

Beyond Linux[®] From Scratch

Version 6.1

BLFS Development Team

Beyond Linux[®] From Scratch: Version 6.1

by BLFS Development Team

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Abstract

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

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Dedication

This book is dedicated to the LFS community

Table of Contents

Preface	xii
Foreword	xii
Who Would Want to Read this Book	xv
Organization	xvi
I. Introduction	18
1. Welcome to BLFS	19
Acknowledgments	19
Credits	20
Which Sections of the Book Do I Want?	24
Conventions Used in this Book	25
Book Version	27
Mirror Sites	28
Getting the Source Packages	29
Change Log	30
Mailing Lists	40
News Server	41
Asking for Help and the FAQ	42
Contact Information	44
2. Important Information	45
Package Management	45
Notes on Building Software	48
The /usr Versus /usr/local Debate	50
Optional Patches	51
BLFS Boot Scripts	52
Going Beyond BLFS	53
II. Post LFS Configuration and Extra Software	55
3. After LFS Configuration Issues	56
Creating a Custom Boot Device	56
Configuring for Adding Users	58
About System Users and Groups	60
The Bash Shell Startup Files	62
The /etc/vimrc and ~/.vimrc Files	71
Customizing your Logon with /etc/issue	72
The /etc/shells File	73
Random Number Generation	74
Compressing Man and Info Pages	75
Automate Mounting of File Systems	85
Configuring for Network Filesystems	88
4. Security	89
OpenSSL-0.9.7g	89
CrackLib-2.8.3	92
Linux-PAM-0.80	95
Shadow-4.0.9	98
Iptables-1.3.3	104

Setting Up a Network Firewall	106
GnuPG-1.4.1	115
Tripwire-portable-0.9	117
Heimdal-0.7	120
MIT Krb5-1.4.1	128
Cyrus SASL-2.1.21	129
Stunnel-4.11	132
5. File Systems	135
Ext3	135
ReiserFS-3.6.19	136
XFS-2.6.25	138
6. Editors	140
Vim-6.3	140
Emacs-21.4a	142
Nano-1.2.5	144
JOE-3.3	146
Ed-0.2	148
Bluefish-1.0.2	150
Other Editors	152
7. Shells	153
ASH-0.4.0	153
Tcsh-6.14.00	155
ZSH-4.2.5	157
III. General Libraries and Utilities	159
8. General Libraries	160
PCRE-6.1	160
Popt-1.7.5	162
Slang-1.4.9	164
FAM-2.7.0	166
Libxml-1.8.17	169
Libxml2-2.6.20	170
Libxslt-1.1.14	172
GMP-4.1.4	174
GDBM-1.8.3	175
GLib-1.2.10	177
GLib-2.6.4	179
LibIDL-0.8.5	181
Libcroco-0.6.0	183
Libgsf-1.12.0	184
Libglade-2.5.1	185
Expat-1.95.8	187
Libesmtp-1.0.3r1	188
Aspell-0.60.3	189
Ispell-3.2.06.epa7	192
SLIB-3a1	194
G-Wrap-1.3.4	196
LZO-2.01	197
Libusb-0.1.10a	198
9. Graphics and Font Libraries	200

Libjpeg-6b	200
Libpng-1.2.8	202
Libtiff-3.7.3	204
Libungif-4.1.3	206
Giflib-4.1.3	209
Lcms-1.14	212
Libmng-1.0.9	214
FreeType-2.1.10	216
Fontconfig-2.3.2	217
Libart_lgpl-2.3.17	220
Librsvg-2.9.5	221
Imlib-1.9.15	223
AAlib-1.4rc5	225
Imlib2-1.2.1	227
libexif-0.6.12	229
FriBidi-0.10.5	230
10. General Utilities	231
Bc-1.06	231
Rep-gtk-0.18	233
Compface-1.4	235
ImageMagick-6.2.3-5	237
Hd2u-1.0.0	239
GTK-Doc-1.3	240
Intltool-0.33	242
Screen-4.0.2	244
HTML Tidy-050722	246
desktop-file-utils-0.10	249
XScreenSaver-4.21	251
Pilot-link-0.11.8	253
11. System Utilities	255
GPM-1.20.1	255
Fcron-2.9.7	258
Hdparm-6.1	261
Which-2.16 and Alternatives	263
UnZip-5.52	265
Zip-2.31	267
PCI Utilities-2.1.11	269
Pkg-config-0.19	271
Cpio-2.6	273
MC-4.6.1	275
Sysstat-6.0.0	277
Apache Ant-1.6.2	280
12. Programming	283
DejaGnu-1.4.4	283
Doxygen-1.4.3	285
Expect-5.43.0	287
GCC-3.4.3	290
GCC-3.3.4	295
Guile-1.6.7	297

JDK-1.5.0	299
Librep-0.17	305
NASM-0.98.39	307
PDL-2.4.2	309
Perl Modules	314
PHP-5.0.4	321
Python-2.4.1	324
Ruby-1.8.2	326
Tcl-8.4.11	328
Tk-8.4.11	330
Other Programming Tools	332
IV. Connecting to a Network	337
13. Dial-up Networking	338
PPP-2.4.3	338
WvDial-1.54.0	340
14. DHCP Clients	342
DHCP-3.0.2 Client	342
Dhcpd-1.3.22-pl4	344
15. Other Connections	347
RP-PPPoE-3.5	347
V. Basic Networking	350
16. Networking Libraries	351
CURL-7.14.0	351
WvStreams-4.0.1	353
GNet-2.0.7	356
Libsoup-2.2.3	357
Libpcap-0.9.3	358
17. Text Web Browsers	359
Links-2.1pre17	359
Lynx-2.8.5	361
W3m-0.5.1	363
18. Basic Networking Programs	365
CVS-1.11.20	365
Inetutils-1.4.2	367
NcFTP-3.1.9	369
NCPFS-2.2.4	371
Net-tools-1.60	374
NTP-4.2.0	377
OpenSSH-4.1p1 Client	380
Portmap-5beta	381
Rsync-2.6.5 Client	383
Samba-3.0.14a Client	384
Subversion-1.1.4	385
Tcpwrappers-7.6	388
Wget-1.9.1	390
19. Basic Networking Utilities	392
Traceroute-1.4a12	392
Nmap-3.81	394
Whois-4.7.5	395

BIND Utilities-9.3.1	396
Ethereal-0.10.12	398
20. Mail/News Clients	401
Nail-11.24	401
Procmail-3.22	403
Fetchmail-6.2.5.2	405
Mutt-1.4.2.1i	407
Pine-4.63	409
Slrn-0.9.8.1	411
Other Mail and News Programs	413
VI. Servers	414
21. Major Servers	415
Apache-2.0.54	415
BIND-9.3.1	418
NFS Utilities-1.0.7	425
OpenSSH-4.1p1	429
ProFTPD-1.2.10	432
Samba-3.0.14a	436
vsFTPD-2.0.3	445
xinetd-2.3.13	447
22. Mail Server Software	458
Exim-4.52	458
Postfix-2.2.5	462
Qpopper-4.0.5	467
Sendmail-8.13.4	469
23. Databases	473
Berkeley DB-4.3.28	473
MySQL-4.1.12	476
PostgreSQL-8.0.3	479
24. Other Server Software	483
DHCP-3.0.2	483
Leafnode-1.10.8	486
OpenLDAP-2.2.24	489
rsync-2.6.5	493
Running a CVS Server	496
Running a Subversion Server	499
VII. X + Window Managers	503
25. X Window System Environment	504
Xorg-6.8.2	504
XFree86-4.5.0	511
Additional X Window System Configuration	520
X Window System Components	522
26. X Libraries	526
Qt-3.3.4	526
GTK+-1.2.10	531
Pango-1.8.1	533
ATK-1.9.1	535
GTK+-2.6.7	537
LessTif-0.94.4	539

startup-notification-0.8	542
Libwnck-2.10.0	544
shared-mime-info-0.16	546
hicolor-icon-theme-0.8	548
libxklavier-2.0	549
freeglut-2.4.0	550
27. Window Managers	552
Introduction	552
sawfish-1.3	553
Fluxbox-0.9.13	555
Metacity-2.10.1	557
XFce-4.2.2	559
Other Window Managers	562
VIII. KDE	563
28. KDE Core Packages	565
KDE Pre-installation Configuration	565
aRts-1.4.1	567
Kdelibs-3.4.1	569
Kdebase-3.4.1	571
Configuring the Core KDE Packages	574
29. KDE Additional Packages	575
Kdeadmin-3.4.1	575
Kdenetwork-3.4.1	577
Kdepim-3.4.1	579
Kdemultimedia-3.4.1	581
Kdegraphics-3.4.1	583
Kdeutils-3.4.1	585
Kdeedu-3.4.1	587
Kdesdk-3.4.1	589
Kdevelop-3.2.1	591
Kdewebdev-3.4.1	593
Kdebindings-3.4.1	595
Kdeaccessibility-3.4.1	597
Kdetoys-3.4.1	599
Kdegames-3.4.1	601
Kdeartwork-3.4.1	603
Kdeaddons-3.4.1	604
Kde-i18n-3.4.1	605
IX. GNOME	607
30. GNOME Core Packages	609
Pre-installation Configuration	609
ORBit2-2.12.2	610
Libbonobo-2.8.1	612
GConf-2.10.0	614
Desktop-file-utils-0.10	616
GNOME MIME Data-2.4.2	617
GNOME Virtual File System-2.10.1	619
Libgnome-2.10.0	621
Libgnomecanvas-2.10.0	623

Libbonoboui-2.8.1	625
GNOME Icon Theme-2.10.1	627
Gnome-keyring-0.4.2	628
Libgnomeui-2.10.0	630
GTK Engines-2.6.3	632
GNOME Themes-2.10.1	633
ScrollKeeper-0.3.14	634
GNOME Desktop-2.10.1	636
Gnome-backgrounds-2.10.1	638
Gnome-menus-2.10.1	640
GNOME Panel-2.10.1	642
GNOME Session-2.10.0	644
VTE-0.11.13	646
GNOME Terminal-2.10.0	648
LibGTop-2.10.1	650
GAIL-1.8.3	652
GNOME Applets-2.10.1	654
EEL-2.10.1	656
Nautilus-2.10.1	657
GNOME Doc Utils-0.2.0	659
Libgtkhtml-2.6.3	661
Yelp-2.6.5	663
Control Center-2.10.1	665
GNOME2 User Docs-2.8.1	667
Configuring the Core GNOME Packages	669
31. GNOME Additional Packages	670
libgnomecups-0.2.0	670
libgnomeprint-2.10.3	672
libgnomeprintui-2.10.2	674
GAL-2.4.2	676
GtkHTML-3.6.2	678
Evolution Data Server-1.2.2	680
bug-buddy-2.10.0	682
gtksourceview-1.2.0	684
gedit-2.10.2	686
EOG-2.10.0	688
GGV-2.8.4	690
File Roller-2.10.3	692
GConf Editor-2.10.0	694
GNOME Utilities-2.10.1	696
system-tools-backends-1.2.0	698
GNOME System Monitor-2.10.1	700
Nautilus CD Burner-2.10.1	702
GNOME Media-2.10.2	704
gnome-audio-2.0.0	706
GNOME Netstatus-2.10.0	707
gcalctool-5.5.42	709
GPdf-2.10.0	711
gucharmap-1.4.3	713

Zenity-2.10.0	715
AT SPI-1.6.4	717
libgail-gnome-1.1.1	719
Java Access Bridge-1.4.5	720
GNOME Speech-0.3.7	722
GNOME Magnifier-0.12.1	724
Gnopernicus-0.10.9	726
GOK-1.0.4	728
Epiphany-1.6.2	730
GnomeMeeting-1.2.1	732
GNOME Games-2.10.1	734
GDM-2.6.0.9	736
32. GNOME 1.4 Libraries	739
Pre-installation Configuration	739
ORBit-0.5.17	740
OAF-0.6.10	742
GNOME Libraries-1.4.2	744
GDK Pixel Buffer-0.22.0	746
GNOME Print-0.37	748
Bonobo-1.0.22	749
GConf-1.0.9	751
GNOME Virtual File System-1.0.5	753
Libglade-0.17	755
GAL-0.24	757
Guppi-0.40.3	759
Libcaplet-1.5.11	761
Soup-0.7.11	762
Libghttp-1.0.9	764
GtkHTML-1.1.7	765
X. X Software	767
33. Individual Office Programs	768
AbiWord-2.2.8	768
Gnumeric-1.4.3	771
GnuCash-1.8.11	773
GIMP-2.2.8	776
Evolution-2.2.2	779
34. Office Suites	781
KOffice-1.4.0b	781
OpenOffice-1.1.4	783
35. Graphical Web Browsers	788
Mozilla-1.7.8	788
Firefox-1.0.6	793
Galeon-1.3.21	796
Konqueror-3.4.1	798
Dillo-0.8.5	799
36. Other X-based Internet Programs	801
Thunderbird-1.0.6	801
Pan-0.14.2	804
Balsa-2.2.6	805

XI. Multimedia	807
37. Multimedia Libraries and Drivers	808
ALSA-1.0.9	808
ALSA Library-1.0.9	809
ALSA Plugins-1.0.9	811
ALSA Utilities-1.0.9a	813
ALSA Tools-1.0.9	816
ALSA Firmware-1.0.9	819
ALSA OSS-1.0.9	820
aRts-1.4.1	822
Audio File-0.2.6	823
EsoundD-0.2.35	824
SDL-1.2.8	826
Libao-0.8.6	828
Libogg-1.1.2	830
Libvorbis-1.1.1	831
NAS-1.7	833
Libmpeg3-1.5.4	835
Libmad-0.15.1b	837
OpenQuicktime-1.0	838
LibFAME-0.9.1	840
Speex-1.0.5	841
Id3lib-3.8.3	842
FLAC-1.1.2	843
Libdvdcss-1.2.8	845
Libdv dread-0.9.4	847
Libdv-0.104	848
Liba52-0.7.4	850
XviD-1.0.3	851
Xine Libraries-1.0.1	853
Libmikmod-3.1.11	855
GStreamer-0.8.10	857
Gst-plugins-0.8.10	859
38. Audio Utilities	861
Mpg123-0.59r	861
Vorbis Tools-1.1.1	863
XMMS-1.2.10	865
LAME-3.96.1	867
CDParanoia-III-9.8	869
FreeTTS-1.2.1	871
39. Video Utilities	874
FFmpeg-0.4.9-pre1	874
Avifile-0.7.43	877
MPlayer-1.0pre7	879
Xine User Interface-0.99.3	885
Transcode-0.6.14	887
40. CD-Writing Utilities	890
Cdrtools-2.01	890
Cdrdao-1.2.0	892

UDFtools-1.0.0b3	894
XII. Printing, Scanning and Typesetting	896
41. Printing	897
CUPS-1.1.23	897
LPRng-3.8.28	900
AFPL Ghostscript-8.51	902
ESP Ghostscript-7.07.1	904
Gimp-Print-4.2.7	907
42. Scanning	909
SANE-1.0.15	909
XSane-0.97	913
43. Standard Generalized Markup Language (SGML)	915
SGML Common-0.6.3	915
DocBook SGML DTD-3.1	917
DocBook SGML DTD-4.4	919
OpenSP-1.5.1	921
OpenJade-1.3.2	924
DocBook DSSSL Stylesheets-1.79	926
DocBook-utils-0.6.14	928
44. Extensible Markup Language (XML)	931
DocBook XML DTD-4.4	931
DocBook XSL Stylesheets-1.68.1	935
45. PostScript	938
a2ps-4.13b	938
Enscript-1.6.4	941
PSUtils-p17	943
GSview-4.7	945
Xpdf-3.00pl3	947
FOP-0.20.5	950
Other PostScript Programs	954
46. Typesetting	955
TeX-3.0	955
JadeTeX-3.13	958
A. Creative Commons License	962
B. Academic Free License v. 2.1	967
Glossary	970
Index	979

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 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–June 2004)

The BLFS project is a natural progression of LFS. Together, these projects provide a unique resource for the Open Source Community. They take the mystery out of the process of building a complete, functional software system from the source code contributed by many talented individuals throughout the world. They truly allow users to implement the slogan "Your distro, your rules."

Our goal is to continue to provide the best resource available that shows you how to integrate many significant

Open Source applications. Since these applications are constantly updated and new applications are developed, this book will never be complete. Additionally, there is always room for improvement in explaining the nuances of how to install the different packages. To make these improvements, we need your feedback. I encourage you to participate on the different mailing lists, news groups, and IRC channels to help meet these goals.

Bruce Dubbs
bdubbs <at> linuxfromscratch.org
BLFS Editor (June 2004–Present)

Preface to Version 6.0

Version 6.0 is a major milestone in the evolution of BLFS. This version provides installation instructions for 357 packages and an additional 21 sections covering configuration and customization of different aspects of your system.

Changes and upgrades to the individual packages are detailed in the Change Log. There you will see literally hundreds of changes made since the last edition. In this change log, one name that you will see over and over is Randy McMurchy. Without his efforts this release would not have been possible. I want to take this opportunity to thank him for the hundreds of hours he has worked to produce this release. I also want to thank the other editors, both past and present, whose insight and effort have made this current version possible. Last, but certainly not least, I want to thank our resident XSL wizard, Manuel Canales Esparcia, whose ability to format a complicated document such as BLFS is truly amazing.

There are two other areas of change that are worthy of note. First, the license that BLFS is released under has changed significantly. In fact, it is now released under two licenses. The first license, the Creative Commons License, covers the descriptive text in the book. The second, the Academic Free License v. 2.1, covers the instructions actually used to build and install the packages. These licenses, along with the book itself, represent our ongoing commitment to open and free software.

The final area of change is the addition of an Index. This section of the book is still incomplete, but as the book continues to be developed, will become an excellent resource for finding programs, libraries, configuration files, and references to kernel configuration requirements. I hope you find it useful.

Bruce Dubbs
March 17, 2005

Preface to Version 6.1

Version 6.1 is an incremental update of BLFS. This version continues the tradition of providing an extensive set of instructions for extending a basic Linux From Scratch system. The instructions in this version of BLFS are based on the LFS 6.1 Book. As usual, the list of packages that have been upgraded or added are in the Change Log.

One major accomplishment in this version of the book is the completion of the Index. This section is now a relatively complete (but not perfect) reference for the components of the various packages in the book.

In any task as large and complex as this book, there are bound to be errors. The editors of the book are dedicated to keeping the book up to date. We appreciate any feedback in helping us to make the book as accurate as possible. The best place to provide comments is via the mailing list at <mailto:blfs-dev@linuxfromscratch.org>.

Enjoy!

Bruce Dubbs
August 1, 2005

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 - Major Servers

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

Part VII - X + Window Managers

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

Part VIII - KDE

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

Part IX - GNOME

GNOME is the main alternative to KDE in the Desktop Environment arena and we cover both GNOME-1.4 and GNOME-2.10 here.

Part X - 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 XI - Multimedia

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

Part XII - Printing, Scanning and Typesetting (PST)

The PST part of the book covers document handling with applications like 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? 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.
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- 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 bdubbs@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:* Bruce Dubbs <bdubbs@linuxfromscratch.org>
- *Co-Editors:* Randy McMurphy, Larry Lawrence, Igor Zivkovic, DJ Lucas, Tushar Teredesai, David Jensen, Manuel Canales Esparcia, and Richard Downing.

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- Chapter 01. Based on the LFS introductory text by *Gerard Beekmans*, modified by *Mark Hymers* for BLFS.
- Chapter 02: The /usr versus /usr/local debate: *Andrew McMurry*.
- Chapter 02: Going beyond BLFS: *Tushar Teredesai*.
- Chapter 02: Package Management: *Tushar Teredesai*.
- Chapter 03: /etc/inputrc: *Chris Lynn*.
- Chapter 03: Customizing your logon & vimrc: *Mark Hymers*.
- Chapter 03: /etc/shells: *Igor Zivkovic*.
- Chapter 03: Random number script *Larry Lawrence*.
- Chapter 03: Creating a Custom Boot Device *Bruce Dubbs*.
- Chapter 03: The Bash Shell Startup Files *James Robertson* revised by *Bruce Dubbs*.
- Chapter 03: Compressed docs *Olivier Peres*.
- Chapter 04: Firewalling: *Henning Rohde* with thanks to *Jeff Bauman*. Revised by *Bruce Dubbs*.
- Chapter 11: Which *Mark Hymers* with many thanks to *Seth Klein* and *Jesse Tie-Ten-Quee*.
- Chapter 25: X Window System Environment: *Bruce Dubbs*.
- Chapter 27: Intro to Window Managers: *Bruce Dubbs*.
- Chapters 28 and 29: KDE: *Bruce Dubbs*.
- Chapters 30, 31, and 32: GNOME: *Larry Lawrence*.

Installation Instruction Authors

- aalib, Alsa, ffmpeg, gocr, MPlayer, opendivx, 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, libsvg, 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*
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- traceroute: *Jeff Bauman*
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- ProFTPD and rsync: *Daniel Baumann*
- ESP Ghostscript: *Matt Rogers*
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- Screen: *Andreas Pedersen*
- PHP: *Jeremy Utley*
- Gimp-Print and libusb: *Alexander E. Patrakov*
- Fetchmail and WvDial: *Paul Campbell*
- UDFtools, Perl modules (initial version) and Bluefish: *Richard Downing*
- Epiphany, FLAC, File Roller, GNOME Magnifier, GNOME Netstatus, GNOME Speech, GOK, GPdf, GnomeMeeting, Gnopernicus, Imlib2, LZO, MC, NASM, Nautilus CD Burner, OpenQuicktime, Speex, XScreenSaver, Zenity, compface, freeglut, gcalctool, gucharmap, id3lib, kde-i18n, kdeaccessibility, kdebindings, kdesdk, kdevelop, kdewebdev, libFAME, liba52, libdv, libdvdcss, libdvread, libmad,

libmikmod and libmpeg3: *Igor Zivkovic*

- tripwire: *Manfred Glombowski*
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- MySQL: *Jesse Tie-Ten-Quee*
- fontconfig, gcc, gcc2, jdk, mozilla, nas, openoffice, ispell, nail, ImageMagick, hd2u, STLport, tcl, tk and bind-utils: *Tushar Teredesai*
- cracklib, libpcap, ncpfs, netfs, ppp(update), RP-PPPoE, Samba-3 and Subversion: *DJ Lucas*
- ntp: *Eric Konopka*
- nfs-utils: *Reinhard*

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- *Ted Riley* for writing the Linux-PAM + CrackLib + Shadow hint on which reinstalling Shadow to use PAM is based.

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 in the process of going from the base system to your intended destination. Choice is very much involved.

Everyone who reads the book will want to read certain sections. The Introduction part—which you are currently reading—contains generic information. Especially take note of the information in Important Information (Chapter 2, Important Information), 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 is where most people will want to turn next. This deals with not just configuration but also Security (Chapter 4, Security), File Systems (Chapter 5, File Systems), Editors (Chapter 6, Editors) and Shells (Chapter 7, Shells). 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 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) 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 and Basic Networking 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) and Dial-Up Connections (Chapter 13, Dial-up Networking). The second of these parts deals with items such as Networking Libraries (Chapter 16, Networking Libraries) 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 Servers part of the book. Those wanting to build servers should find a good starting point there. Note that Servers also contains information on various database packages.

The next parts of the book principally deal with desktop systems. This portion of the book starts with a part talking about X and Window Managers. This part also deals with some generic X-based libraries (Chapter 26, X Libraries). After this, KDE and GNOME are given their own parts which are followed by one on X Software.

The book then moves on to deal with Multimedia packages. Note that many people may want to use the ALSA-1.0.9 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. 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 to identify references to specific commands.

```
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 `/boot/grub/grub.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 external to the book such as HowTo's, download locations, websites, etc.

Mozilla-1.7.8

This form of text is used for links internal to the book such as another section describing a different package.

```
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.

[REPLACED TEXT]

This form of text is used to encapsulate text that should be modified and is not to be typed as seen, or copy and pasted. Note that the square brackets are not part of the text, but should be substituted for as well.

`root`

This form of text is used to show a specific system user reference in the instructions.

Book Version

This is BLFS-BOOK version 6.1 dated August 14st, 2005. 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/mirrors.html> website for the list of current mirrors.

Getting the Source Packages

Within the BLFS instructions, each package has two references for finding the source files for the package—an http link and an ftp link (some packages may only list one of these links). Every effort has been made to ensure that these links are accurate. However, the World Wide Web is in continuous flux. Packages are sometimes moved or updated and the exact URL specified is not always available.

To overcome this problem, the BLFS Team, with the assistance of Server Beach, has made an http/ftp site available at *anduin.linuxfromscratch.org*. This site has all the sources of the exact versions of the packages used in BLFS. If you can't find the BLFS package you need, get it there.

We would like to ask a favor, however. Although this is a public resource for you to use, we do not want to abuse it. We have already had one unthinking individual download over 3 GB of data, including multiple copies of the same files that are placed at different locations (via symlinks) to make finding the right package easier. This person clearly did not know what files he needed and downloaded everything. The best place to download files is the site or sites set up by the source code developer. Please try there first.

Change Log

Please note that the Change Log only lists which editor was responsible for putting the changes into SVN; please read the Credits page in Chapter 1 for details on who wrote what.

6.1 – August 14st, 2005

- August 19th, 2005 [dj]: Updated dev.d scripts and surrounding text in alsa-utils.
- August 12th, 2005 [randy]: Added a command to the PostgreSQL instructions to fix broken ownership of installed files.
- August 11th, 2005 [randy]: Applied a patch contributed by stirling to fix many broken download URLs.
- August 11th, 2005 [randy]: Added a new section "Other Programming Tools" to Chapter 12 - Programming.
- August 9th, 2005 [bdubbs]: BLFS-6.1-pre2 release.
- August 9th, 2005 [dj]: Added default PATH for pam_env and a note about the lack of ENV_SUPATH.
- August 8th, 2005 [randy]: Added instructions to install patches to Ruby and NASM that fix security vulnerabilities discovered in both packages, thanks to Ken Moffat for the suggestions.
- August 8th, 2005 [randy]: Modified documentation installation in the Fontconfig instructions.
- August 8th, 2005 [randy]: Modified the Shadow instructions so that builders will not receive configuration errors during the testing recommended by the warning note.
- August 7th, 2005 [randy]: Removed building the MPFR library from the GMP instructions.
- July 31st, 2005 [randy]: Updated to libpcap-0.9.3 and moved the instructions from Chapter 8 "General Libraries" to Chapter 16 "Networking libraries"; updated to HTML Tidy-050722 and Ethereal-0.10.12.
- July 31st, 2005 [dj]: Updated bootscripts tarball, added ALSA dev.d helper scripts, corrected SSL instructions for postfix, and updated postfix to 2.2.5.
- July 31st, 2005 [richard]: Updated to firefox-1.0.6.
- July 30th, 2005 [bdubbs]: Updated to fetchmail-6.2.5.2.
- July 30th, 2005 [bdubbs]: Updated to mc-4.6.1.
- July 30th, 2005 [richard]: Updated to thunderbird-1.0.6 with enigmail-0.92.0 and ipc-1.1.3.
- July 30th, 2005 [tushar]: Added boot-time consistency check for ext3 partitions.
- July 29th, 2005 [bdubbs]: Updated to exim-5.52.
- July 29th, 2005 [bdubbs]: Updated to iptables-1.3.3.
- July 29th, 2005 [richard]: Revised wording about LFS newsserver.
- July 29th, 2005 [richard]: Updated to fcron-2.9.7 changing dependency wording for the required text editor.
- July 28th, 2005 [richard]: Updated to curl-7.14.0.
- July 28th, 2005 [richard]: Updated to LZO-2.01.

- July 28th, 2005 [richard]: Updated to libvorbis-1.1.1 and vorbis-tools-1.1.1.
- July 28th, 2005 [dj]: Added security patch for OpenOffice and removed broken optimization patch for JDK.
- July 27th, 2005 [bdubbs]: Updated escape sequence explanation in the /etc/issue discussion in Chapter 3.
- July 27th, 2005 [tushar]: Updated to aspell-0.60.3.
- July 27th, 2005 [tushar]: Updated to libxml2-2.6.20.
- July 27th, 2005 [tushar]: Updated to pkg-config-0.19.
- July 27th, 2005 [tushar]: Updated to speex-1.0.5.
- July 27th, 2005 [bdubbs]: Updated to KDE-3.4.1.
- July 27th, 2005 [djensen]: Updated to Bluefish-1.0.2.
- July 27th, 2005 [djensen]: Updated to ImageMagick-6.2.3-5.
- July 25th, 2005 [djensen]: Updated to ALSA-1.0.9.
- July 25th, 2005 [tushar]: Fix symlink related bug in cpio. See Bug # 1464.
- July 25th, 2005 [randy]: Updated to Heimdal-0.7.
- July 25th, 2005 [djensen]: Updated to Imlib2-1.2.1.
- July 25th, 2005 [djensen]: Updated to freeglut-2.4.0.
- July 25th, 2005 [tushar]: Added optional defines to xorg to allow installation into standard directories.
- July 24th, 2005 [dj]: Updated to Linux-PAM-0.80 and corrected sed for /etc/login.defs in Shadow instructions.
- July 24th, 2005 [randy]: Updated to CrackLib-2.8.3.
- July 23rd, 2005 [djensen]: Added security patch to Mpg123.
- July 23rd, 2005 [randy]: Updated to Shadow-4.0.9 via a patch from DJ Lucas.
- July 22nd, 2005 [randy]: Added textual updates to the "After LFS Configuration" chapter.
- July 21st, 2005 [randy]: Added additional text to the "Conventions" and "Unpacking" sections; numerous typo, grammar and tagging fixes to the "Introduction" chapter.
- July 20th, 2005 [tushar]: Added testsuite to pango.
- July 20th, 2005 [larry]: Removed document instructions from mysql, no longer in package.
- July 20th, 2005 [randy]: Updated to Stunnel-4.11.
- July 19th, 2005 [randy]: Updated to Doxygen-1.4.3.
- July 18th, 2005 [randy]: Updated to Nail-11.24 and Cyrus-SASL-2.1.21.
- July 17th, 2005 [randy]: Updated to GnuCash-1.8.11.
- July 17th, 2005 [tushar]: Updated Notes on Building Software.
- July 14th, 2005 [randy]: Added Finance::QuoteHist module and dependencies to Perl Modules instructions.

- July 14th, 2005 [djensen]: Updated to Tcl-8.4.11 and Tk-8.4.11.
- July 14th, 2005 [djensen]: Updated to Gst-plugins-0.8.10.
- July 14th, 2005 [bdubbs]: Updated to koffice-1.4.0b.
- July 13th, 2005 [randy]: Major overhaul to the Perl Modules instructions including adding new modules, removing obsolete modules, adding additional dependencies, complete text rewrite and new page layout.
- July 12th, 2005 [djensen]: Updated to Nmap-3.81.
- July 11th, 2005 [tushar]: Install static library and header in PCI Utilities.
- July 11th, 2005 [djensen]: Remove inappropriate patch from OpenSSL-0.9.7g.
- July 10th, 2005 [djensen]: Added recommendation to skip the Berkeley DB test-suite.
- July 9th, 2005 [djensen]: Updated to Libpcap-0.9.1.
- July 9th, 2005 [djensen]: Updated to Libtiff-3.7.3.
- July 9th, 2005 [tushar]: For fcron, replace switch --with-answer-all=no with --with-boot-install=no.
- July 9th, 2005 [tushar]: Added make check to intltool.
- July 9th, 2005 [dj]: Updated blfs-bootscripts and added RTC instructions to MPlayer.
- July 8th, 2005 [tushar]: Added document installation to fontconfig.
- July 7th, 2005 [djensen]: Added document installation to NTP-4.2.0.
- July 3rd, 2005 [tushar]: Added note on installation of ispell and spell wrappers in aspell.
- July 3rd, 2005 [tushar]: Added note that gmp testsuite is highly recommended.
- July 3rd, 2005 [djensen]: Updated to ImageMagick-6.2.3-3.
- July 3rd, 2005 [djensen]: Updated to GIMP-2.2.8.
- July 1st, 2005 [djensen]: Updated to Berkeley DB-4.3.28.
- Jun 30th, 2005 [djensen]: Updated to Pkgconfig-0.18.
- Jun 29th, 2005 [djensen]: Updated to MySQL-4.1.12.
- Jun 28th, 2005 [djensen]: Updated to Hdparm-6.1.
- Jun 28th, 2005 [djensen]: Updated to Nano-1.2.5.
- Jun 28th, 2005 [djensen]: Updated to Libgsf-1.12.0.
- Jun 28th, 2005 [djensen]: Updated to PCRE-6.1.
- Jun 28th, 2005 [randy]: Updated Perl Modules: HTML::Parser-3.45, HTML::TableExtract-2.02, DateManip-5.44, Module-CoreList-2.02 and Compress::Zlib-1.34; added dependencies to Finance::Quote Perl Module.
- Jun 26th, 2005 [dj]: Added optimization patch to JDK instructions.
- Jun 25th, 2005 [randy]: Updated G-Wrap dependencies; updated to Perl Module Module::Info-0.28.

- Jun 23th, 2005 [djensen]: Updated to Cdrdao-1.2.0.
- Jun 21th, 2005 [djensen]: Updated to OpenSSL-0.9.7g.
- Jun 21th, 2005 [djensen]: Corrected http download url in Transcode.
- Jun 21th, 2005 [djensen]: Updated to XFce-4.2.2.
- Jun 21th, 2005 [djensen]: Updated to Dillo-0.8.5.
- Jun 21th, 2005 [djensen]: Updated to GSview-4.7.
- Jun 20th, 2005 [djensen]: Updated to Freetype-2.1.10.
- Jun 20th, 2005 [djensen]: Updated to Fontconfig-2.3.2.
- Jun 20th, 2005 [djensen]: Moved Libwnck from gnome/core to x/libs.
- Jun 20th, 2005 [djensen]: Separated the DB-4.3.27 test from the build, they are not compatible.
- Jun 20th, 2005 [dj]: Added missing required patch to dhcp instructions.
- June 19th, 2005 [djensen]: Changed links to t1lib-5.1.0 and mcript link to mcript.sourceforge.net/
- Jun 18th, 2005 [dj]: Added dhcp-3.0.2-gcc_3.4.3-2.patch, updated dhclient instructions to print settings obtained in bootscript, and added libmawt.so symlink to JDK instructions.
- June 18th, 2005 [djensen]: Updated to Fluxbox-0.9.13
- June 18th, 2005 [djensen]: Updated to Ghostscript-8.51. Separated root/user.
- June 18th, 2005 [igor]: Updated to Postfix-2.2.3.
- June 17th, 2005 [igor]: Updated to Apache-2.0.54.
- June 17th, 2005 [djensen]: Updated to NcFTP-3.1.9. Separated root/user.
- June 17th, 2005 [djensen]: Updated to Pine-4.63. Separated root/user.
- June 16th, 2005 [djensen]: Updated to Gnet-2.0.7. Added alternate gtk-doc/html doc install directory.
- June 16th, 2005 [djensen]: Added document installation to W3m, separated user/root commands in W3m, Pan, Balsa, Comfpace, Fetchmail, Mutt, Slrn, Net-tools, NTP and Enscript.
- June 15th, 2005 [djensen]: Updated to Hd2u-1.0.0. Separated user and root commands.
- June 15th, 2005 [djensen]: Separated user/root instructions and/or updated Installed Directories for Libao, Libmpeg123, Libmad, OpenQuicktime, libFAME, Speex, Libdvdread, FLAC, Gst-plugins, Libcroco, Libesmtp, Libungif, MC, GSview, AALib and Rep-gtk
- June 15th, 2005 [djensen]: Updated to Avifile-0.7-0.7.43. removed pc sed.
- June 15th, 2005 [djensen]: Removed --mandir configure switch from Dhcpd.
- June 15th, 2005 [archaic]: Updated to vsftpd-2.0.3.
- June 14th, 2005 [djensen]: Added 8 plugin links and a python version sed to Abiword.
- June 14th, 2005 [bdubbs]: Updated to autofs-4.1.4.
- June 13th, 2005 [djensen]: Updated to PostgreSQL-8.0.3. Added testsuite command.

- June 13th, 2005 [randy]: Modified installation path of GNOME-1.4 libraries to /opt/gnome-1.4.
- June 13th, 2005 [djensen]: Added a2ps instructions to install the downloaded fonts. Added possible testsuite.
- June 12th, 2005 [bdubbs]: Corrected startup scripts. Removed xterm-title and substituted extra-prompt.sh.
- June 12th, 2005 [bdubbs]: Changed location of ispell dictionaries to /usr/share/ispell.
- June 12th, 2005 [djensen]: Simplified the PSUtils build instructions. Separated user and root instructions.
- June 12th, 2005 [bdubbs]: Updated to thunderbird-1.0.2 and fixed problem in the installation of thunderbird's `defaults` directory.
- June 12th, 2005 [bdubbs]: Added instruction to make `rc.iptables` executable in firewalling section.
- June 12th, 2005 [bdubbs]: Updated `cpio` instructions to ensure LSB testsuites pass internationalization tests.
- June 12th, 2005 [djensen]: Updated to Links-2.1pre17. Added SDL to optional dependencies. Separated user and root instructions.
- June 12th, 2005 [randy]: Added new package FriBidi-0.10.5.
- June 11th, 2005 [djensen]: Updated to AbiWord-2.2.8, build instructions altered to build and install plugins.
- June 10th, 2005 [djensen]: Fixed `md5sum` joe-3.3. Completed XFree86 update to 4.5.0
- June 10th, 2005 [randy]: Added additional optional dependencies to the Bluefish instructions.
- June 10th, 2005 [djensen]: Updated to joe-3.3.
- June 8th, 2005 [randy]: Updated to PCRE-6.0 using a patch submitted by David Jensen; added documentation installation to the Imlib instructions.
- June 6th, 2005 [randy]: Added a note to the Samba instructions about unprivileged users mounting SMB shares; updated JDK binary version to 1.5.0_03; updated to ZSH-4.2.5; added installation of documentation to the PCRE instructions, suggested by David Jensen.
- June 6th, 2005 [bdubbs]: Updated `bind` and `bind-utils` sections to version 9.3.1.
- June 5th, 2005 [randy]: Removed "which" as a dependency of DocBook-utils and created a note saying it must be installed; clarified why 'yes' is piped to 'make config' in the introduction of the installation section of Net-Tools (fixes bug #1259).
- June 5th, 2005 [randy]: Created Samba client instruction page, suggested by Alexander Patrakov; added additional configuration text to the Samba server instructions, submitted by Alexander Patrakov; added SWAT (without Stunnel) configuration instructions to the Samba server instructions, suggested by Jim Gifford; removed Stunnel and added XFS as dependencies of the Samba package; added instructions to create a nobody user in the Samba server bootscript installation section, suggested by Frank Olschewski.
- June 5th, 2005 [bdubbs]: Integrated system uid and gid values into individual packages.
- June 5th, 2005 [bdubbs]: Added `blufish-1.0.1` from patch provided by theOldFellow.
- June 4th, 2005 [randy]: Standardized the creation of the nobody user (without a valid login shell) in the NFS Utilities and Postfix instructions.
- June 3rd, 2005 [randy]: Updated Samba configuration information as suggested by Alexander Patrakov

(fixes bug #1386); Updated to rsync-2.6.5 and OpenSSH-4.1p1.

- June 3rd, 2005 [igor]: Updated to ImageMagick-6.2.3-0.
- June 1st, 2005 [randy]: Updated to Galeon-1.3.21, Sysstat-6.0.0, HTML Tidy-050531, Whois-4.7.5 and Tcsh-6.14.00; moved installation of tcsh to /bin instead of /usr/bin and updated /etc/shells during the Tcsh installation.
- May 31st, 2005 [bdubbs]: Added section explaining system user and group numerical assignments.
- May 31st, 2005 [randy]: Removed the explicit path from the GDM bootscript commands and updated the GDM instructions to include a note to update the script if \$GNOME_PREFIX is non-standard; updated bootscripts to version 20050531.
- May 30th, 2005 [randy]: Updated to GDM-2.6.0.9, GNOME Speech-0.3.7, Gnopernicus-0.10.9 and GOK-1.0.4; added new package libexif-0.6.12; moved libexif to a required dependency of Nautilus.
- May 29th, 2005 [bdubbs]: Updated to Firefox-1.0.4.
- May 29th, 2005 [bdubbs]: Updated to Mozilla-1.7.8.
- May 29th, 2005 [randy]: Updated to Gnumeric-1.4.3 and changed the installation path to /usr (thanks to Bruce Dubbs, David Jensen and Jody Goldberg for their input); added popt to the libgnomeprint dependencies, suggested by David Jensen; updated to GNOME Magnifier-0.12.1.
- May 28th, 2005 [randy]: Updated to Ethereal-0.10.11, reported by Matthias Berndt.
- May 27th, 2005 [igor]: Updated to GIMP-2.2.7.
- May 25th, 2005 [randy]: Updated installation commands in the FreeTTS instructions.
- May 23rd, 2005 [randy]: Updated to libgail-gnome-1.1.1 and Java Access Bridge-1.4.5.
- May 22nd, 2005 [randy]: Added new package FreeTTS-1.2.1.
- May 22nd, 2005 [manuel]: Finished the book sources retagging and indentation to match current template.xml.
- May 19th, 2005 [randy]: Updated to GnomeMeeting-1.2.1.
- May 18th, 2005 [archaic]: GPM: Moved the LDFLAGS option from the configure command to the make command as libm wasn't being properly pulled into the environment.
- May 18th, 2005 [randy]: Fixed documentation installation command in the Esound instructions, suggested by David Jensen; fixed skin file MD5sum in the MPlayer instructions, suggested by Zibeli Aton.
- May 18th, 2005 [randy]: Updated to GConf Editor-2.10.0, GNOME Netstatus-2.10.0, gcalctool-5.5.42, GPdf-2.10.0 and Zenity-2.10.0; commented out the Nautilus Media package from inclusion in the book.
- May 17th, 2005 [randy]: Updated to GNOME System Monitor-2.10.1, bug-buddy-2.10.0, EOG-2.10.0, AT SPI-1.6.4, gtksourceview-1.2.0, gedit-2.10.2, GGV-2.8.4 and File Roller-2.10.3.
- May 16th, 2005 [randy]: Added new package gnome-audio-2.0.0; updated to GNOME Utils-2.10.1 and GNOME Games-2.10.1.
- May 15th, 2005 [randy]: Updated to Evolution-2.2.2, Epiphany-1.6.2, Nautilus CD Burner-2.10.1 and GNOME Media-2.10.2.

- May 12th, 2005 [randy]: Updated to GAL-2.4.2 and GtkHTML-3.6.2.
- May 11th, 2005 [manuel]: Fixed a typo in JDK, reported by William Harrington.
- May 11th, 2005 [randy]: Updated to libgnomecups-0.2.0, libgnomeprint-2.10.3, libgnomeprintui-2.10.2, Evolution Data Server-1.2.2 and gucharmap-1.4.3.
- May 11th, 2005 [randy]: Updated all the GNOME-2 core package instructions to the GNOME 2.10.1 release (ORBit-2.12.2, libbonobo-2.8.1, GConf-2.10.0, GNOME VFS-2.10.1, libgnome-2.10.0, libgnomecanvas-2.10.0, libbonoboui-2.8.1, GNOME Icon Theme-2.10.1, gnome-keyring-0.4.2, libgnomeui-2.10.0, GTK Engines-2.6.3, GNOME Themes-2.10.1, GNOME Desktop-2.10.1, libwnck-2.10.0, GNOME Panel-2.10.1, GNOME Session-2.10.0, VTE-0.11.13, GNOME Terminal-2.10.0, LibGTop-2.10.1, GAIL-1.8.3, GNOME Applets-2.10.1, EEL-2.10.1, Nautilus-2.10.1, GNOME Doc Utils-0.2.0, libgtkhtml-2.6.3, Yelp-2.6.5 and Control Center-2.10.1). Many of the add-on packages build with existing instructions, however, all of them will be updated ASAP.
- May 11th, 2005 [randy]: Added three new GNOME-2 packages: gnome-menus-2.10.1, gnome-backgrounds-2.10.1 and system-tools-backends-1.2.0.
- May 10th, 2005 [randy]: Increment BLFS Bootscripts version to 20050509.
- May 9th, 2005 [igor]: Updated to MySQL-4.1.11.
- May 8th, 2005 [randy]: Updated to Metacity-2.10.1; updated XScreenSaver dependencies and build instructions.
- May 6th, 2005 [randy]: Updated to GIMP-2.2.6 and gst-plugins-0.8.8; removed the --disable-docs-build switch from the GStreamer instructions, suggested by Matthew Burgess.
- May 5th, 2005 [manuel]: Shortened the Tidy documentation generation commands.
- May 5th, 2005 [dj]: Removed bad MANPATH variable from JDK instructions and fixed CLASSPATH for spaces in filenames.
- May 4th, 2005 [igor]: Updated to Fcron-2.9.6.
- May 4th, 2005 [randy]: Updated to GStreamer-0.8.10.
- May 3rd, 2005 [randy]: Updated to CVS-1.11.20 and HTML Tidy-050502; added MPlayer to the list of FFmpeg's dependencies as it can utilize the shared post-processing library.
- May 2nd, 2005 [randy]: Updated to xine Libraries-1.0.1.
- May 1st, 2005 [randy]: Updated to MPlayer-1.0pre7; added a sed command to the FFmpeg instructions to fix an issue on MMX capable machines.
- April 29th, 2005 [bdubbs]: Update to aRts 1.4, kde 3.4, and kdevelop 3.2.
- April 28th, 2005 [dj]: Added doublefree patch to OOo instructions, corrected gcc patch and libmawt symlink. Added a description for javaws to JDK instructions.
- April 28th, 2005 [randy]: Added documentation installation to the id3lib instructions.
- April 27th, 2005 [randy]: Updated to FLAC-1.1.2, libdv-0.104 and XviD-1.0.3; added Doxygen dependency and documentation installation to the libdvdcss instructions; added documentation installation to the liba52 instructions.

- April 26th, 2005 [randy]: Updated to GStreamer-0.8.9 and libao-0.8.6; added a download URL to the PassiveTeX dependency in the libvorbis instructions; added installation of HTML documentation to the SDL and libmikmod instructions.
- April 24th, 2005 [dj]: Updated to JDK-1.5.0, added gcc-3.4.2+ and jdk-1.5.0 patches to OpenOffice, and added jdk-1.5.0 patch for fop.
- April 24th, 2005 [randy]: Fixed incorrect path pointing to the documentation in the Cyrus-SASL configuration section and incorrect library versions in the chmod commands in the OpenLDAP instructions, both pointed out by syaodzir; added documentation installation to the startup-notification instructions.
- April 23rd, 2005 [bdubbs]: Updated to nfs-utils-1.0.7. Added comments about user nobody and pointed to section on netfs.
- April 23rd, 2005 [randy]: Updated to libsvg-2.9.5.
- April 22nd, 2005 [randy]: Updated to Firefox-1.0.3, libgsf-1.11.1, libglade-2.5.1 and Mozilla-1.7.7; added instructions to Firefox and Mozilla to utilize the JDK Java plugin.
- April 21st, 2005 [bdubbs]: Upgraded to xscreensaver-4.21.
- April 21st, 2005 [bdubbs]: Added patch to libmilmod.
- April 20th, 2005 [bdubbs]: Updated qt instructions to eliminate an unnecessary copy procedure and fixed qmqke.conf adjustment.
- April 20th, 2005 [randy]: Updated to Doxygen-1.4.2.
- April 19th, 2005 [randy]: Updated to NAS-1.7.
- April 19th, 2005 [bdubbs]: Updated to qt-3.3.4; fixed some configuration problems with build method 1.
- April 18th, 2005 [randy]: Updated to shared-mime-info-0.16, hicolor-icon-theme-0.8 and GnuPG-1.4.1.
- April 17th, 2005 [randy]: Updated to LessTif-0.94.4, intltool-0.33 and Module-Info-0.27 (Perl module); added an "Other Window Managers" section to Chapter 27.
- April 17th, 2005 [manuel]: Updated the stylesheets to use DocBook-XSL 1.68.1.
- April 15th, 2005 [randy]: Updated to libsoup-2.2.3, Samba-3.0.14a and libmng-1.0.9; added documentation installation commands to the LZO instructions; added a patch to fix a build issue and documentation installation commands to the lcms instructions.
- April 14th, 2005 [randy]: Updated to libxklavier-2.0 and pkgconfig-0.17.2.
- April 13th, 2005 [randy]: Updated to Glib-2.6.4, GTK+-2.6.7, Whois-4.7.2, Imlib2-1.2.0 and libart_lgpl-2.3.17; added documentation installation commands to the giflib and libungif instructions.
- April 12th, 2005 [randy]: Updated to Samba-3.0.13 and pkgconfig-0.17.1.
- April 12th, 2005 [bdubbs]: Finish server reorganization. Moved php to Programming and NFS to Major Servers.
- April 12th, 2005 [bdubbs]: Major reorganization of server sections. Consolidated 'Server Networking' and 'Content Serving'.
- April 11th, 2005 [dj]: Added 'Additional X Windows Configuration' page.

- April 11th, 2005 [randy]: Updated to Nail-11.22, Guile-1.6.7 and Subversion-1.1.4; moved Guile instructions from 'Chapter 8 - General Libraries' to 'Chapter 12 - Programming'.
- April 10th, 2005 [randy]: Updated to NASM-0.98.39 and Sendmail-8.13.4.
- April 10th, 2005 [igor]: Updated to libIDL-0.8.5 and Firefox-1.0.2.
- April 9th, 2005 [randy]: Updated to PHP-5.0.4.
- April 8th, 2005 [randy]: Updated to PostgreSQL-8.0.1 and Aspell-0.60.2.
- April 7th, 2005 [randy]: Updated the JadeTex instructions to work with Tex-3.0, contributed by Steffen Knollmann.
- April 6th, 2005 [igor]: Updated to ATK-1.9.1.
- April 6th, 2005 [randy]: Updated to MySQL-4.1.10a and TeX-3.0.
- April 5th, 2005 [randy]: Added a note to the GCC-3.4.3 instructions to install a missing interface header file.
- April 4th, 2005 [randy]: Updated to OpenLDAP-2.2.24, Stunnel-4.09, GTK-Doc-1.3 and OpenSSH-4.0p1; added a command to the cURL instructions to fix a broken test script.
- April 4th, 2005 [igor]: Updated to OpenSSL-0.9.7f contributed by Anderson Lizardo.
- April 3rd, 2005 [manuel]: Updated the XML sources to use DocBook XML DTD-4.4.
- April 3rd, 2005 [randy]: Updated to libxslt-1.1.14.
- April 2nd, 2005 [randy]: Added which as a required dependency of DocBook-utils, reported by Andrew Benton; updated to libxml2-2.6.19.
- April 1st, 2005 [randy]: Updated to DocBook XML DTD-4.4 and DocBook XSL Stylesheets-1.68.1.
- March 31st, 2005 [bdubbs]: Updated the install instructions for xinetd to use /etc/xinetd.d/ directory structure. Patch by John Gnew.
- March 31st, 2005 [randy]: Updated to libxml2-2.6.18 and libxslt-1.1.13.
- March 30th, 2005 [randy]: Updated to libusb-0.1.10a and Python-2.4.1.
- March 29th, 2005 [randy]: Updated to DocBook DSSSL Stylesheets-1.79 (with rewrite of instructions); fixed deprecated tar option in Vim instructions; added a note to the Fontconfig instructions to have the SGMLSpm Perl module installed if DocBook-utils is installed.
- March 28th, 2005 [randy]: Updated to DocBook-SGML-DTD-4.4; added manpage installation to OpenJade instructions, suggested by Andrew Benton.
- March 27th, 2005 [randy]: Updated to libtiff-3.7.2, pkgconfig-0.16.0 and ALSA-1.0.8.
- March 26th, 2005 [randy]: Updated to HTML Tidy-050324 and UnZip-5.52.
- March 25th, 2005 [randy]: Updated to GCC-3.4.3.
- March 24th, 2005 [randy]: Updated to Sysstat-5.1.5, Fontconfig-2.3.1 and Expect-5.43.0; added a note the the Tk instructions about running the test suite.
- March 23rd, 2005 [randy]: Updated to Shadow-4.0.7; added security patch to Vim instructions; added daemon fixes patch to Inetutils instructions.

- March 22nd, 2005 [randy]: Added the installation of documentation to the Linux-PAM instructions.
- March 21st, 2005 [larry]: Updated to emacs-21.4a.
- March 18th, 2005 [randy]: Added a sed command to the Zip instructions to fix an installation problem, suggested by Matthew Burgess.
- March 17th, 2005 [bdubbs]: Released Version 6.0-pre1.

Mailing Lists

The linuxfromscratch.org server is hosting a number of mailing lists that are used for the development of the BLFS book. 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. Note, however, that as this is written, it is not possible to write to the mailing lists via the NNTP service.

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](#). 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 the `root` user to see if it's loaded. Check the `syslog.log` or run **modprobe [driver]** to review any error message. If it loads properly, you may need to add the **modprobe** command 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 ...” requires a thorough review of permissions 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 most cases, the package instructions will walk you through the changes, but some will not. The section called “Going Beyond BLFS” 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 6.1),
- 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 for more information on the available mailing lists.

The current BLFS maintainer is Bruce Dubbs. If you need to reach Bruce, send an email to bdubbs@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 when they are released. Generally the instructions in the LFS and BLFS Book can be used to upgrade to the newer versions. Here are some points that you should be aware of when upgrading packages, especially on a running system.

- If one of the toolchain packages (Glibc, GCC or 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 it. 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-2.3.4 to glibc-2.3.5 will not usually cause any problems.
- If a package containing a shared library is updated, and if the name 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 name of the library.) For example, consider a package foo-1.2.3 that installs a shared library with name `libfoo.so.1`. Say you upgrade the package to a newer version foo-1.2.4 that installs a shared library with name `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 until 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 some 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 system 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” 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 the `/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 using this approach. A 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 the `/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. Therefore, 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`, and Gentoo's Portage system.

User Based Management

This scheme, 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 Building Software

Those people who have built an 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 files 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.

Building Software as an Unprivileged (non-root) User

The golden rule of Unix System Administration is to use your superpowers only when necessary. Hence, BLFS recommends that you build software as an unprivileged user and only become the `root` user when installing the software. This philosophy is followed in all the packages in this book. Unless otherwise specified, all instructions should be executed as an unprivileged user. The book will advise you on instructions that need `root` privileges.

Unpacking the Software

If a file is in `.tar` format and compressed, it is unpacked by running one of the following commands:

```
tar -xvf filename.tar.gz
tar -xvf filename.tgz
tar -xvf filename.tar.Z
tar -xvf filename.tar.bz2
```



Note

You may omit using the `v` parameter in the commands shown above and below if you wish to suppress the verbose listing of all the files in the archive as they are extracted. This can help speed up the extraction as well as make any errors produced during the extraction more obvious to you.

You can also use a slightly different method:

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

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

```
gunzip -v patchname.gz
bunzip2 -v patchname.bz2
```

Verifying File Integrity Using 'md5sum'

Generally, to verify that the downloaded file is genuine and complete, many 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. Note that the BLFS book includes md5sums for all the source files also. To use the BLFS supplied md5sums, you can create a `file.md5sum` (place the md5sum data and the exact name of the downloaded file on the same line of a file, separated by white space) and run the command shown above. Alternately, simply run the command shown below and compare the output to the md5sum data shown in the BLFS book.

```
md5sum [name_of_downloaded_file]
```

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 an 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 standard 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` command 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 manage. The only really hard and fast rule is that Unix distributions should not touch /usr/local, except perhaps to create 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 occasionally includes 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 referenced 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 [../../../lfs/view/stable/chapter07/bootscripts.html](http://lfs/view/stable/chapter07/bootscripts.html) for more information on the LFS-Bootscripts package.

Package Information

- Download: <http://www.linuxfromscratch.org/blfs/downloads/6.1/blfs-bootscripts-6.1.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 as the `root` user, 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 `$PREFIX/lib` to `/etc/ld.so.conf` or expand `LD_LIBRARY_PATH` to include it. Before using the latter option, check out <http://www.visi.com/~barr/ldpath.html>. If you modify `/etc/ld.so.conf`, remember to update `/etc/ld.so.cache` by executing **ldconfig** as the `root` user.
- Add `$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 it 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 a link to 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`** process. 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-group.

**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 non-Unix like backgrounds to Linux find the concept of text-only configuration files slightly strange. In Linux, just about all configuration is done via the manipulation of 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 a text file. The advantage of text-only configuration is that you can edit parameters using your favorite text editor, whether that be **vim**, **emacs**, or any other editor.

The first task is making a recovery boot device in [Creating a Custom Boot Device](#) because it's the most critical need. Then the system is configured to ease addition of new users, because this can affect the choices you make in the two subsequent topics—[The Bash Shell Startup Files](#) and [The vimrc Files](#).

The remaining topics, [Customizing your Logon with /etc/issue](#), [The /etc/shells File](#), [Random number generation](#), [Compressing man and info pages](#), [autofs-4.1.4](#), and [Configuring for Network Filesystems](#) are then addressed, in that order. They don't have much interaction with the other topics in this chapter.

Creating a Custom Boot Device

Decent Rescue Boot Device Needs

This section is really about creating a *rescue* device. As the name *rescue* implies, the host system has a problem, often lost partition information or corrupted file systems, that prevent 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.

In a modern system, there are many devices that can be used as a rescue device: floppy, cdrom, usb drive, or even a network card. Which one you use depends on your hardware and your BIOS. In the past, we usually thought of rescue device as a floppy disk. Today, many systems do not even have a floppy drive.

Building a complete rescue device is a challenging task. In many ways, it is equivalent to building an entire LFS system. In addition, it would be a repetition of information already available. For these reasons, the procedures for a rescue device image are not presented here.

Creating a Rescue Floppy

The software of today's systems has grown large. Linux 2.6 no longer supports booting directly from a floppy. In spite of this, there are solutions available using older versions of Linux. One of the best is Tom's Root/Boot Disk available at <http://www.toms.net/rb/>. This will provide a minimal Linux system on a single floppy disk and provides the ability to customize the contents of your disk if necessary.

Creating a Bootable CD-ROM

There are several sources that can be used for a rescue CD-ROM. Just about any commercial distribution's installation CD-ROMs or DVDs will work. These include RedHat, Mandrake, and SuSE. One very popular option is Knoppix.

In addition, the LFS Community has developed its own Boot CD-ROM available at <ftp://anduin.linuxfromscratch.org/isos/>. A copy of this CD-ROM is available with the printed version of the Linux From Scratch book. If you download the ISO image, use **cdrecord** to copy the image to a CD-ROM.

In the future, the build instructions for this CD-ROM will be presented, but they are not available at the time of this writing.

Creating a Bootable USB Drive

A USB Pen drive, sometimes called a Thumb drive, is recognized by Linux as a SCSI device. Using one of these devices as a rescue device has the advantage that it is usually large enough to hold more than a minimal boot image. You can save critical data to the drive as well as use it to diagnose and recover a damaged system. Booting such a drive requires BIOS support, but building the system consists of formatting the drive, adding GRUB as well as the Linux kernel and supporting files.

Configuring for Adding Users

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

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 this 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 as the `root` user 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 the following command as the `root` user:

```
/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 two sections, The Bash Shell Startup Files and The `vimrc` Files. 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 instead just sends 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 (perform as the `root` user):

```
useradd -m [newuser]
```

About System Users and Groups

Throughout BLFS, many packages install programs that run as daemons or in some way should have a user or group name assigned. Generally these names are used to map a user ID (uid) or group ID (gid) for system use. Generally the specific uid or gid numbers used by these applications are not significant. The exception of course, is that `root` has a uid and gid of 0 (zero) that is indeed special. The uid values are stored in `/etc/passwd` and the gid values are found in `/etc/group`.

Customarily, Unix systems classify users and groups into two categories: system users and regular users. The system users and groups are given low numbers and regular users and groups have numeric values greater than all the system values. The cutoff for these numbers is found in two parameters in the `/etc/login.defs` configuration file. The default `UID_MIN` value is 1000 and the default `GID_MIN` value is 100. If a specific uid or gid value is not specified when creating a user with `useradd` or a group with `groupadd` the values assigned will always be above these cutoff values.

Additionally, the Linux Standards Base recommends that system uid and gid values should be below 100.

Below is a table of suggested uid/gid values used in BLFS. These can be changed as desired, but provide a suggested set of consistent values.

Table 3.1. UID/GID Suggested Values

Name	uid	gid
bin	1	1
lp	9	
usb		14
named	20	20
gdm	21	21
fcron	22	22
apache	25	25
smmsp	26	26
exim	31	31
postfix	32	32
postdrop		33
sendmail	34	
mail		34
vmailman	35	35
news	36	36
mysql	40	40
postgres	41	
ftp	45	45
proftpd	46	46
vsftpd	47	47

Name	uid	gid
rsyncd	48	48
sshd	50	50
stunnel	51	51
svn	56	56
svntest		57
games	60	60
anonymous	98	
nobody	99	
nogroup		99

One value that is missing is 65534. This value is customarily assigned to the user `nobody` and group `nogroup` and is unnecessary. The issue is explained in more detail in the first note in the NFS Utilities Installation section.

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 using a shell program (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.

Many distributions use `/etc/bashrc` for system wide initialization of non-login shells. This file is usually called from the user's `~/.bashrc` file and is not built directly into **bash** itself. This convention is followed in this section.

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



Note

Most of the instructions below are used to create files located in the `/etc` directory structure which requires you to execute the commands as the `root` user. If you elect to create the files in user's home directories instead, you should run the commands as an unprivileged user.

`/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 of the initialization.

For more information on the escape sequences you can use for your prompt (i.e., 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.org>
```

```

# 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"
}

# Set the initial path
export PATH=/bin:/usr/bin

if [ $EUID -eq 0 ] ; then
    pathappend /sbin:/usr/sbin
    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 [ -r $script ] ; then
        . $script
    fi
done

```

```

        fi
done

# Now to clean up
unset pathremove pathprepend pathappend

# End /etc/profile
EOF

```

The /etc/profile.d Directory

Now create the `/etc/profile.d` directory, where the individual initialization scripts are placed:

```
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 2>/dev/null); do
    pathappend $directory PKG_CONFIG_PATH

```

```
done
for directory in $(find /opt/*/bin -type d 2>/dev/null); 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 the default group write permissions are turned off 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
```

```
fi
EOF
```

/etc/profile.d/X.sh

If X is installed, the `PATH` and `PKG_CONFIG_PATH` variables are also updated.

```
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/extra-prompt.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. The sequence `\e` is an ESC character. `\a` is a BEL character. For a reference on **xterm** escape sequences, see <http://rtfm.etla.org/xterm/ctlseq.html>.

```
cat > /etc/profile.d/extra-prompt.sh << "EOF"
PROMPT_COMMAND="echo -ne '\e[1m${USER}@${HOSTNAME} : ${PWD}\e[0m\a' "
export PROMPT_COMMAND
EOF
```

The escape sequences above are BOLD, NORMAL, and BEL.

'/etc/profile.d/i18n.sh'

This script shows how to set some environment variables necessary for native language support. Setting these variables properly gives you:

- the output of programs translated into your native language
- correct classification of characters into letters, digits and other classes – this is necessary for Bash to accept keystrokes properly in non-English locales
- the alphabetical sorting order correct for your country
- proper default paper size
- correct formatting of monetary, time and date values

Replace `[LL]` with the two-letter code for your language (e.g., “en”) and `[CC]` with the two-letter code for your country (e.g., “GB”). Also you may need to specify (and this is actually the preferred form) your character encoding (e.g., “iso8859-1”) after a dot (so that the result is “en_GB.iso8859-1”). Issue the following command for more information:

```
man 3 setlocale
```

The list of all locales supported by Glibc can be obtained by running the following command:

```
locale -a
```

After you are sure about your locale settings, create the `/etc/profile.d/i18n.sh` file:

```
cat > /etc/profile.d/i18n.sh << "EOF"
# Set up i18n variables
export LC_ALL=[ll]_[CC]
export LANG=[ll]_[CC]
export G_FILENAME_ENCODING=@locale
EOF
```

The `LC_ALL` variable sets the same value for all locale categories. For better control, you may prefer to set values individually for all categories listed in the output of the `locale` command.

The `G_FILENAME_ENCODING` variable tells applications such as Glib and GTK+ that filenames are in the default locale encoding and not in UTF-8 as assumed by default.

Other Initialization Values

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>
# updated by Bruce Dubbs <bdubbs@linuxfromscratch.org>

# Make sure that the terminal is set up properly for each shell

if [ -f /etc/profile.d/tinker-term.sh ]; then
    source /etc/profile.d/tinker-term.sh
fi

# 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] \\\$ "
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 shown 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>.

The `/etc/vimrc` and `~/.vimrc` Files

The LFS book installs Vim as its text editor. At this point it should be noted that there are a *lot* of different editing applications 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 creates a basic `vimrc` file. In this section you'll find an 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 `~/.vimrc` to provide user specific effects. 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 the home directory of users already on the system, such as `root`. Be sure to set permissions, owner, and group if you do copy anything directly from `/etc/skel`.

```
" Begin .vimrc

set columns=80
set wrapmargin=8
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.

Below you'll find a quick explanation of what each of the options in this example file means here:

- `set columns=80`: This simply sets the number of columns used on the screen.
- `set wrapmargin=8`: This is the number of characters from the right window border where wrapping starts.
- `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.

Customizing your Logon with `/etc/issue`

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 *not* interpret the escape sequences shown below.

One of the most common things which people want to do is 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 issue the command `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 characters (normally `^[[H^[[2J`) on the first line alone.



Note

Terminal escape sequences are special codes recognized by the terminal. The `^[` represents an ASCII ESC character. The sequence `ESC [H` puts the cursor in the upper left hand corner of the screen and `ESC 2 J` erases the screen. For more information on terminal escape sequences see <http://rtfm.etla.org/xterm/ctlseq.html>

The following sequences 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 character sequences to display various information. All `issue` sequences 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., i686.
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., 2.6.11.12.
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.
```

The `/etc/shells` File

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 the root of the directory structure (`/`).

For example, this file is consulted by **chsh** to determine whether an unprivileged 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-6.1` package.

```
make install-random
```

Compressing Man and Info Pages

Man and info reader programs can transparently process files compressed with **gzip** or **bzip2**, 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: 20050112.0027
#
# 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)
#
# Modified 20050112 by Randy McMurphy to shorten line lengths and
# correct grammar errors.
#
# TODO:
# - choose a default compress method to be based on the available
#   tool : gzip or bzip2;
# - offer an option to automagically choose the best compression
#   method on a per page basis (eg. check which of
#   gzip/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 all directories.
                     In case a backup already exists, it is saved as .tar.old
                     prior to making the new backup. If a .tar.old backup
                     exists, 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 pathnames 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 more 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", 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 35564KB before compression. gzip -9 compressed them down to 20372KB (57.28%), bzip2 -9 got down to 19812KB (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 '/', once without.
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}" || exit 1
      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
    fi
  done
done

```

```

# 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 "$FILE" ]; then
  # Take care of hard-links: build the list of files hard-linked
  # to the one we are {de,}compressing.
  # NB. This is not optimum has the file will eventually be
  # compressed as many times it has hard-links. But for now,
  # that's the safe way.
  inode=`ls -li "$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}${COMP_SUF}"
    fi
    # Really work only for hard-links. Harmless for soft-links
    chmod 644 "${NEWFILE}${COMP_SUF}"
  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 -n "Whaooo... \"${DIR}/${FILE}\" is neither a symlink "
  echo "nor a plain file. Please check:"
  ls -l "${DIR}/${FILE}"
  exit 1
fi
done # for FILE
done # for DIR

EOF
chmod 755 /usr/sbin/compressdoc

```

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

Don't forget that a few programs, like the X Window System and XEmacs also install their documentation in non-standard places (such as `/usr/X11R6/man`, etc.). Be sure to add these locations to the file `/etc/man.conf`, as `MANPATH [/path]` lines.

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 are deleted.

Automate Mounting of File Systems

Introduction to Autofs

The autofs package contains userspace tools that work with the kernel to mount and un-mount removable file systems. This is useful for allowing users to mount floppies, cdroms and other removable storage devices without requiring the system administrator to mount the devices. This may not be ideal for all installations, so be aware of the risks before implementing this feature.

Package Information

- Download (HTTP): <http://ftp.kernel.org/pub/linux/daemons/autofs/v4/autofs-4.1.4.tar.bz2>
- Download (FTP): <ftp://ftp.kernel.org/pub/linux/daemons/autofs/v4/autofs-4.1.4.tar.bz2>
- Download MD5 sum: 7e3949114c00665b4636f0c318179657
- Download size: 168 KB
- Estimated disk space required: 2.3 MB
- Estimated build time: less than 0.1 SBU

Additional Downloads

- Recommended Patch: <http://ftp.kernel.org/pub/linux/daemons/autofs/v4/autofs-4.1.4-misc-fixes.patch>
- Recommended Patch: <http://ftp.kernel.org/pub/linux/daemons/autofs/v4/autofs-4.1.4-multi-parse-fix.patch>
- Recommended Patch:
<http://ftp.kernel.org/pub/linux/daemons/autofs/v4/autofs-4.1.4-non-replicated-ping.patch>

Kernel Configuration

Verify that kernel support has been compiled in or built as modules in the following areas:

```
File systems
  Kernel automounter version 4 support Y or M
Network File Systems
  NFS file system support           Y or M
  SMB file system support           Y or M
```

Recompile and install the new kernel, if necessary.

Installation of Autofs

Install autofs by running the following commands:

```
patch -Np1 -i ../autofs-4.1.4-misc-fixes.patch &&
patch -Np1 -i ../autofs-4.1.4-multi-parse-fix.patch &&
patch -Np1 -i ../autofs-4.1.4-non-replicated-ping.patch &&
./configure --prefix=/ --mandir=/usr/share/man &&
make
```

Now, as the root user:

```
make install &&
```

```
rm /etc/rc.d/init.d/autofs
```

Command Explanations

rm /etc/rc.d/init.d/autofs: This command removes the installed script which only works on specific distributions.

Configuring Autofs

Config Files

/etc/sysconfig/autofs.conf, /etc/auto.master, /etc/auto.misc, and /etc/auto.net

Configuration Information

The installation process creates `auto.master`, `auto.misc` and `auto.net`. You will replace the `auto.master` with the following commands:

```
mv /etc/auto.master /etc/auto.master.bak &&
cat > /etc/auto.master << "EOF"
# Begin /etc/auto.master

/media /etc/auto.misc

# End /etc/auto.master
EOF
```



Note

This file mounts a new media directory over the one created by LFS and will therefore hide any mounts made by the `fstab` file into that directory.

While this package could be used to mount NFS shares and SMB shares, that feature is not configured in these instructions. NFS shares are covered on the next page.

The `auto.misc` must be configured to your working hardware. The loaded configuration file should load your `cdrom` if `/dev/cdrom` is active or it can be edited to match your device setup and examples for floppies are available in the file and easily activated. Documentation for this file is available using the **man 5 autofs** command.

Boot Script

Install the `/etc/rc.d/init.d/autofs` mount script and `/etc/sysconfig/autofs.conf` support file included with the `blfs-bootscripts-6.1` package.

```
make install-autofs
```

The time-out variable is set in `/etc/sysconfig/autofs.conf`. The installed file sets a default of 60 seconds of inactivity before unmounting the device. A much shorter time may be necessary to protect buffer writing to a floppy if users tend to remove the media prior to the timeout setting.

Contents

Installed Program:	automount
Installed Libraries:	autofs modules
Installed Directories:	/lib/autofs and /var/run/autofs

Short Descriptions

automount is the daemon that performs the mounting when a request is made for the device.

Configuring for Network Filesystems

While LFS is capable of mounting network file systems such as NFS, these are not mounted by the `mountfs` init script. Network file systems must be mounted after the networking is activated and unmounted before the network goes down. The `netfs` bootscrip was written to handle both boot-time mounting of network filesystems, if the entry in `/etc/fstab` contains the `_netdev` option, and unmounting of all network filesystems before the network is brought down.

As the `root` user, install the `/etc/rc.d/init.d/netfs` bootscrip included with the `blfs-bootscrips-6.1` 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. For applications that don't offer the best security, you can use the Stunnel package to wrap an application daemon inside an SSL tunnel.

Prevention of breaches, like a trojan, are assisted by applications like GnuPG, specifically the ability to confirm signed packages, which recognizes modifications 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.

OpenSSL-0.9.7g

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, email applications and web browsers (for accessing HTTPS sites).

Package Information

- Download (HTTP): <http://www.openssl.org/source/openssl-0.9.7g.tar.gz>
- Download (FTP): <ftp://ftp.openssl.org/source/openssl-0.9.7g.tar.gz>
- Download MD5 sum: 991615f73338a571b6a1be7d74906934
- Download size: 3.0 MB
- Estimated disk space required: 35 MB
- Estimated build time: 0.9 SBU

Additional Downloads

- Required patch: http://www.linuxfromscratch.org/blfs/downloads/6.1/openssl-0.9.7g-fix_manpages-1.patch

OpenSSL Dependencies

Optional

bc-1.06 (recommended if you run the test suite during the build)

Installation of OpenSSL

Install OpenSSL by running the following commands:

```
patch -Np1 -i ../openssl-0.9.7g-fix_manpages-1.patch &&
./config --openssldir=/etc/ssl --prefix=/usr shared &&
make MANDIR=/usr/share/man
```

To test the results, issue: **make test**.

Now, as the root user:

```
make MANDIR=/usr/share/man install &&
cp -v -r certs /etc/ssl
```

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.

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 `/etc/ssl/man`.

cp -v -r certs /etc/ssl: The certificates must be copied manually since the install script skips this step.

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

Installed Programs: `c_rehash`, `openssl`, and `openssl_fips_fingerprint`
Installed Libraries: `libcrypto.[so,a]` and `libssl.[so,a]`
Installed Directories: `/etc/ssl` and `/usr/include/ssl`

Short Descriptions

c_rehash is a Perl script that scans all files in a directory and adds symbolic links to their hash values.

openssl 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.[so,a]` 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.[so,a]` 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**.

CrackLib-2.8.3

Introduction to CrackLib

The CrackLib package contains a library used to enforce strong passwords by comparing user selected passwords to words in chosen word lists.

Package Information

- Download (HTTP): <http://prdownloads.sourceforge.net/cracklib/cracklib-2.8.3.tar.gz>
- Download (FTP):
- Download MD5 sum: 13f82f75b892cbd0ba7cb9069e307006
- Download size: 480 KB
- Estimated disk space required: 27.6 MB
- Estimated build time: 0.1 SBU

Additional Downloads

- Recommended word list for English-speaking countries (size: 4.4 MB; md5sum: d18e670e5df560a8745e1b4dede8f84f): <http://prdownloads.sourceforge.net/cracklib/cracklib-words.gz>
- Required patch to create a library used with the Heimdal Kerberos 5 package:
<http://www.linuxfromscratch.org/blfs/downloads/6.1/cracklib-2.8.3-heimdal-1.patch>

There are additional word lists available for download, e.g., from <http://www.cotse.com/tools/wordlists.htm>. CrackLib can utilize as many, or as few word lists you choose to install.



Important

Users tend to base their passwords on regular words of the spoken language, and crackers know that. CrackLib is intended to filter out such bad passwords at the source using a dictionary created from word lists. To accomplish this, the word list(s) for use with CrackLib must be an exhaustive list of words and word-based keystroke combinations likely to be chosen by users of the system as (guessable) passwords.

The default word list recommended above for downloading mostly satisfies this role in English-speaking countries. In other situations, it may be necessary to download (or even create) additional word lists.

Note that word lists suitable for spell-checking are not usable as CrackLib word lists in countries with non-Latin based alphabets, because of “word-based keystroke combinations” that make bad passwords.

Installation of CrackLib

If desired, apply the Heimdal patch (note that with this patch the original library is not affected; this patch only creates an additional library used by the Heimdal password-checking routines):

```
patch -Np1 -i ../cracklib-2.8.3-heimdal-1.patch
```

Install CrackLib by running the following commands:

```
./configure --prefix=/usr --datadir=/lib &&
make
```

Now, as the root user:

```
make install &&
mv -v /usr/lib/libcrack.so.2* /lib &&
ln -v -sf ../../lib/libcrack.so.2.8.0 /usr/lib/libcrack.so
```

The following commands can be used to install the recommended word list. Other word lists (text based, one word per line) can also be used by simply installing them into `/usr/share/dict`.

```
install -v -m644 -D ../cracklib-words.gz \
    /usr/share/dict/cracklib-words.gz &&
gunzip -v /usr/share/dict/cracklib-words.gz &&
ln -v -s cracklib-words /usr/share/dict/words &&
echo $(hostname) >>/usr/share/dict/cracklib-extra-words &&
create-cracklib-dict /usr/share/dict/cracklib-words \
    /usr/share/dict/cracklib-extra-words
```

If desired, check the proper operation of the library as an unprivileged user using the tests included with the package:

```
make test
```

Command Explanations

`--datadir=/lib`: This parameter forces the installation of the CrackLib dictionary to the `/lib` hierarchy.

`mv -v /usr/lib/libcrack.so.2* /lib` and `ln -v -sf ../../lib/libcrack.so.2.8.0 ...`: These two commands move the `libcrack.so.2.8.0` library and associated symlink from `/usr/lib` to `/lib`, then recreates the `/usr/lib/libcrack.so` symlink pointing to the relocated file.

`install -v -m644 -D ...`: This command creates the `/usr/share/dict` directory (if it doesn't already exist) and installs the compressed word list there.

`ln -v -s cracklib-words /usr/share/dict/words`: The word list is linked to `/usr/share/dict/words` as historically, `words` is the primary word list in the `/usr/share/dict` directory. Omit this command if you already have a `/usr/share/dict/words` file installed on your system.

`echo $(hostname) >>...`: The value of `hostname` is echoed to a file called `cracklib-extra-words`. This extra file is intended to be a site specific list which includes easy to guess passwords such as company or department names, user's names, product names, computer names, domain names, etc.

`create-cracklib-dict ...`: This command creates the CrackLib dictionary from the word lists. Modify the command to add any additional word lists you have installed.

Contents

Installed Programs: cracklib-check, cracklib-format, cracklib-packer, cracklib-unpacker and

`create-cracklib-dict`

Installed Libraries: `libcrack.[so,a]` and optionally, `libcrack_heimdal.[so,a]`

Installed Directories: `/lib/cracklib` and `/usr/share/dict`

Short Descriptions

`create-cracklib-dict` is used to create the CrackLib dictionary from the given word list(s).

`libcrack.[so,a]` provides a fast dictionary lookup method for strong password enforcement.

Linux-PAM-0.80

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-0.80.tar.bz2>
- Download (FTP): <ftp://ftp.kernel.org/pub/linux/libs/pam/pre/library/Linux-PAM-0.80.tar.bz2>
- Download MD5 sum: `ccff87fe639efdfc22b1ba4a0f08ec57`
- Download size: 376 KB
- Estimated disk space required: 8.6 MB
- Estimated build time: 0.2 SBU

Additional Downloads

Documentation

- Optional documentation:
<http://www.kernel.org/pub/linux/libs/pam/pre/library/Linux-PAM-0.80-docs.tar.bz2>

Linux-PAM Dependencies

Recommended

CrackLib-2.8.3

Optional

sgmltools-lite and Berkeley DB-4.3.28 (for pam_userdb module)

Installation of Linux-PAM

Install Linux-PAM by running the following commands:

```
sed -i 's|DICTIONARIES="|&/lib /lib/cracklib |' \
    configure &&
./configure --enable-static-libpam --with-mailspool=/var/mail \
    --enable-read-both-confs --sysconfdir=/etc \
    --mandir=/usr/share/man &&
make
```

If you downloaded the documentation and wish to install it, unpack the tarball into the doc directory:

```
tar -jxf ../Linux-PAM-0.80-docs.tar.bz2 -C doc
```

Now, as the root user:

```
make install &&
```

```
mv -v /lib/libpam.a /lib/libpam_misc.a /lib/libpamc.a /usr/lib &&
rm -v /lib/libpam{,c,_misc}.so &&
ln -v -sf ../../lib/libpam.so.0.80 /usr/lib/libpam.so &&
ln -v -sf ../../lib/libpam_misc.so.0.80 /usr/lib/libpam_misc.so &&
ln -v -sf ../../lib/libpamc.so.0.80 /usr/lib/libpamc.so
```

Install the documentation using the following commands:

```
install -v -d -m755 /usr/share/doc/Linux-PAM-0.80 &&
for DOCTYPE in html ps specs txts
do
    cp -v -R doc/$DOCTYPE /usr/share/doc/Linux-PAM-0.80
done
```

Command Explanations

sed -i 's|DICT_DIR_CANDIDATES=|&/lib /lib/cracklib |' configure: This command changes where **configure** looks to find the CrackLib dictionary.

--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 -v /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 guidelines.

rm -v /lib/libpam{,c,_misc}.so; ln -v -sf ... /usr/lib/...: These commands move the `.so` symlinks from `/lib` to `/usr/lib`.

Configuring Linux-PAM

Config Files

`/etc/security/*` and `/etc/pam.d/*` or `/etc/pam.conf`

Configuration Information

Configuration information is placed in `/etc/pam.d/` or `/etc/pam.conf` depending on user preference. 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.



Note

You should now reinstall the Shadow-4.0.9 package.

Contents

Installed Programs: unix_chkpwd and pam_tally
Installed Libraries: libpam.[so,a], libpamc.[so,a], and libpam_misc.[so,a]
Installed Directories: /etc/pam.d, /etc/security, /lib/security, and /usr/include/security

Short Descriptions

unix_chkpwd checks user passwords that are stored in read protected databases.
pam_tally is used to view or manipulate the faillog file.
libpam.[so,a] provides the interfaces between applications and the PAM modules.

Shadow-4.0.9

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.

Package Information

- Download (HTTP):
- Download (FTP): <ftp://ftp.pld.org.pl/software/shadow/old/shadow-4.0.9.tar.bz2>
- Download MD5 sum: 66e3a3a60ea6b021a7babff311b07607
- Download size: 1.1 MB
- Estimated disk space required: 13 MB
- Estimated build time: 0.3 SBU

Additional Downloads

- Patch to fix several invalid warning messages when used with Linux_PAM:
http://www.linuxfromscratch.org/blfs/downloads/6.1/shadow-4.0.9-Linux_PAM_fixes-1.patch

Shadow Dependencies

Required

Linux-PAM-0.80

Installation of Shadow

Reinstall Shadow by running the following commands:

```
patch -Np1 -i ../shadow-4.0.9-Linux_PAM_fixes-1.patch &&
./configure --libdir=/lib --enable-shared \
    --with-libpam --without-libcrack &&
sed -i 's/groups$(EXEEXT) //' src/Makefile &&
sed -i '/groups/d' man/Makefile &&
make
```

Now, as the root user:

```
make install &&
mv -v /usr/bin/passwd /bin &&
mv -v /lib/libshadow.*a /usr/lib &&
rm -v /lib/libshadow.so &&
ln -v -sf ../../lib/libshadow.so.0 /usr/lib/libshadow.so
```

Command Explanations

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

already contains `libcrack`.

`sed -i ...`: These commands are used to suppress the installation of the `groups` program as the version from the `Coreutils` package installed during LFS is preferred.

Configuring Linux-PAM to Work with Shadow

Config Files

`/etc/pam.d/*` or alternatively `/etc/pam.conf`, `/etc/login.defs` and `/etc/security/*`

Configuration Information

Configuring `/etc/login.defs`

The `login` program currently performs many functions which Linux-PAM modules should now handle. The following `sed` command will comment out the appropriate lines in `/etc/login.defs`, and stop `login` from performing these functions (a backup file named `/etc/login.defs.orig` is also created to preserve the original file's contents):

```
install -v -m644 /etc/login.defs /etc/login.defs.orig &&
for FUNCTION in 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 \
                ULIMIT ENV_TZ ENV_HZ ENV_SUPATH \
                ENV_PATH QMAIL_DIR MAIL_DIR MAIL_FILE \
                CHFN_AUTH FAILLOG_ENAB QUOTAS_ENAB FTMP_FILE
do
    sed -i -e "s/^\$FUNCTION/# &/" /etc/login.defs
done
```

If you have `CrackLib` installed, also comment out four more lines using the following command:

```
for FUNCTION in OBSCURE_CHECKS_ENAB CRACKLIB_DICTPATH \
                PASS_CHANGE_TRIES PASS_ALWAYS_WARN
do
    sed -i -e "s/^\$FUNCTION/# &/" /etc/login.defs
done
```

Configuring the `/etc/pam.d/` Files

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

'login' (with `CrackLib`)

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

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

```

account    required    pam_access.so
account    required    pam_unix.so
session    required    pam_env.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
password   required    pam_cracklib.so  retry=3 difok=8 minlen=5 \
                                dcredit=3 ocredit=3 \
                                ucredit=2 lcredit=2
password   required    pam_unix.so      md5 shadow use_authok

# End /etc/pam.d/login
EOF

```

'login' (without CrackLib)

```

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
password   required     pam_unix.so      md5 shadow

# End /etc/pam.d/login
EOF

```

'passwd' (with CrackLib)

```

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

password   required     pam_cracklib.so  retry=3 difok=8 minlen=5 \
                                dcredit=3 ocredit=3 \
                                ucredit=2 lcredit=2
password   required     pam_unix.so      md5 shadow use_authok

# End /etc/pam.d/passwd
EOF

```

'passwd' (without CrackLib)

```

cat > /etc/pam.d/passwd << "EOF"

```

```
# Begin /etc/pam.d/passwd
password    required          pam_unix.so      md5 shadow
# End /etc/pam.d/passwd
EOF
```

'su'

```
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     optional        pam_mail.so      dir=/var/mail standard
session     required        pam_env.so
session     required        pam_unix.so

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

'chage'

```
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
```

'chpasswd', 'newusers', 'groupadd', 'groupdel', 'groupmod', 'useradd', 'userdel', and 'usermod'

```
for PROGRAM in chpasswd newusers groupadd groupdel \
               groupmod useradd userdel usermod
do
    install -v -m644 /etc/pam.d/chage /etc/pam.d/$PROGRAM
    sed -i -e "s/chage/$PROGRAM/" /etc/pam.d/$PROGRAM
done
```

**Warning**

At this point, you should do a simple test to see if Shadow is working as expected. Open another terminal and log in as a user, then **su** to **root**. If you do not see any errors, then all is well and you should proceed with the rest of the configuration. If you did receive errors, stop now and double check the above configuration files manually. If you cannot find and fix the error, you should

recompile Shadow replacing `--with-libpam` with `--without-libpam` in the above instructions (also move the `/etc/login.defs.orig` backup file to `/etc/login.defs`). If you fail to do this and the errors remain, you will be unable to log into your system.

Other

Currently, `/etc/pam.d/other` is configured to allow anyone with an account on the machine to use PAM-aware programs without a configuration file for that program. After testing Linux-PAM for proper configuration, install a more restrictive `other` file so that program-specific configuration files are required:

```
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
```

Configuring Login Access

Instead of using the `/etc/login.access` file for controlling access to the system, Linux-PAM uses the `pam_access.so` module along with the `/etc/security/access.conf` file. Rename the `/etc/login.access` file using the following command:

```
if [ -f /etc/login.access ]; then
    mv -v /etc/login.access /etc/login.access.NOUSE
fi
```

Configuring Resource Limits

Instead of using the `/etc/limits` file for limiting usage of system resources, Linux-PAM uses the `pam_limits.so` module along with the `/etc/security/limits.conf` file. Rename the `/etc/limits` file using the following command:

```
if [ -f /etc/limits ]; then
    mv -v /etc/limits /etc/limits.NOUSE
fi
```

Configuring Default Environment

During previous configuration, several items were removed from `/etc/login.defs`. Some of these items are now controlled by the `pam_env.so` module and the `/etc/security/pam_env.conf` configuration file. In particular, the default path has been changed. To recover your default path, execute the following commands:

```
ENV_PATH=`grep '^ENV_PATH' /etc/login.defs.orig | \
    awk '{ print $2 }' | sed 's/PATH=/'` &&
```

```
echo 'PATH          DEFAULT='`echo "${ENV_PATH}"`'          OVERRIDE=${PATH}' \  
  >> /etc/security/pam_env.conf &&  
unset ENV_PATH
```



Note

ENV_SUPATH is no longer supported. You must create a valid `/root/.bashrc` file to provide a modified path for the super user.

Contents

A list of the installed files, along with their short descriptions can be found at [../..../lfs/view/stable/chapter06/shadow.html#contents-shadow](http://lfs/view/stable/chapter06/shadow.html#contents-shadow).

Iptables-1.3.3

Introduction to Iptables

The next part of this chapter deals with firewalls. The principal 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.

Package Information

- Download (HTTP): <http://www.iptables.org/files/iptables-1.3.3.tar.bz2>
- Download (FTP): <ftp://ftp.netfilter.org/pub/iptables/iptables-1.3.3.tar.bz2>
- Download MD5 sum: 86d88455520cfdc56fd7ae27897a80a4
- Download size: 176 KB
- Estimated disk space required: 4.8 MB
- Estimated build time: 0.2 SBU

Kernel Configuration

A firewall in Linux is accomplished through a portion of the kernel called netfilter. The interface to netfilter is iptables. To use it, the appropriate kernel configuration parameters are found in Device Drivers -> Networking Support -> Networking Options -> Network Packet Filtering -> IP: Netfilter Configuration.

Installation of Iptables



Note

Installation of iptables will fail if raw kernel headers are found in `/usr/src/linux` either as actual files or a symlink. As of the Linux 2.6 kernel series, this directory should no longer exist because appropriate headers were installed from the Linux-Libc-Headers package during the base LFS installation.

For some non-x86 architectures, the raw kernel headers may be required. In that case, add the environment variable `KERNEL_DIR=/usr/src/linux` to the make commands below.

Install iptables by running the following commands:

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

Now, as the root user:

```
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 activated during the boot process and `/usr` may not be mounted at that time.

Configuring Iptables

Introductory instructions for configuring your firewall are presented in the next section: [Firewalling](#)

Boot Script

To set up the iptables firewall at boot, install the `/etc/rc.d/init.d/iptables` init script included in the `blfs-bootscripts-6.1` package.

```
make install-iptables
```

Contents

Installed Programs: iptables, iptables-restore, iptables-save and ip6tables
Installed Libraries: libip6t_*.so and libipt_*.so
Installed Directory: /lib/iptables

Short Descriptions

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

iptables-restore is used to restore IP Tables from data specified on STDIN. Use I/O redirection provided by your shell to read from a file.

iptables-save is used to dump the contents of an IP Table in easily parseable format to STDOUT. Use I/O-redirection provided by your shell to write to a file.

ip6tables is used to set up, maintain, and inspect the tables of IPv6 packet filter rules in the Linux kernel. Several different tables may be defined. Each table contains a number of built-in chains and may also contain user-defined chains.

`libip*.so` library modules 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, you should have already installed iptables as described in the previous section.

Introduction to Firewall Creation

The general purpose of a firewall is to protect a computer or a network against malicious access.

In a perfect world, every daemon or service on every machine is perfectly configured and immune to flaws such as buffer overflows or other problems regarding its security. Furthermore, you trust every user accessing your services. In this world, you do not need to have a firewall.

In the real world however, daemons may be misconfigured and exploits against essential services are freely available. You may wish to choose which services are accessible by certain machines or you may wish to limit which machines or applications are allowed external access. Alternatively, you may simply not trust some of your applications or users. You are probably connected to the Internet. In this world, a firewall is essential.

Don't assume however, that having a firewall makes careful configuration redundant, or that it makes any negligent misconfiguration harmless. It doesn't prevent 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 properly configured and up to date. A firewall is not a cure all, but should be an essential part of your overall security strategy.

Meaning of the Word "Firewall"

The word firewall can have several different meanings.

Personal Firewall

This is a hardware device or software program commercially sold (or offered via freeware) by companies such as Symantec which claims that it secures a home or desktop computer connected to the Internet. This type of firewall is highly relevant for users who do not know how their computers might be accessed via the Internet or how to disable that access, especially if they are always online and connected via broadband links.

Masquerading Router

This is a system 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 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 relatively secure.

BusyBox

This is often an old computer you may have retired and nearly forgotten, performing masquerading or routing functions, but offering non-firewall services such as a web-cache or mail. This may be used for home networks, but is not to be considered as secure as a firewall only machine because the combination of server and router/firewall 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 IPs and a physically separated structure, is essentially a separate network with direct Internet access. The servers on this network are those which must be easily accessible from both the Internet and intranet. The firewall protects both networks. This type of firewall has a minimum of three network interfaces.

Packetfilter

This type of firewall does routing or masquerading, but does not maintain a state table of ongoing communication streams. It is fast, but quite limited in its ability to block undesired packets without blocking desired packets.

Now You Can Start to Build your Firewall



Caution

This introduction on how to setup a firewall 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 of how a firewall works. They are not intended to fit into any particular configuration and may not provide complete protection from an attack.

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 at the end of this section for more details. There you will find a list of URLs that contain quite comprehensive information about building your own firewall.

The firewall configuration script installed in the iptables section differs from the standard configuration script. It only has two of the standard targets: start and status. The other targets are clear and lock. For instance if you issue:

```
/etc/rc.d/init.d/iptables start
```

the firewall will be restarted just as it is upon system startup. The status target will present a list of all currently implemented rules. The clear target turns off all firewall rules and the lock target will block all packets in and out of the computer with the exception of the loopback interface.

The main startup firewall is located in the file `/etc/rc.d/rc.iptables`. The sections below provide three different approaches that can be used for a system.



Note

You should always run your firewall rules from a script. This ensures consistency and a record of what was done. It also allows retention of comments that are essential for understanding the rules long after they were written.

Personal Firewall

A Personal Firewall is designed to let you access all the 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. It is still applicable to the Linux 2.6 kernels.

```

cat > /etc/rc.d/rc.iptables << "EOF"
#!/bin/sh

# Begin $rc_base/rc.iptables

# 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

# Enable broadcast echo Protection
echo 1 > /proc/sys/net/ipv4/icmp_echo_ignore_broadcasts

# Disable Source Routed Packets
echo 0 > /proc/sys/net/ipv4/conf/all/accept_source_route

# Enable TCP SYN Cookie Protection
echo 1 > /proc/sys/net/ipv4/tcp_syncookies

# Disable ICMP Redirect Acceptance
echo 0 > /proc/sys/net/ipv4/conf/all/accept_redirects

# Don't send Redirect Messages
echo 0 > /proc/sys/net/ipv4/conf/all/send_redirects

# Drop Spoofed Packets coming in on an interface, where responses
# would result in the reply going out a different interface.
echo 1 > /proc/sys/net/ipv4/conf/all/rp_filter

# Log packets with impossible addresses.
echo 1 > /proc/sys/net/ipv4/conf/all/log_martians

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

# disable Explicit Congestion Notification
# too many routers are still ignorant
echo 0 > /proc/sys/net/ipv4/tcp_ecn

# Set a known state
iptables -P INPUT DROP
iptables -P FORWARD DROP
iptables -P OUTPUT DROP

# These lines are here in case rules are already in place and the
# script is ever rerun on the fly. We want to remove all rules and
# pre-existing user defined chains before we implement new rules.

```

```

iptables -F
iptables -X
iptables -Z

iptables -t nat -F

# 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
# (e.g. port mode 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 "

# End $rc_base/rc.iptables
EOF
chmod 700 /etc/rc.d/rc.iptables

```

This script is quite simple, it drops all traffic coming into your computer that wasn't initiated from your computer, 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, take a look at BusyBox example number 4.

Even if you have daemons or services running on your system, these will be inaccessible everywhere but from your computer itself. If you want to allow access to services on your machine, such as **ssh** or **ping**, take a look at BusyBox.

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 for the firewall itself, make sure that there are no unnecessary servers running on it such as X11 et al. As a general principle, the firewall itself should not access any untrusted service (think of a remote server giving answers that makes a daemon on your system crash, or even worse, that implements a worm via a buffer-overflow).

```

cat > /etc/rc.d/rc.iptables << "EOF"
#!/bin/sh

# Begin $rc_base/rc.iptables

echo
echo "You're using the example configuration for a setup of a firewall"
echo "from Beyond Linux From Scratch."
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 configuration rules below."  
echo "You can find additional 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  
  
# Enable broadcast echo Protection  
echo 1 > /proc/sys/net/ipv4/icmp_echo_ignore_broadcasts  
  
# Disable Source Routed Packets  
echo 0 > /proc/sys/net/ipv4/conf/all/accept_source_route  
  
# Enable TCP SYN Cookie Protection  
echo 1 > /proc/sys/net/ipv4/tcp_syncookies  
  
# Disable ICMP Redirect Acceptance  
echo 0 > /proc/sys/net/ipv4/conf/all/accept_redirects  
  
# Don't send Redirect Messages  
echo 0 > /proc/sys/net/ipv4/conf/all/send_redirects  
  
# Drop Spoofed Packets coming in on an interface where responses  
# would result in the reply going out a different interface.  
echo 1 > /proc/sys/net/ipv4/conf/all/rp_filter  
  
# Log packets with impossible addresses.  
echo 1 > /proc/sys/net/ipv4/conf/all/log_martians  
  
# Be verbose on dynamic ip-addresses (not needed in case of static IP)  
echo 2 > /proc/sys/net/ipv4/ip_dynaddr  
  
# Disable Explicit Congestion Notification  
# Too many routers are still ignorant  
echo 0 > /proc/sys/net/ipv4/tcp_ecn  
  
# Set a known state  
iptables -P INPUT DROP  
iptables -P FORWARD DROP  
iptables -P OUTPUT DROP
```

```

# These lines are here in case rules are already in place and the
# script is ever rerun on the fly. We want to remove all rules and
# pre-existing user defined chains before we implement new rules.
iptables -F
iptables -X
iptables -Z

iptables -t nat -F

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

# Allow forwarding if the initiated on the intranet
iptables -A FORWARD -m state --state ESTABLISHED,RELATED -j ACCEPT
iptables -A FORWARD -i ! ppp+ -m state --state NEW -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 policy rules)
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 "

# Enable IP Forwarding
echo 1 > /proc/sys/net/ipv4/ip_forward
EOF
chmod 700 /etc/rc.d/rc.iptables

```

With this script your intranet should be reasonably secure against external attacks. No one should be able to setup a new connection to any internal service and, if it's masqueraded, makes your intranet invisible to the Internet. Furthermore, your firewall should be relatively safe 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 (e.g., **eth1**) which you are using.

BusyBox

This scenario isn't too different from the Masquerading Router, but additionally offers some services to your intranet. Examples of this can be when you want to administer your firewall 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 the references at the end of this section for more information.

Be cautious. Every service you have enabled makes your setup more complex and your firewall less secure. You are exposed to the risks of misconfigured services or running a service with an exploitable bug. A firewall should generally not run any extra services. See the introduction to the Masquerading Router for some more details.

If you want to add services such as internal Samba or name servers that do not need to access the Internet themselves, the additional statements are quite simple and should still be acceptable from a security standpoint. Just add the following lines into the script *before* the logging rules.

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

If daemons, such as squid, have to access the Internet themselves, 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 over trojans who would like to "call home", and a bit of redundancy in case you've (mis-)configured a service so that it broadcasts its existence to the world.

To accomplish this, you should 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., named) does its lookups via UDP:

```
iptables -A OUTPUT -p udp --dport 53 -j ACCEPT
```

- You want to be able to ping your computer 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 system to obtain usernames. Although there's really little harm in this, having an identd running is not recommended because many security experts feel the service gives out too much additional information.

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
```

- To log and drop invalid packets (packets that came in after netfilter's timeout or some types of network scans):

```
iptables -I INPUT -p tcp -m state --state INVALID \
-j LOG --log-prefix "FIREWALL:INVALID"
iptables -I INPUT -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 -A INPUT -i ppp+ -s 10.0.0.0/8 -j DROP
iptables -A INPUT -i ppp+ -s 172.16.0.0/12 -j DROP
iptables -A INPUT -i ppp+ -s 192.168.0.0/16 -j DROP
```

There are other addresses that you may also want to drop: 0.0.0.0/8, 127.0.0.0/8, 224.0.0.0/3 (multicast and experimental), 169.254.0.0/16 (Link Local Networks), and 192.0.2.0/24 (IANA defined test network).

- If your firewall is a DHCP client, you need to allow those packets:

```
iptables -A INPUT -i ppp0 -p udp -s 0.0.0.0 --sport 67 \
-d 255.255.255.255 --dport 68 -j ACCEPT
```

- To simplify debugging and be fair to anyone who'd like to access a service you have disabled, purposely or by mistake, you could 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
```

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

Conclusion

Finally, there is one fact you 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 valuable information, you need to spend the time to protect it properly.

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
en.tldp.org/LDP/nag2/x-087-2-firewall.html
en.tldp.org/HOWTO/Security-HOWTO.html
en.tldp.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
www.e-infomax.com/ipmasq
www.circlemud.org/~jelson/writings/security/index.htm
www.securityfocus.com
www.cert.org - tech_tips
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

GnuPG-1.4.1

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 the contents of the file or email.

Package Information

- Download (HTTP): <http://public.ftp.planetmirror.com/pub/gnupg/gnupg-1.4.1.tar.bz2>
- Download (FTP): <ftp://ftp.gnupg.org/gcrypt/gnupg/gnupg-1.4.1.tar.bz2>
- Download MD5 sum: `fdfc5553d0904cd65011e47a42a9532c`
- Download size: 2.8 MB
- Estimated disk space required: 32 MB
- Estimated build time: 0.42 SBU

GnuPG Dependencies

Optional

OpenLDAP-2.2.24, libusb-0.1.10a, cURL-7.14.0, MTA, DocBook-utils-0.6.14 and docbook-to-man

Installation of GnuPG

Install GnuPG by running the following commands:

```
./configure --prefix=/usr --libexecdir=/usr/lib &&  
make
```

Now, as the `root` user:

```
make install &&  
chmod -v 4755 /usr/bin/gpg
```

Command Explanations

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

`chmod -v 4755 /usr/bin/gpg`: `gpg` is installed setuid `root` to avoid swapping out sensitive data.

Contents

Installed Programs: `gpg`, `gpgsplit`, and `gpgv`
Installed Libraries: None
Installed Directories: `/usr/lib/gnupg` and `/usr/share/gnupg`

Short Descriptions

- gpg** is the backend (command-line interface) for this OpenPGP implementation.
- gpgsplit** separates key rings.
- gpgv** is a verify only version of **gpg**.

Tripwire-portable-0.9

Introduction to Tripwire

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

Package Information

- Download (HTTP): <http://www.frenchfries.net/paul/tripwire/tripwire-portable-0.9.tar.gz>
- Download (FTP):
- Download MD5 sum: 02610d0593fe04d35d809ff6c5becc02
- Download size: 869 KB
- Estimated disk space required: 22 MB
- Estimated build time: 2.96 SBU

Tripwire Dependencies

Optional

MTA (See Chapter 22, Mail Server Software)

Installation of Tripwire

Compile Tripwire by running the following commands:

```
sed -i -e 's@TWDB="${prefix}@TWDB="/var@' install/install.cfg &&
./configure --prefix=/usr --sysconfdir=/etc/tripwire &&
make
```

Now, as the root user:

```
make install &&
cp -v policy/*.txt /usr/share/doc/tripwire
```

The default configuration is to use a local MTA. If you don't have an MTA installed and have no wish to install one, modify `install.cfg` to use an SMTP server instead.

Command Explanations

`sed -i -e 's@TWDB="${prefix}@TWDB="/var@' install/install.cfg`: This command tells the package to install the program database and reports in `/var/lib/tripwire`.

`make install`: This command creates the Tripwire security keys as well as installing the binaries. There are two keys: a site key and a local key which are stored in `/etc/tripwire/`.

`cp -v 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 are integrity checked. The default policy file (`/etc/tripwire/twpol.txt`) is for a default Redhat installation and will need to be updated for your system.

Policy files 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` for additional information. `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 (perform as the `root`):

```
twadmin --create-polfile --site-keyfile /etc/tripwire/site.key \
  /etc/tripwire/twpol.txt &&
tripwire --init
```

Usage Information

To use Tripwire after creating a policy file to run a report, use the following command:

```
tripwire --check > /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 examine the report (or email) and then modify the Tripwire database to reflect the changed files on your system. This is so that Tripwire will not continually notify you that files you intentionally changed are a security violation. To do this you must first `ls -l /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, as the `root` user, type in the following command making the appropriate substitutions for `[?]`:

```
tripwire --update -twrfile \
  /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, 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 as the `root` user:

```
twadmin --create-polfile /etc/tripwire/twpol.txt &&  
tripwire --init
```

Contents

Installed Programs: siggen, tripwire, twadmin, and twprint.
Installed Libraries: None
Installed Directories: /etc/tripwire, /usr/share/doc/tripwire, and /var/lib/tripwire

Short Descriptions

siggen is a signature gathering utility that displays the hash function values for the specified files.
tripwire is the main file integrity checking program.
twadmin administrative and utility tool used to perform certain administrative functions related to Tripwire files and configuration options.
twprint prints Tripwire database and report files in clear text format.

Heimdal-0.7

Introduction to Heimdal

Heimdal is a free implementation of Kerberos 5 that aims to be compatible with MIT krb5 and is backward 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 or compromised. 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-0.7.tar.gz>
- Download (FTP): <ftp://ftp.pdc.kth.se/pub/heimdal/src/heimdal-0.7.tar.gz>
- Download MD5 sum: 0a8097a8772d5d2de8c5539d3182b82a
- Download size: 4.5 MB
- Estimated disk space required: 91 MB
- Estimated build time: 2.4 SBU

Additional Downloads

- Required Patch: http://www.linuxfromscratch.org/blfs/downloads/6.1/heimdal-0.7-fhs_compliance-1.patch
- Required patch for CrackLib support:
<http://www.linuxfromscratch.org/blfs/downloads/6.1/heimdal-0.7-cracklib-1.patch>

Heimdal Dependencies

Required

OpenSSL-0.9.7g and Berkeley DB-4.3.28

Optional

Linux-PAM-0.80, OpenLDAP-2.2.24, X (X.org-6.8.2 or XFree86-4.5.0), CrackLib-2.8.3 (compiled with the heimdal patch) and krb4



Note

Some sort of time synchronization facility on your system (like NTP-4.2.0) 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. Issue the following command as the `root` user.

```
mv -v /usr/bin/ftp /usr/bin/ftpn
```

If you wish the Heimdal package to link against the CrackLib library (requires CrackLib-2.8.3 installed with the heimdal patch), you must apply a patch:

```
patch -Np1 -i ../heimdal-0.7-cracklib-1.patch
```

Install Heimdal by running the following commands:

```
patch -Np1 -i ../heimdal-0.7-fhs_compliance-1.patch &&
./configure --prefix=/usr \
  --sysconfdir=/etc/heimdal \
  --libexecdir=/usr/sbin \
  --datadir=/var/lib/heimdal \
  --localstatedir=/var/lib/heimdal \
  --enable-shared \
  --with-readline=/usr &&
make
```

To test the results, issue: **make check**.

Now, as the `root` user:

```
make install &&
install -v -m755 -d /usr/share/doc/heimdal-0.7/standardisation &&
install -v -m644 doc/{init-creds,layman.asc} \
  /usr/share/doc/heimdal-0.7 &&
install -v -m644 doc/standardisation/* \
  /usr/share/doc/heimdal-0.7/standardisation &&
mv -v /bin/login /bin/login.shadow &&
mv -v /bin/su /bin/su.shadow &&
mv -v /usr/bin/{login,su} /bin &&
ln -v -sf ../../bin/login /usr/bin &&
mv -v /usr/lib/lib{otp,kafs,krb5,asn1,roken,crypto}.so.* \
  /usr/lib/libdb-4.3.so /lib &&
ln -v -sf ../../lib/libdb-4.3.so /usr/lib/libdb.so &&
ln -v -sf ../../lib/libdb-4.3.so /usr/lib/libdb-4.so &&
for SYMLINK in otp.so.0.1.3 kafs.so.0.4.1 krb5.so.17.4.0 \
  asn1.so.6.1.0 roken.so.16.1.0 crypto.so.0.9.7
do
  ln -v -sf ../../lib/lib$SYMLINK \
    /usr/lib/lib`echo $SYMLINK | cut -d. -f1`.so
done
ldconfig
```

Command Explanations

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



Tip

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 are installed, 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 so they'll be in the privileged user's default `PATH`.

mvshadow; mv ... /bin; ln -v -sf ../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`. The old executables are preserved before the move to keep things sane should breaks occur.

mv ... /lib; ln -v -sf ../lib/lib... /usr/lib...: The **login** and **su** programs installed by Heimdal link against Heimdal libraries as well as libraries provided by the OpenSSL and Berkeley DB packages. These libraries are moved to `/lib` to be FHS compliant and also in case `/usr` is located on a separate partition which may not always be mounted.

Configuring Heimdal

Config Files

`/etc/heimdal/*`

Configuration Information



Note

All the configuration steps shown below must be accomplished by the `root` user unless otherwise noted.

Master KDC Server Configuration

Create the Kerberos configuration file with the following commands:

```
install -v -m755 -d /etc/heimdal &&
cat > /etc/heimdal/krb5.conf << "EOF"
# Begin /etc/heimdal/krb5.conf

[libdefaults]
    default_realm = [EXAMPLE.COM]
    encrypt = true

[realms]
    [EXAMPLE.COM] = {
        kdc = [hostname.example.com]
        admin_server = [hostname.example.com]
        kpasswd_server = [hostname.example.com]
    }

[domain_realm]
    .[example.com] = [EXAMPLE.COM]
```

```
[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
chmod -v 644 /etc/heimdal/krb5.conf
```

You will need to substitute your domain and proper hostname for the occurrences of the *[hostname]* and *[EXAMPLE.COM]* names.

`default_realm` should be the name of your domain changed to ALL CAPS. This isn't required, but both Heimdal and MIT `krb5` 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 -v -m755 -d /var/lib/heimdal &&
kstash
```

Create the KDC database:

```
kadmin -l
```

The commands below will prompt you for information about the principles. Choose the defaults for now unless you know what you are doing and need to specify different values. You can go in later and change the defaults, should you feel the need. You may use the up and down arrow keys to use the history feature of **kadmin** in a similar manner as the **bash** history feature.

At the `kadmin>` prompt, issue the following statement:

```
init [EXAMPLE.COM]
```

The database must now be populated with at least one principle (user). For now, just use your regular login name or root. You may create as few, or as many principles as you wish using the following statement:

```
add [loginname]
```

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

```
add --random-key host/[hostname.example.com]
```

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

```
ext host/[hostname.example.com]
```

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/[hostname.example.com]
```

(choose the defaults)

```
ext ftp/[hostname.example.com]
```

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, setup and configuration of your new Heimdal Kerberos 5 installation.

Install the `/etc/rc.d/init.d/heimdal` init script included in the `blfs-bootscripts-6.1` 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.

In order to use the Heimdal X programs, you'll need to add a service port entry to the `/etc/services` file

for the **kxd** server. There is no 'standardized port number' for the 'kx' service in the IANA database, so you'll have to pick an unused port number. Add an entry to the `services` file similar to the entry below (substitute your chosen port number for `[49150]`):

```
kx          [ 49150 ]/tcp    # Heimdal kerberos X
kx          [ 49150 ]/udp    # Heimdal kerberos X
```

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

Contents

Installed Programs:	afslog, dump_log, ftp, ftpd, hprop, hpropd, ipropd-master, ipropd-slave, kadmin, kadmind, kauth, kcm, kdc, kdestroy, kf, kfd, kgetcred, kinit, klist, kpasswd, kpasswd, krb5-config, kstash, ktutil, kx, kxd, login, mk_cmds, otp, otpprint, pagsh, pfrom, popper, push, rcp, replay_log, rsh, rshd, rxtelnet, rxterm, string2key, su, telnet, telnetd, tenletxr, truncate-log, verify_krb5_conf and xnlock
Installed Libraries:	libasn1.[so,a], libeditline.[so,a], libgssapi.[so,a], libhdb.[so,a], libkadm5clnt.[so,a], libkadm5srv.[so,a], libkafs.[so,a], libkrb5.[so,a], libotp.[so,a], libroken.[so,a], libsl.[so,a] and libss.[so,a]
Installed Directories:	/etc/heimdal, /usr/include/kadm5, /usr/share/doc/heimdal-0.7 and /var/lib/heimdal

Short Descriptions

afslog	obtains AFS tokens for a number of cells.
ftp	is a kerberized FTP client.
ftpd	is a kerberized FTP daemon.
hprop	takes a principal database in a specified format and converts it into a stream of Heimdal database records.
hpropd	is a server that receives a database sent by hprop and writes it as a local database.
ipropd-master	is a daemon which runs on the master KDC server which incrementally propagates changes to the KDC database to the slave KDC servers.
ipropd-slave	is a daemon which runs on the slave KDC servers which incrementally propagates changes to the KDC database from the master KDC server.
kadmin	is a utility used to make modifications to the Kerberos database.
kadmind	is a server for administrative access to the Kerberos database.
kauth	is a symbolic link to the kinit program.
kcm	is a process based credential cache for Kerberos tickets.
kdc	is a Kerberos 5 server.
kdestroy	removes a principle's current set of tickets.

kf	is a program which forwards tickets to a remote host through an authenticated and encrypted stream.
kfd	is a server used to receive forwarded tickets.
kgetcred	obtains a ticket for a service.
kinit	is used to authenticate to the Kerberos server as a principal and acquire a ticket granting ticket that can later be used to obtain tickets for other services.
klist	reads and displays the current tickets in the credential cache.
kpasswd	is a program for changing Kerberos 5 passwords.
kpasswd	is a Kerberos 5 password changing server.
krb5-config	gives information on how to link programs against Heimdal libraries.
kstash	stores the KDC master password in a file.
ktutil	is a program for managing Kerberos keytabs.
kx	is a program which securely forwards X connections.
kxd	is the daemon for kx .
login	is a kerberized login program.
otp	manages one-time passwords.
otpprint	prints lists of one-time passwords.
pfrom	is a script that runs push --from .
popper	is a kerberized POP-3 server.
push	is a kerberized POP mail retrieval client.
rcp	is a kerberized rcp client program.
rsh	is a kerberized rsh client program.
rshd	is a kerberized rsh server.
rxtnet	starts a secure xterm window with a tnet to a given host and forwards X connections.
rxterm	starts a secure remote xterm .
string2key	maps a password into a key.
su	is a kerberized su client program.
tnet	is a kerberized tnet client program.
tnetd	is a kerberized tnet server.
tenletxr	forwards X connections backwards.
verify_krb5_conf	checks <code>krb5.conf</code> file for obvious errors.

xnlock	is a program that acts as a secure screen saver for workstations running X.
<code>libasn1.[so,a]</code>	provides the ASN.1 and DER functions to encode and decode the Kerberos TGTs.
<code>libeditline.a</code>	is a command-line editing library with history.
<code>libgssapi.[so,a]</code>	contain the Generic Security Service Application Programming Interface (GSSAPI) functions which provides security services to callers in a generic fashion, supportable with a range of underlying mechanisms and technologies and hence allowing source-level portability of applications to different environments.
<code>libhdb.[so,a]</code>	is a Heimdal Kerberos 5 authentication/authorization database access library.
<code>libkadm5clnt.[so,a]</code>	contains the administrative authentication and password checking functions required by Kerberos 5 client-side programs.
<code>libkadm5srv.[so,a]</code>	contain the administrative authentication and password checking functions required by Kerberos 5 servers.
<code>libkafs.[so,a]</code>	contains the functions required to authenticated to AFS.
<code>libkrb5.[so,a]</code>	is an all-purpose Kerberos 5 library.
<code>libotp.[so,a]</code>	contains the functions required to handle authenticating one time passwords.
<code>libroken.[so,a]</code>	is a library containing Kerberos 5 compatibility functions.

MIT Krb5-1.4.1

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/krb5/1.4/krb5-1.4.1-signed.tar>
- Download (FTP):
- Download MD5 sum: 617e0071fa5b74ab4116f064678af551
- Download size: 6.4 MB
- Estimated disk space required: TBD MB
- Estimated build time: TBD SBU

Installation of MIT Krb5



Note

The instructions for MIT Krb5 have not yet been validated by the BLFS Editors. Until this section is updated, the Editors recommend using Heimdal-0.7 to implement the functionality of this package.

Command Explanations

Configuring MIT Krb5

Contents

Cyrus SASL-2.1.21

Introduction to Cyrus SASL

The Cyrus SASL package contains a Simple Authentication and Security Layer, a method for adding authentication support to connection-based protocols. To use SASL, a protocol includes a command for identifying and authenticating a user to a server and for optionally negotiating protection of subsequent protocol interactions. If its use is negotiated, a security layer is inserted between the protocol and the connection.

Package Information

- Download (HTTP): <http://ftp.andrew.cmu.edu/pub/cyrus-mail/cyrus-sasl-2.1.21.tar.gz>
- Download (FTP): <ftp://ftp.andrew.cmu.edu/pub/cyrus-mail/cyrus-sasl-2.1.21.tar.gz>
- Download MD5 sum: dde02db234dea892bee298390890502e
- Download size: 1.6 MB
- Estimated disk space required: 16 MB
- Estimated build time: 0.3 SBU

Cyrus SASL Dependencies

Required

OpenSSL-0.9.7g

Optional

Linux-PAM-0.80, OpenLDAP-2.2.24, Heimdal-0.7 or MIT krb5-1.4.1, JDK-1.5.0, MySQL-4.1.12, PostgreSQL-8.0.3, Berkeley DB-4.3.28, GDBM-1.8.3, krb4, SQLite and Dmalloc

Installation of Cyrus SASL

Install Cyrus SASL by running the following commands:

```
./configure --prefix=/usr --sysconfdir=/etc \
            --with-dbpath=/var/lib/sasl/sasldb2 \
            --with-saslauthd=/var/run &&
make
```

This package does not come with a test suite. If you are planning on using the GSSAPI authentication mechanism, it is recommended to test it after installing the package using the sample server and client programs which were built in the preceding step. Instructions for performing the tests can be found at <http://www.linuxfromscratch.org/hints/downloads/files/cyrus-sasl.txt>.

Now, as the root user:

```
make install &&
install -v -m644 saslauthd/saslauthd.8 /usr/share/man/man8 &&
install -v -m755 -d /usr/share/doc/cyrus-sasl-2.1.21 &&
install -v -m644 doc/{*.{html,txt,fig},ONEWS,TODO} \
            saslauthd/LDAP_SASLAUTHD /usr/share/doc/cyrus-sasl-2.1.21 &&
install -v -m700 -d /var/lib/sasl
```

Command Explanations

`--with-dbpath=/var/lib/sasl/sasldb2`: This parameter forces the **saslauthd** database to be created in `/var/lib/sasl` instead of `/etc`.

`--with-saslauthd=/var/run`: This parameter forces **saslauthd** to use the FHS compliant directory `/var/run` for variable run-time data.

`--with-ldap`: This parameter enables use with OpenLDAP.

`--enable-ldapdb`: This parameter enables the LDAPDB authentication backend. There is a circular dependency with this parameter which requires you to build the Cyrus SASL package, then the OpenLDAP package (with SASL support), then finally building the Cyrus SASL package again with this parameter.

`install -v -m644 ...`: These commands install documentation which is not installed by the **make install** command.

`install -v -m700 -d /var/lib/sasl`: This directory must exist when starting **saslauthd**. If you're not going to be running the daemon, you may omit the creation of this directory.

Configuring Cyrus SASL

Config Files

`/etc/saslauthd.conf` (for LDAP configuration) and `/usr/lib/sasl2/Appname.conf` (where "Appname" is the application defined name of the application)

Configuration Information

See <file:///usr/share/doc/cyrus-sasl-2.1.21/sysadmin.html> for information on what to include in the application configuration files. See file:///usr/share/doc/cyrus-sasl-2.1.21/LDAP_SASLAUTHD for configuring **saslauthd** with OpenLDAP.

Init Script

If you need to run the **saslauthd** daemon at system startup, install the `/etc/rc.d/init.d/cyrus-sasl` init script included in the `blfs-bootscripts-6.1` package.

```
make install-cyrus-sasl
```



Note

You'll need to modify the init script and replace the `[authmech]` parameter to the `-a` switch with your desired authentication mechanism.

Contents

Installed Programs: `saslauthd`, `sasldblistusers2`, and `saslpasswd2`

Installed Libraries: `libjavasasl.so`, `libsasl2.so`, and numerous SASL plugins and Java classes

Installed Directories: /usr/include/sasl, /usr/lib/java/classes/sasl, /usr/lib/sasl2,
/usr/share/doc/cyrus-sasl-2.1.21, and /var/lib/sasl

Short Descriptions

saslauthd	is the SASL authentication server.
sasldblistusers2	is used to list the users in the SASL password database.
saslpasswd2	is used to set and delete a user's SASL password and mechanism specific secrets in the SASL password database.
libsasl2.so	is a general purpose authentication library for server and client applications.

Stunnel-4.11

Introduction to Stunnel

The Stunnel package contains a program that allows you to encrypt arbitrary TCP connections inside SSL (Secure Sockets Layer) so you can easily communicate with clients over secure channels. Stunnel can be used to add SSL functionality to commonly used Inetd daemons like POP-2, POP-3, and IMAP servers, to standalone daemons like NNTP, SMTP and HTTP, and in tunneling PPP over network sockets without changes to the server package source code.

Package Information

- Download (HTTP): <http://www.stunnel.org/download/stunnel/src/stunnel-4.11.tar.gz>
- Download (FTP): <ftp://stunnel.mirt.net/stunnel/stunnel-4.11.tar.gz>
- Download MD5 sum: 253c50435d4d81cba6f19ca34266e6dc
- Download size: 484 KB
- Estimated disk space required: 4.0 MB
- Estimated build time: 0.1 SBU

Stunnel Dependencies

Required

OpenSSL-0.9.7g

Optional

tcpwrappers-7.6

Installation of Stunnel

The **stunnel** daemon will be run in a **chroot** jail by an unprivileged user. Create the new user, group and **chroot** home directory structure using the following commands as the **root** user:

```
groupadd -g 51 stunnel &&
useradd -c "Stunnel Daemon" -d /var/lib/stunnel \
        -g stunnel -s /bin/false -u 51 stunnel &&
install -v -m700 -o stunnel -g stunnel -d /var/lib/stunnel/run
```



Note

A signed SSL Certificate and a Private Key is necessary to run the **stunnel** daemon. If you own, or have already created a signed SSL Certificate you wish to use, copy it to `/etc/stunnel/stunnel.pem` before starting the build (ensure only **root** has read and write access), otherwise you will be prompted to create one during the installation process. The `.pem` file must be formatted as shown below:

```
-----BEGIN RSA PRIVATE KEY-----
[many encrypted lines of unencrypted key]
-----END RSA PRIVATE KEY-----
```

```

-----BEGIN CERTIFICATE-----
[many encrypted lines of certificate]
-----END CERTIFICATE-----
-----BEGIN DH PARAMETERS-----
[multiple encrypted lines of DH parameters]
-----END DH PARAMETERS-----

```

Install Stunnel by running the following commands:

```

./configure --prefix=/usr --sysconfdir=/etc \
  --localstatedir=/var/lib &&
make

```

This package does not come with a test suite.

Now, as the root user:

```
make install
```

Command Explanations

`--sysconfdir=/etc`: This parameter forces the configuration directory to `/etc` instead of `/usr/etc`.

`--localstatedir=/var/lib`: This parameter causes the installation process to create `/var/lib/stunnel` instead of `/usr/var/stunnel`.

make install: This command installs the package and, if you did not copy an `stunnel.pem` file to the `/etc/stunnel` directory, prompts you for the necessary information to create one. Ensure you reply to the

```
Common Name (FQDN of your server) [localhost]:
```

prompt with the name or IP address you will be using to access the service(s).

Configuring Stunnel

Config Files

```
/etc/stunnel/stunnel.conf
```

Configuration Information

Create a basic `/etc/stunnel/stunnel.conf` configuration file using the following commands:

```

cat >/etc/stunnel/stunnel.conf << "EOF"
# File: /etc/stunnel/stunnel.conf

pid = /run/stunnel.pid
chroot = /var/lib/stunnel
client = no
setuid = stunnel
setgid = stunnel

```

EOF

Next, you need to add the service(s) you wish to encrypt to the configuration file. The format is as follows:

```
[[service]]
accept = [hostname:portnumber]
connect = [hostname:portnumber]
```

If you use Stunnel to encrypt a daemon started from **[x]inetd**, you may need to disable that daemon in the `/etc/[x]inetd.conf` file and enable a corresponding `[service]_stunnel` service. You may have to add an appropriate entry in `/etc/services` as well.

For a full explanation of the commands and syntax used in the configuration file, run **man stunnel**. To see a BLFS example of an actual setup of an **stunnel** encrypted service, read the the section called “Configuring SWAT” in the Samba instructions.

Boot Script

To automatically start the **stunnel** daemon when the system is rebooted, install the `/etc/rc.d/init.d/stunnel` bootscript from the `blfs-bootscripts-6.1` package.

```
make install-stunnel
```

Contents

Installed Programs: stunnel and stunnel3
Installed Library: libstunnel.so
Installed Directories: /etc/stunnel, /var/lib/stunnel, and /usr/share/doc/stunnel

Short Descriptions

stunnel is a program designed to work as an SSL encryption wrapper between remote clients and local (**[x]inetd**-startable) or remote servers.

stunnel3 is a Perl wrapper script to use **stunnel** 3.x syntax with **stunnel** ≥ 4.05 .

`libstunnel.so` contains the API functions required by Stunnel.

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/hd[XX] /mnt_point ext3 defaults 1 1
```

In the above line, replace `/dev/hd[XX]` by the partition (e.g., `/dev/hda2`), `/mnt_point` by the mount point (e.g., `/home`). The 1 in the last field ensures that the partition will be checked for consistency during the boot process by the **checkfs** script as recommended by the maintainer. You may replace the `ext3` fs type in the above by `auto` if you want to ensure that the partition is mounted even if you accidentally disable 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/hd[XX]
```

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>. This information is still relevant to the 2.6 kernels.

ReiserFS-3.6.19

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-3.6.19.tar.gz>
- Download (FTP): <ftp://ftp.namesys.com/pub/reiserfsprogs/reiserfsprogs-3.6.19.tar.gz>
- Download MD5 sum: b42cf15f6651c3ceff5cb84996c0d539
- Download size: 400 KB
- Estimated disk space required: 7.9 MB
- Estimated build time: 0.16 SBU

Installation of ReiserFS

Install ReiserFS by running the following commands:

```
./configure --prefix=/usr --sbindir=/sbin &&
make
```

Now, as the root user:

```
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

Installed Programs:	debugreiserfs, mkreiserfs, reiserfsck, reiserfstune, and resize_reiserfs
Installed Libraries:	None
Installed Directories:	None

Short Descriptions

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	creates a ReiserFS file system.

reiserfsck is used to check or repair a ReiserFS file system.

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

resize_reiserfs is used to resize an unmounted ReiserFS file system.

XFS-2.6.25

Introduction to XFS

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

Package Information

- Download (HTTP): http://mirrors.sunsite.dk/xfs/download/cmd_tars/xfsprogs-2.6.25.src.tar.gz
- Download (FTP): ftp://oss.sgi.com/projects/xfs/download/cmd_tars/xfsprogs-2.6.25.src.tar.gz
- Download MD5 sum: 65fbf692f348b57f21edd4813733d9ae
- Download size: 833 KB
- Estimated disk space required: 25.2 MB
- Estimated build time: 0.59 SBU

Installation of XFS



Note

If you did not install the E2fsprogs package in LFS, you must install it, or UUID before proceeding with the installation of XFS.

Install XFS by running the following commands:

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

Now, as the root user:

```
make install
```

Command Explanations

`sed -i 's/autoconf//' Makefile`: This command disables running **autoconf** because it is unnecessary.

Contents

Installed Programs:	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
Installed Library:	libhandle.so
Installed Directory:	/usr/share/doc/xfsprogs

Short Descriptions

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

mkfs.xfs	constructs an XFS file system.
xfs_admin	changes the parameters of an XFS file system.
xfs_bmap	prints block mapping for an XFS file.
xfs_check	checks XFS file system consistency.
xfs_copy	copies the contents of an XFS file system to one or more targets in parallel.
xfs_db	is used to debug an XFS file system.
xfs_freeze	suspends access to an XFS file system.
xfs_growfs	expands an XFS file system.
xfs_info	is equivalent to invoking xfs_growfs , but specifying that no change to the file system is to be made.
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	prints the log of an XFS file system.
xfs_mkfile	creates an XFS file, padded with zeroes by default.
xfs_ncheck	generates pathnames from inode numbers for an XFS file system.
xfs_repair	repairs corrupt or damaged XFS file systems.
xfs_rtcp	copies a file to the real-time partition on an XFS file system.
libhandle.so	contains functions to map filesystem handles to a corresponding open file descriptor for that filesystem.

Chapter 6. Editors

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

Vim-6.3

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-6.3.tar.bz2>
- Download (FTP): <ftp://ftp.vim.org/pub/vim/unix/vim-6.3.tar.bz2>
- Download MD5 sum: 821fda8f14d674346b87e3ef9cb96389
- Download size: 3.7 MB
- Estimated disk space required: 48 MB
- Estimated build time: 0.59 SBU

Additional Downloads

- Required patch: http://www.linuxfromscratch.org/blfs/downloads/6.1/vim-6.3-security_fix-1.patch
- Translated Vim messages: <http://ftp.at.vim.org/pub/vim/extra/vim-6.3-lang.tar.gz>

Vim Dependencies

Recommended

X (XFree86-4.5.0 or X.org-6.8.2)

Optional

GTK+-2.6.7, LessTif-0.94.4, Python-2.4.1, Tcl-8.4.11, Ruby-1.8.2 and GPM-1.20.1

Installation of Vim



Note

If you recompile Vim to link against X, and your X libraries 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`.

If desired, unpack the translated messages archive:

```
tar -zxf ../vim-6.3-lang.tar.gz --strip-components=1
```

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 &&
patch -Np1 -i ../vim-6.3-security_fix-1.patch &&
./configure --prefix=/usr --with-features=huge &&
make
```

Now, as the root user:

```
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

A list of the reinstalled files, along with their short descriptions can be found at [../..../lfs/view/stable/chapter06/vim.html#contents-vim](http://lfs/view/stable/chapter06/vim.html#contents-vim).

Installed Programs: gview, gvim, gvimdiff, rgview, and rgvim

Installed Libraries: None

Installed Directory: /usr/share/vim

Short Descriptions

gview starts **gvim** in read-only mode.

gvim is the editor that runs under X and includes a GUI.

gvimdiff edits two or three versions of a file with **gvim** and shows the differences.

rgview is a restricted version of **gview**.

rgvim is a restricted version of **gvim**.

Emacs-21.4a

Introduction to Emacs

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

Package Information

- Download (HTTP): <http://ftp.gnu.org/pub/gnu/emacs/emacs-21.4a.tar.gz>
- Download (FTP): <ftp://ftp.gnu.org/pub/gnu/emacs/emacs-21.4a.tar.gz>
- Download MD5 sum: 5ec2c01f7604cf207628de0e82181647
- Download size: 20 MB
- Estimated disk space required: 96.8 MB
- Estimated build time: 4.20 SBU

Emacs Dependencies

Optional

X (XFree86-4.5.0 or X.org-6.8.2), libjpeg-6b, libpng-1.2.8, libtiff-3.7.3, and libungif-4.1.3 or giflib-4.1.3

Installation of Emacs

Install Emacs by running the following commands:

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

Now, as the root user:

```
make install
```

Contents

Installed Programs:	b2m, ctags, ebrowse, emacs, emacsclient, etags, grep-changelog, and rcs-checkin
Installed Libraries:	None
Installed Directories:	/usr/sbin/emacs and /usr/share/emacs

Short Descriptions

b2m	is a program to convert mail files from RMAIL format to Unix “mbox” format.
ctags	creates cross-reference tagfile database files for source code.
ebrowse	permits browsing of C++ class hierarchies from within emacs .
emacs	is an editor.

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

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

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

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

Nano-1.2.5

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-1.2.5.tar.gz>
- Download (FTP): <ftp://ftp.uni-koeln.de/editor/nano-1.2.5.tar.gz>
- Download MD5 sum: f2b3efbf1cf356d736740d531b6b22c4
- Download size: 891 KB
- Estimated disk space required: 5.1 MB
- Estimated build time: 0.1 SBU

Nano Dependencies

Optional

slang-1.4.9

Installation of Nano

Install nano by running the following commands:

```
./configure --prefix=/usr --sysconfdir=/etc/nano \
  --enable-color --enable-multibuffer --enable-nanorc &&
make
```

This package does not come with a test suite.

Now, as the root user:

```
make install &&
install -v -m644 -D nanorc.sample /etc/nano/nanorc.sample &&
install -v -m755 -d /usr/share/doc/nano-1.2.5 &&
install -v -m644 *.html /usr/share/doc/nano-1.2.5
```

Configuring nano

Config Files

/etc/nano/nanorc and ~/.nanorc

Configuration Information

Example configuration (create as a system-wide /etc/nano/nanorc or a personal ~/.nanorc file)

```
set autoindent
set const
```

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

Another example is the `nanorc.sample` file in the `/etc/nano` directory. It includes color configurations and has some documentation included in the comments.

Contents

Installed Programs: nano
Installed Libraries: None
Installed Directory: /usr/share/doc/nano

Short Descriptions

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

JOE-3.3

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://prdownloads.sourceforge.net/joe-editor/joe-3.3.tar.gz>
- Download (FTP):
- Download MD5 sum: 02221716679c039c5da00c275d61dbf4
- Download size: 468 KB
- Estimated disk space required: 6.4 MB
- Estimated build time: 0.15 SBU

Installation of JOE

Install JOE by running the following commands:

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

This package does not come with a test suite.

Now, as the root user:

```
make install
```

Configuring JOE

Config Files

/etc/joe/jmacsrc, /etc/joe/joerc, /etc/joe/jpicorc, /etc/joe/jstarrc,
/etc/joe/rjoerc, and ~/.joerc

Contents

Installed Programs: jmacs, joe, jpico, jstar, rjoe, and termidx
Installed Libraries: None
Installed Directory: /etc/joe

Short Descriptions

jmacs is a symbolic link to **joe** used to launch Emacs emulation mode.
joe is a small text editor capable of emulating WordStar, Pico, and Emacs.

- jpico** is a symbolic link to **joe** used to launch Pico emulation mode.
- jstar** is a symbolic link to **joe** used to launch WordStar emulation mode.
- rjoe** is a symbolic link to **joe** that restricts JOE to editing only files which are specified on the command-line.
- termidx** is a program used by **joe** to generate the termcap index file.

Ed-0.2

Introduction to Ed

Ed is a line-oriented text editor. It is used to create, display, modify and otherwise manipulate text files, both interactively and via shell scripts. Ed isn't something which many people use. It's described here because it can be used by the patch program if you encounter an ed-based patch file. This happens rarely because diff-based patches are preferred these days.

Package Information

- Download (HTTP): <http://ftp.gnu.org/pub/gnu/ed/ed-0.2.tar.gz>
- Download (FTP): <ftp://ftp.gnu.org/pub/gnu/ed/ed-0.2.tar.gz>
- Download MD5 sum: ddd57463774cae9b50e70cd51221281b
- Download size: 182 KB
- Estimated disk space required: 2.9 MB
- Estimated build time: 0.02 SBU

Additional Downloads

- Required Patch: <http://www.linuxfromscratch.org/blfs/downloads/6.1/ed-0.2-mkstemp-1.patch>

Installation of Ed

Ed normally uses the `mktemp` function to create temporary files in `/tmp`, but this function contains a vulnerability (see the section on Temporary Files at <http://en.tldp.org/HOWTO/Secure-Programs-HOWTO/avoid-race.html>). Apply the following patch to make Ed use `mkstemp` instead, a secure way to create temporary files:

```
patch -Np1 -i ../ed-0.2-mkstemp-1.patch
```

Install Ed by running the following commands:

```
./configure --prefix=/usr --exec-prefix="" &&  
make
```

Now, as the `root` user:

```
make install
```

Command Explanations

`--exec-prefix=""`: This forces the programs to be installed into the `/bin` directory. Having the programs available there is useful in the event of the `/usr` partition being unavailable.

Contents

Installed Programs: ed and red

Installed Libraries: None

Installed Directories: None

Short Descriptions

ed is a line-oriented text editor.

red is a restricted **ed**—it can only edit files in the current directory and cannot execute shell commands.

Bluefish-1.0.2

Introduction to Bluefish

The Bluefish package contains a powerful X Window System editor designed for web designers, but also suitable as a programmer's editor. Bluefish supports many programming and markup languages, and as such is ideal for editing XML and HTML files.

Package Information

- Download (HTTP): <http://pkedu.fbt.eitn.wau.nl/~olivier/downloads/bluefish-1.0.2.tar.bz2>
- Download (FTP): <ftp://ftp.ratisbona.com/pub/bluefish/downloads/bluefish-1.0.2.tar.bz2>
- Download MD5 sum: 281d72f5c45c913671c36bc6b7b45445
- Download size: 1.4 MB
- Estimated disk space required: 23.0 MB
- Estimated build time: 0.3 SBU

Bluefish Dependencies

Required

GTK+-2.6.7 and PCRE-6.1

Optional

GNOME Virtual File System-2.10.1 (for remote files), Aspell-0.60.3 (for spellchecking), libgnomeui-2.10.0, GNOME MIME Data-2.4.2, desktop-file-utils-0.10 and shared-mime-info-0.16

Installation of Bluefish

Install Bluefish by running the following commands:

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

This package does not come with a test suite.

Now, as the `root` user:

```
make install
```

Configuring Bluefish

Config Files

`~/.bluefish/*`

Configuration Information

The directory `~/.bluefish` is created by the program when it is first run, and the configuration files are

maintained by the program automatically to preserve settings from run to run.

Contents

Installed Program: bluefish
Installed Libraries: None
Installed Directory: /usr/share/bluefish

Short Descriptions

bluefish is an X Window System editor for markup and programming.

Other Editors

pico is a text editor installed as a part of Pine-4.63.

mcedit is a text editor installed as part of MC-4.6.1.

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 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 MD5 sum: 1c59f5b62a081cb0cb3b053c01d79529
- Download size: 118 KB
- Estimated disk space required: 2.2 MB
- Estimated build time: 0.06 SBU

Additional Downloads

- Required Patch: http://www.linuxfromscratch.org/blfs/downloads/6.1/ash-0.4.0-cumulative_fixes-1.patch

Installation of ASH

Install ASH by running the following commands:

```
patch -Np1 -i ../ash-0.4.0-cumulative_fixes-1.patch &&
make
```

Now, as the root user:

```
install -v -m 755 sh /bin/ash &&
install -v -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 -v -sf ash /bin/sh
```

Configuring ASH

Config Files

ASH sources `/etc/profile` and `$HOME/.profile`

Contents

Installed Program: ash
Installed Libraries: None
Installed Directories: None

Short Description

ash is a **sh**-compliant shell.

Tcsh-6.14.00

Introduction to Tcsh

The Tcsh package contains “an enhanced but completely compatible version of the Berkeley Unix C shell (**cs**h)”. 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 perform installation tasks.

Package Information

- Download (HTTP): <http://gd.tuwien.ac.at/utils/shells/tcsh/tcsh-6.14.00.tar.gz>
- Download (FTP): <ftp://ftp.funet.fi/pub/unix/shells/tcsh/tcsh-6.14.00.tar.gz>
- Download MD5 sum: 353d1bb7d2741bf8de602c7b6f0efd79
- Download size: 859 KB
- Estimated disk space required: 9 MB
- Estimated build time: 0.2 SBU

Installation of Tcsh

Install Tcsh by running the following commands:

```
./configure --prefix=/usr --bindir=/bin &&
make &&
sh ./tcsh.man2html
```

This package does not come with a test suite.

Now, as the `root` user:

```
make install &&
make install.man &&
ln -v -sf tcsh /bin/csh &&
ln -v -sf tcsh.1 /usr/man/man1/csh.1 &&
install -v -m755 -d /usr/share/doc/tcsh-6.14.00/html &&
install -v -m644 tcsh.html/* /usr/share/doc/tcsh-6.14.00/html &&
install -v -m644 FAQ /usr/share/doc/tcsh-6.14.00
```

Command Explanations

`--bindir=/bin`: This installs the **tcsh** program in `/bin` instead of `/usr/bin`.

`sh ./tcsh.man2html`: This creates HTML documentation from the formatted man page.

`ln -v -sf 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`, `/etc/csh.logout`, `~/.tcshrc`, `~/.cshrc`, `~/.history`, `~/.cshdirs`, `~/.login`, and `~/.logout`. More information on these files can be found in the `tcsh(1)` man page.

Configuration Information

Update `/etc/shells` to include the C shell program names (as the `root` user):

```
cat >> /etc/shells << "EOF"
/bin/tcsh
/bin/csh
EOF
```

Contents

Installed Program:	<code>tcsh</code>
Installed Libraries:	None
Installed Directory:	<code>/usr/share/doc/tcsh-6.14.00</code>

Short Descriptions

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-4.2.5

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://prdownloads.sourceforge.net/zsh/zsh-4.2.5.tar.bz2>
- Download (FTP):
- Download MD5 sum: e2060f743dcdf3b383e80e862a6548fe
- Download size: 2.0 MB
- Estimated disk space required: 24 MB
- Estimated build time: 0.5 SBU

ZSH Dependencies

Optional

PCRE-6.1

Installation of ZSH

Install ZSH by running the following commands:

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

To test the results, issue: **make check**.

Now, as the root user:

```
make install &&  
make install.info
```

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.

Configuration Information

Update `/etc/shells` to include the ZSH shell program names (as the root user):

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

```
/usr/bin/zsh  
/usr/bin/zsh-4.2.5  
EOF
```

Contents

Installed Programs: zsh and zsh-4.2.5
Installed Libraries: None
Installed Directories: /usr/lib/zsh and /usr/share/zsh

Short Description

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 libraries: 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 that needs the functionality they supply. In the BLFS book, each package is presented 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 program's 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.

PCRE-6.1

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):
- Download (FTP): `ftp://ftp.csx.cam.ac.uk/pub/software/programming/pcre/pcre-6.1.tar.bz2`
- Download MD5 sum: `069a8c34df7ec4bd0dad8f26c64c9dd3`
- Download size: 543 KB
- Estimated disk space required: 11.4 MB
- Estimated build time: 0.3 SBU

Installation of PCRE

Install PCRE by running the following commands:

```
./configure --prefix=/usr --enable-utf8 &&  
make
```

To test the results, issue: **make runtest**.

Now, as the `root` user:

```
make install &&  
install -v -m755 -d /usr/share/doc/pcre-6.1/html &&
```

```
install -v -m644 doc/html/* /usr/share/doc/pcre-6.1/html &&
install -v -m644 doc/{Tech.Notes,*.txt} /usr/share/doc/pcre-6.1
```

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-regexp` when executing `./configure` for Grep or move `libpcre` to `/lib` as follows.

```
mv -v /usr/lib/libpcre.so.* /lib/ &&
ln -v -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

Installed Programs: pcregrep, pcretest, and pcre-config
Installed Libraries: libpcre.[so,a], libpcrecpp.[so,a] and libpcreposix.[so,a]
Installed Directory: /usr/share/doc/pcre-6.1

Short Descriptions

pcregrep is a **grep** that understands Perl compatible regular expressions.
pcretest can test a Perl compatible regular expression.
pcre-config is used during the compile process of programs linking to the PCRE libraries.

Popt-1.7-5

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://ftp.debian.org/debian/pool/main/p/popt/popt_1.7.orig.tar.gz
- Download (FTP): ftp://ftp.debian.org/debian/pool/main/p/popt/popt_1.7.orig.tar.gz
- Download MD5 sum: 5988e7aeb0ae4dac8d83561265984cc9
- Download size: 562 KB
- Estimated disk space required: 5.5 MB
- Estimated build time: 0.17 SBU

Additional Downloads

- Patch level upgrade: http://ftp.debian.org/debian/pool/main/p/popt/popt_1.7-5.diff.gz

Installation of Popt

Install popt by running the following commands:

```
patch -Np1 -i ../popt_1.7-5.diff &&
./configure --prefix=/usr &&
cp configure.in configure.ac &&
touch configure.in configure.ac &&
make
```

To test the results, issue: **make check**.

Now, as the `root` user:

```
make install
```

Command Explanations

cp configure.in configure.ac: Because `configure.in` is updated with the patch, this file is needed for **make** to work properly.

touch configure.in configure.ac: Ensure file timestamps are the same.

Contents

Installed Programs: None
Installed Library: libpopt.[so,a]
Installed Directories: None

Short Descriptions

`libopt.[so,a]` 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 MD5 sum: 4fbb1a7f1257e065ca830deefe13d350
- Download size: 624 KB
- Estimated disk space required: 10.7 MB
- Estimated build time: 0.2 SBU

Installation of Slang

Install slang by running the following commands:

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

This package does not come with a test suite.

Now, as the `root` user:

```
make install
```

Now, as the unprivileged user:

```
make elf
```

And finally, as the `root` user:

```
make install-elf &&  
chmod 755 /usr/lib/libslang.so.1.4.9
```

Command Explanations

make elf and **make install-elf**: These commands create and install the dynamic shared library version of slang.

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

Installed Programs: None
Installed Library: libslang.[so,a]
Installed Directory: /usr/share/doc/slang

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): <http://gd.tuwien.ac.at/opsys/linux/gentoo/distfiles/fam-2.7.0.tar.gz>
- Download (FTP): <ftp://oss.sgi.com/projects/fam/download/stable/fam-2.7.0.tar.gz>
- Download MD5 sum: 1bf3ae6c0c58d3201afc97c6a4834e39
- Download size: 301 KB
- Estimated disk space required: 7.7 MB
- Estimated build time: 0.26 SBU

Additional Downloads

- Dnotify patch (Recommended):
<http://www.linuxfromscratch.org/blfs/downloads/6.1/fam-2.7.0-dnotify-1.patch>

FAM Dependencies

Required

portmap-5beta

Installation of FAM

Install FAM by running the following commands:

```
patch -Np1 -i ../fam-2.7.0-dnotify-1.patch &&
chmod -v 755 configure &&
autoreconf -f -i &&
./configure --prefix=/usr --sysconfdir=/etc &&
make
```

Now, as the root user:

```
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.

chmod -v 755 configure: **configure** is set to read-only and **autoreconf** will fail if the permissions aren't changed.

autoreconf -f -i: The autotools need rebuilding because the dnotify patch affects `configure.ac` and `Makefile.am`.

Configuring FAM

Config Files

`/etc/rpc,` `/etc/fam.conf,` `/etc/inetd.conf` or `/etc/xinetd.conf` or
`/etc/xinetd.d/fam`

Configuration Information

Configuring the File Alteration Monitor. Perform the following instructions as the `root` user.

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**, the following command will create the FAM file as `/etc/xinetd.d/sgi_fam` (be sure the `nogroup` group exists):

```
cat >> /etc/xinetd.d/sgi_fam << "EOF"  
# Begin /etc/xinetd.d/sgi_fam  
  
# 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  
}  
  
# End /etc/xinetd.d/sgi_fam  
EOF
```

If you do not have an **inetd** daemon installed and have no wish to install one, you can also start **famd** during system startup by installing the `/etc/rc.d/init.d/fam` init script included in the `blfs-bootscripts-6.1` package.

```
make install-fam
```

Contents

Installed Program: famd

Installed Library: libfam.[so,a]

Installed Directories: None

Short Descriptions

famd is the file alteration monitor daemon.

`libfam.[so,a]` contains functions that support the file allocation 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 MD5 sum: c7d1b9b1cbfcfbbc56c92f424c37d32c
- Download size: 743 KB
- Estimated disk space required: 14 MB
- Estimated build time: 0.3 SBU

Installation of Libxml

Install libxml by running the following commands:

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

To test the results, issue: **make check**.

Now, as the `root` user:

```
make install
```

Contents

Installed Program:	xml-config
Installed Library:	libxml.[so,a]
Installed Directories:	/usr/include/gnome-xml and /usr/share/gnome-xml

Short Descriptions

`libxml.[so,a]` provides the functions for programs to parse files that use the XML format.

Libxml2-2.6.20

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/libxml2-2.6.20.tar.bz2>
- Download (FTP): <ftp://ftp.gnome.org/pub/GNOME/sources/libxml2/2.6/libxml2-2.6.20.tar.bz2>
- Download MD5 sum: 342f722d1770071be19253f229fef677
- Download size: 3.0 MB
- Estimated disk space required: 79.3 MB
- Estimated build time: 0.50 SBU (additional 0.65 SBU to run the testsuite)

Libxml2 Dependencies

Optional

Python-2.4.1

Installation of Libxml2

Install libxml2 by running the following commands:

```
./configure --prefix=/usr --with-history &&  
make
```

To test the results, issue: **make check**.

Now, as the `root` user:

```
make install
```

Command Explanations

--with-history: Enables readline support.

Contents

Installed Programs:	xml2-config, xmllint, and xmlcatalog
Installed Libraries:	libxml2.[so,a] and optionally, the libxml2mod.[so,a] Python module
Installed Directories:	/usr/include/libxml2, /usr/share/doc/libxml2-2.6.20, and /usr/share/doc/libxml2-python-2.6.20

Short Descriptions

xml2-config	determines the compile and linker flags that should be used to compile and link programs that use <code>libxml2</code> .
xmlcatalog	is used to monitor and manipulate XML and SGML catalogs.
xmllint	parses XML files and outputs reports (based upon options) to detect errors in XML coding.
<code>libxml2.[so,a]</code>	libraries provide the functions for programs to parse files that use the XML format.

Libxslt-1.1.14

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-1.1.14.tar.gz>
- Download (FTP): <ftp://xmlsoft.org/libxslt-1.1.14.tar.gz>
- Download MD5 sum: db71660bb7d01ccd4e6be990af8d813b
- Download size: 2.6 MB
- Estimated disk space required: 36 MB
- Estimated build time: 0.32 SBU

Libxslt Dependencies

Required

libxml2-2.6.20

Optional

Python-2.4.1 and libgcrypt

Installation of Libxslt

Install libxslt by running the following commands:

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

To test the results, issue: **make check**.

Now, as the root user:

```
make install
```

Contents

Installed Programs:	xslt-config and xsltproc
Installed Libraries:	libxslt.[so,a], libxslt.[so,a] and optionally, libxsltmod.[so,a] Python modules
Installed Directories:	/usr/include/libxslt, /usr/share/doc/libxslt-1.1.14, and /usr/share/doc/libxslt-python-1.1.14

Short Descriptions

xslt-config is used to find out the pre-processor, linking and compiling flags necessary to use the libxslt libraries in 3rd-party programs.

xsltproc is used to apply XSLT stylesheets to XML documents.

`libxslt.[so,a]` provides extensions to the `libxml2` libraries to parse files that use the XSLT format.

`libexslt.[so,a]` is used to provide extensions to XSLT functions.

GMP-4.1.4

Introduction to GMP

The GMP package contains math libraries. These have useful functions for arbitrary precision arithmetic.

Package Information

- Download (HTTP): <http://ftp.gnu.org/gnu/gmp/gmp-4.1.4.tar.bz2>
- Download (FTP): <ftp://ftp.gnu.org/gnu/gmp/gmp-4.1.4.tar.bz2>
- Download MD5 sum: 0aa7d3b3f5b5ec5951e7dddd6f65e891
- Download size: 1.6 MB
- Estimated disk space required: 60.8 MB
- Estimated build time: 0.88 SBU (additional 0.81 SBU to run the testsuite)

Installation of GMP

Install GMP by running the following commands:

```
./configure --prefix=/usr --enable-cxx --enable-mpbsd &&
make
```

To test the results, issue: **make check**. Owing to various reports of mis-compilations, the maintainer strongly recommends running the test-suite and report any failures. The libraries should not be used in a production environment if there are problems running **make check**.

Now, as the `root` user:

```
make install
```

Command Explanations

`--enable-cxx`: This parameter enables C++ support by building the `libgmpxx` libraries.

`--enable-mpbsd`: This parameter enables building the Berkeley MP compatibility (`libmp`) libraries.

Contents

Installed Programs: None

Installed Libraries: `libgmp.[so,a]`, `libgmpxx.[so,a]` and `libmp.[so,a]`

Installed Directories: None

Short Descriptions

`libgmp.[so,a]` contains 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 MD5 sum: 1d1b1d5c0245b1c00aff92da751e9aa1
- Download size: 223 KB
- Estimated disk space required: 2.75 MB
- Estimated build time: 0.08 SBU

Installation of GDBM

Install GDBM by running the following commands:

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

This package does not come with a test suite.

Now, as the `root` user:

```
make BINOWN=root BINGRP=root install
```

In addition, you may need to install the DBM and NDBM compatibility headers and library since some applications look for these older dbm routines.

```
make BINOWN=root BINGRP=root install-compat
```

Command Explanations

make BINOWN=root BINGRP=root install: This command overrides the `BINOWN` and `BINGRP` variables in the `Makefile` changing ownership of the installed files to `root` instead of the `bin` user.

Contents

Installed Programs:	None
Installed Libraries:	libgdbm.[so,a] and libgdbm_compat.[so,a]
Installed Directories:	None

Short Descriptions

`libgdbm.[so,a]` contains functions to manipulate a hashed database.

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 MD5 sum: 6fe30dad87c77b91b632def29dd69ef9
- Download size: 412 KB
- Estimated disk space required: 6.4 MB
- Estimated build time: 0.19 SBU

Additional Downloads

- Required patch: <http://www.linuxfromscratch.org/blfs/downloads/6.1/glib-1.2.10-gcc34-1.patch>

Installation of GLib

Install glib by running the following commands:

```
patch -Np1 -i ../glib-1.2.10-gcc34-1.patch &&
./configure --prefix=/usr &&
make
```

To test the results, issue: **make check**.

Now, as the `root` user:

```
make install &&
chmod -v 755 /usr/lib/libgmodule-1.2.so.0.0.10
```

Contents

Installed Programs: glib-config
Installed Libraries: libglib.[so,a], libgmodule.[so,a] and libgthread.[so,a]
Installed Directories: /usr/include/glib-1.2 and /usr/lib/glib

Short Descriptions

glib-config is a tool that is used by **configure** scripts to determine the compiler and linker flags that should be used to compile and link programs that use GLib.

`libglib.[so,a]` libraries contain a low-level core library for the GIMP Toolkit.

GLib-2.6.4

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/v2.6/glib-2.6.4.tar.bz2>
- Download (FTP): <ftp://ftp.gtk.org/pub/gtk/v2.6/glib-2.6.4.tar.bz2>
- Download MD5 sum: af7eeb8aae764ff763418471ed6eb93d
- Download size: 2.3 MB
- Estimated disk space required: 40.9 MB
- Estimated build time: 2.82 SBU (includes rebuilding documentation)

Glib Dependencies

Required

pkg-config-0.19

Optional

GTK-Doc-1.3

Installation of GLib

Install glib by running the following commands:

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

To test the results, issue: **make check**.

Now, as the root user:

```
make install
```

Command Explanations

`--enable-gtk-doc`: This switch will rebuild the API documentation during the **make** command.

Contents

Installed Programs: glib-genmarshal, glib-gettextize, glib-mkenums, and gobject-query

Installed Libraries: libglib-2.0.so, libgobject-2.0.so, libgmodule-2.0.so, and libgthread-2.0.so

Installed Directories: /usr/include/glib-2.0, /usr/lib/glib-2.0, /usr/share/glib-2.0,
/usr/share/gtk-doc/html/glib, and /usr/share/gtk-doc/html/gobject

Short Descriptions

glib-genmarshal is a C code marshaller generation utility for GLib closures.
glib-gettextize is a variant of the gettext internationalization utility.
glib-mkenums is a C language enum description generation utility.
gobject-query is a small utility that draws a tree of types.
GLib libraries contain a low-level core library for the GIMP Toolkit.

LibIDL-0.8.5

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-0.8.5.tar.bz2>
- Download (FTP): <ftp://ftp.gnome.org/pub/GNOME/sources/libIDL/0.8/libIDL-0.8.5.tar.bz2>
- Download MD5 sum: c63f6513dc7789d0575bea02d62d58d7
- Download size: 332 KB
- Estimated disk space required: 4.9 MB
- Estimated build time: 0.13 SBU

LibIDL Dependencies

Required

Glib-2.6.4

Installation of LibIDL

Install libIDL by running the following commands:

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

This package does not come with a test suite.

Now, as the `root` user:

```
make install
```

Contents

Installed Program:	libIDL-config-2
Installed Library:	libIDL-2.[so,a]
Installed Directory:	/usr/include/libIDL-2.0/libIDL

Short Descriptions

libIDL-config-2 determines the compile and linker flags that should be used to compile and link programs that use libIDL-2.

libIDL-2.[so,a] libraries provide the functions to create and maintain trees of CORBA Interface

Definition Language (IDL) files.

Libcroco-0.6.0

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/0.6/libcroco-0.6.0.tar.bz2>
- Download (FTP): <ftp://ftp.gnome.org/pub/gnome/sources/libcroco/0.6/libcroco-0.6.0.tar.bz2>
- Download MD5 sum: 78fb2bf78d469df83b1fc94ce196c1c4
- Download size: 360 KB
- Estimated disk space required: 8.7 MB
- Estimated build time: 0.22 SBU

Libcroco Dependencies

Required

GLib-2.6.4 and libxml2-2.6.20

Installation of Libcroco

Install libcroco by running the following commands:

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

This package does not come with a test suite.

Now, as the `root` user:

```
make install
```

Contents

Installed Program:	<code>csslint-0.6</code>
Installed Library:	<code>libcroco.[so,a]</code>
Installed Directory:	<code>/usr/include/libcroco-0.6.0</code>

Libgsf-1.12.0

Introduction to Libgsf

The libgsf package contains `libgsf` libraries. These are 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/1.12/libgsf-1.12.0.tar.bz2>
- Download (FTP): <ftp://ftp.gnome.org/pub/gnome/sources/libgsf/1.12/libgsf-1.12.0.tar.bz2>
- Download MD5 sum: 34c4672edd2e4e814fb82d7b94d71ffd
- Download size: 428 KB
- Estimated disk space required: 10.1 MB
- Estimated build time: 0.3 SBU

Libgsf Dependencies

Required

GLib-2.6.4 and libxml2-2.6.20

Optional

GNOME Virtual File System-2.10.1 (required for GNOME-2 support) and GTK-Doc-1.3

Installation of Libgsf

Install libgsf by running the following commands:

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

This package does not come with a test suite.

Now, as the `root` user:

```
make install
```

Contents

Installed Programs:	None
Installed Libraries:	<code>libgsf-1.[so,a]</code> and optionally, <code>libgsf-gnome-1.[so,a]</code>
Installed Directories:	<code>/usr/include/libgsf-1</code> and <code>/usr/share/gtk-doc/html/gsf</code>

Libglade-2.5.1

Introduction to Libglade

The libglade package contains libglade libraries. These are useful for loading Glade interface files in a program at runtime.

Package Information

- Download (HTTP): <http://ftp.gnome.org/pub/GNOME/sources/libglade/2.5/libglade-2.5.1.tar.bz2>
- Download (FTP): <ftp://ftp.gnome.org/pub/GNOME/sources/libglade/2.5/libglade-2.5.1.tar.bz2>
- Download MD5 sum: e4734a59f1f2308d7714dc0ebf8163f1
- Download size: 317 KB
- Estimated disk space required: 5.1 MB
- Estimated build time: 0.15 SBU

Libglade Dependencies

Required

libxml2-2.6.20 and GTK+-2.6.7

Optional

Python-2.4.1 and GTK-Doc-1.3

Installation of Libglade

Install libglade by running the following commands:

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

Now, as the root user:

```
make install
```

Command Explanations

`--enable-gtk-doc`: This switch can be added to rebuild the HTML documentation.

Contents

Installed Program: libglade-convert (requires **python** and `pyexpat.so`)

Installed Library: libglade-2.0.[so,a]

Installed Directories: `/usr/include/libglade-2.0`, `/usr/share/xml/libglade`, and `/usr/share/gtk-doc/html/libglade`

Short Descriptions

libglade-convert is used to convert old Glade interface files to Glade-2.0 standards.

`libglade-2.0.[so,a]` contain the functions necessary to load Glade interface files.

Expat-1.95.8

Introduction to Expat

The expat package contains a stream oriented C library for parsing XML.

Package Information

- Download (HTTP): <http://prdownloads.sourceforge.net/expat/expat-1.95.8.tar.gz>
- Download (FTP):
- Download MD5 sum: aff487543845a82fe262e6e2922b4c8e
- Download size: 314 KB
- Estimated disk space required: 4.2 MB
- Estimated build time: 0.08 SBU

Expat Dependencies

Optional

Check (for running the test suite)

Installation of Expat

Install expat by running the following commands:

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

To test the results, issue: **make check**.

Now, as the `root` user:

```
make install
```

Contents

Installed Program:	xmlwf
Installed Library:	libexpat.[so,a]
Installed Directories:	None

Short Descriptions

`xmlwf` is a non-validating utility to check whether or not XML documents are well formed.

`libexpat.[so,a]` contains API functions for parsing XML.

Libesmtp-1.0.3r1

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-1.0.3r1.tar.bz2>
- Download (FTP):
- Download MD5 sum: c07aa79293aa36298626fe5e68d6bfba
- Download size: 270 KB
- Estimated disk space required: 6.9 MB
- Estimated build time: 0.16 SBU

Libesmtp Dependencies

Optional

OpenSSL-0.9.7g

Installation of Libesmtp

Install libesmtp by running the following commands:

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

This package does not come with a test suite.

Now, as the `root` user:

```
make install
```

Contents

Installed Program:	libesmtp-config
Installed Libraries:	libesmtp.[so,a] and libesmtp SASL plugins
Installed Directory:	/usr/lib/esmtp-plugins

Short Descriptions

libesmtp-config	displays version information and the options used to compile libesmtp.
libesmtp.[so,a]	is used to manage submission of electronic mail to a Mail Transport Agent.
libesmtp SASL plugins	are used to integrate libesmtp with SASL authentication.

Aspell-0.60.3

Introduction to Aspell

The Aspell package contains an interactive spell checking program and the Aspell libraries. Aspell can either be used as a library or as an independent spell checker.

Package Information

- Download (HTTP): <http://ftp.gnu.org/gnu/aspell/aspell-0.60.3.tar.gz>
- Download (FTP): <ftp://ftp.gnu.org/gnu/aspell/aspell-0.60.3.tar.gz>
- Download MD5 sum: ca44ac2fcfdc7213e03d3b5610ce141a
- Download size: 1.6 MB
- Estimated disk space required: 26.0 MB (Additional 8 MB for en dict)
- Estimated build time: 0.62 SBU

Additional Downloads

You'll need to download at least one dictionary. The link below will take you to a page containing links to dictionaries in many languages.

- Aspell dictionaries: <ftp://ftp.gnu.org/gnu/aspell/dict>

Aspell Dependencies

Required

which-2.16

Installation of Aspell

Install Aspell by running the following commands:

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

Now, as the root user:

```
make install
```

If you do not plan to install Ispell, then copy the wrapper script **ispell**:

```
install -v -m 755 scripts/ispell /usr/bin/
```

If you do not plan to install Spell, then copy the wrapper script **spell**:

```
install -v -m 755 scripts/spell /usr/bin/
```

Configuring Aspell

Configuration Information

After Aspell is installed, you must set up at least one dictionary. Install one or more dictionaries by running the following commands:

```
./configure &&
make
```

Now, as the `root` user:

```
make install
```

Contents

Installed Programs:	aspell, aspell-import, precat, preunzip, prezip, prezip-bin, pspell-config, run-with-aspell, word-list-compress and optionally, ispell and spell
Installed Libraries:	libaspell.so and libpspell.so
Installed Directories:	/usr/include/pspell and /usr/lib/aspell-0.60

Short Descriptions

aspell	is a utility that can function as an ispell -a replacement, as an independent spell checker, as a test utility to test out Aspell features, and as a utility for managing dictionaries.
ispell	is a wrapper around aspell to invoke it in ispell compatible mode.
spell	is a wrapper around aspell to invoke it in spell compatible mode.
aspell-import	imports old personal dictionaries into Aspell.
precat	decompresses a prezipped file to stdout.
preunzip	decompresses a prezipped file.
prezip	is a prefix delta compressor, used to compress sorted word lists or other similar text files.
prezip-bin	is called by the various wrapper scripts to perform the actual compressing and decompressing.
pspell-config	displays information about the <code>libpspell</code> installation, mostly for use in build scripts.
run-with-aspell	is a script to help use Aspell as an ispell replacement.
word-list-compress	compresses or decompresses sorted word lists for use with the Aspell spell checker.
<code>libaspell.so</code>	contains spell checking API functions.
<code>libpspell.so</code>	is an interface to the <code>libaspell</code> library. All the spell checking functionality is

now in `libaspell` but this library is included for backward compatibility.

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 MD5 sum: d5d867e62776524f60b3b5dcc3d8014f
- Download size: 1.2 MB
- Estimated disk space required: 11 MB
- Estimated build time: less than 0.1 SBU

Installation of Ispell

The first step is to create `local.h`.

```
sed -e "s:/usr/local:/usr:g" -e "s:/lib:/share/ispell:" \
    local.h.linux > local.h
```

By default, ispell only installs an American English dictionary. To set up other languages, check out the `config.X` file for the `#define` entry to append to `local.h`.

Build ispell using the following commands:

```
make
```

To test the build, issue: **make test**.

Now, as the `root` user:

```
make install
```

Command Explanations

`sed -e "s:/usr/local:/usr:g" -e "s:/lib:/share/ispell:" local.h.linux > local.h`: This command corrects the installation directories of the package.

Contents

Installed Program:	ispell
Installed Libraries:	None
Installed Directory:	/usr/share/ispell

Short Descriptions

ispell is used for spell checking.

SLIB-3a1

Introduction to SLIB

The SLIB package is a portable library for the programming language Scheme. It provides a platform independent framework for using “packages” of Scheme procedures and syntax. SLIB contains useful packages for all Scheme implementations, including Guile. Its catalog can be transparently extended to accommodate packages specific to a site, implementation, user or directory.

Package Information

- Download (HTTP): <http://swiss.csail.mit.edu/ftplib/scm/OLD/slib3a1.tar.gz>
- Download (FTP):
- Download MD5 sum: dc1aa0ffb9e2414223ceefc315f6baf9
- Download size: 705 KB
- Estimated disk space required: 8.6 MB
- Estimated build time: 0.01 SBU

Additional Downloads

- Required Patch: http://www.linuxfromscratch.org/blfs/downloads/6.1/slib-3a1-automate_install-1.patch

SLIB Dependencies

Required

Guile-1.6.7

Installation of SLIB

Install SLIB by issuing the following commands:

```
patch -Np1 -i ../slib-3a1-automate_install-1.patch &&
make
```

Now, as the `root` user:

```
make prefix=/usr/ install &&
make prefix=/usr/ catalogs &&
make prefix=/usr/ installinfo
```

Command Explanations

`make prefix=/usr/ catalogs`: This command builds the SLIB Scheme implementation catalog.

`make prefix=/usr/ installinfo`: This commands installs the **info** documentation.

Contents

Installed Program: slib
Installed Libraries: a Scheme library system.
Installed Directory: /usr/share/guile/slib

Short Descriptions

slib is a shell script used to initialize SLIB in a named Scheme implementation. It can also be used to initialize an SLIB session using a given executable.

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 MD5 sum: bf29b8b563cc27d9f7fd90a6243653aa
- Download size: 403 KB
- Estimated disk space required: 3.1 MB
- Estimated build time: 0.1 SBU

G-Wrap Dependencies

Required

Guile-1.6.7

Optional

GLib-1.2.10, GTK+-1.2.10 and guile-gtk

Installation of G-Wrap

Install G-Wrap by running the following commands:

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

To test the results, issue: **make check**.

Now, as the `root` user:

```
make install
```

Contents

Installed Program:	<code>g-wrap-config</code>
Installed Libraries:	<code>/usr/lib/libgw-*.so</code> and <code>/usr/lib/libgwrap-*.so</code>
Installed Directories:	<code>/usr/include/g-wrap</code> and <code>/usr/share/guile/g-wrap</code>

Short Descriptions

g-wrap-config is a tool to generate CFLAGS for linking C code to the Scheme runtime libraries.

LZO-2.01

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-2.01.tar.gz>
- Download (FTP): <ftp://ftp.uni-koeln.de/util/arc/lzo-2.01.tar.gz>
- Download MD5 sum: 0068c3f5a6325323dcdad3a4c52ed51e
- Download size: 591 KB
- Estimated disk space required: 8.7 MB
- Estimated build time: 0.28 SBU

LZO Dependencies

Optional

NASM-0.98.39 and Dmalloc

Installation of LZO

Install LZO by running the following commands:

```
./configure --prefix=/usr --enable-shared &&  
make
```

Now, as the root user:

```
make install &&  
install -v -m755 -d /usr/share/doc/lzo-2.01 &&  
install -v -m644 doc/* /usr/share/doc/lzo-2.01
```

Contents

Installed Programs:	None
Installed Library:	liblzo2.[so,a]
Installed Directory:	/usr/share/doc/lzo-2.01

Short Descriptions

liblzo2.[so,a] is a data compression and decompression library.

Libusb-0.1.10a

Introduction to Libusb

The libusb package contains a library used by some applications for USB device access.

Package Information

- Download (HTTP): <http://prdownloads.sourceforge.net/libusb/libusb-0.1.10a.tar.gz>
- Download (FTP):
- Download MD5 sum: c6062b29acd2cef414bcc34e0decbdd1
- Download size: 375 KB
- Estimated disk space required: 7.4 MB (additional 1.3 MB to install documentation)
- Estimated build time: 0.1 SBU

Libusb Dependencies

Optional (Required to Build the HTML User Manual)

OpenJade-1.3.2 and DocBOOK SGML DTD-4.2

Optional (Required to Build the API Documentation)

Doxygen-1.4.3 and GraphViz

Installation of Libusb

Install libusb by running the following commands:

```
./configure --prefix=/usr --disable-build-docs &&  
make
```

If you wish to build the API documentation, issue the following command:

```
make apidox
```

Now, as the root user:

```
make install
```

If you built the HTML user manual, install it using the following commands as the root user:

```
install -v -d -m755 /usr/share/doc/libusb-0.1.10a/html &&  
install -v -m644 doc/html/* /usr/share/doc/libusb-0.1.10a/html
```

If you built the API documentation, install it using the following commands as the root user:

```
install -v -d -m755 /usr/share/doc/libusb-0.1.10a/apidocs &&  
install -v -m644 apidocs/html/* \  
/usr/share/doc/libusb-0.1.10a/apidocs
```

Command Explanations

`--disable-build-docs`: This switch avoids building the HTML user manual. If you wish to build the user manual, you may need to remove the OpenSP catalog definitions from the system SGML catalogs. Use the following command before building the package to accomplish this:

```
sed -i.orig \
    -e "/CATALOG \\/etc\\/sgml\\/OpenSP-1.5.1.cat/d" \
    /etc/sgml/catalog \
    /etc/sgml/sgml-docbook.cat
```

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, ensure the `usb` group exists on your system. If necessary, create the `usb` group using the following command:

```
groupadd -g 14 usb
```

Ensure that you have compiled the “USB device filesystem” directly into the kernel or compiled it as a module (listing the resulting “usbcore” module in the `/etc/sysconfig/modules` file). You should also have an entry similar to the line below in your `/etc/fstab` file:

```
usbfs /proc/bus/usb usbfs devgid=14,devmode=0660 0 0
```

Contents

Installed Program:	<code>usb-config</code>
Installed Libraries:	<code>libusb.[so,a]</code> and <code>libusbpp.[so,a]</code>
Installed Directory:	<code>/usr/share/doc/libusb-0.1.10a</code>

Short Descriptions

usb-config is a script that provides the right compiler and linker flags for programs using `libusb`.
`libusb.[so,a]` libraries contain C functions for accessing USB hardware.

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.photopost.com/jpegsrc.v6b.tar.gz>
- Download (FTP): <ftp://ftp.uu.net/graphics/jpeg/jpegsrc.v6b.tar.gz>
- Download MD5 sum: dbd5f3b47ed13132f04c685d608a7547
- Download size: 599 KB
- Estimated disk space required: 4.6 MB
- Estimated build time: 0.15 SBU

Installation of Libjpeg

Install libjpeg by running the following commands:

```
./configure --prefix=/usr --enable-static --enable-shared &&  
make
```

To test the results, issue: **make test**.

Now, as the `root` user:

```
make install
```

Command Explanations

--enable-static *--enable-shared*: These switches tell libjpeg to build both shared and static libraries.

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

Installed Programs: cjpeg, djpeg, jpegtran, rdjpgcom, and wrjpgcom
Installed Library: libjpeg.[so,a]
Installed Directories: None

Short Descriptions

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 decompresses image files from JPEG/JFIF format to either PPM (PBMPLUS color format), PGM (PBMPLUS gray-scale format), BMP, or Targa format.

jpegtran is used for lossless transformation of JPEG files.

rdjpgcom displays text comments from within a JPEG file.

wrjpgcom inserts text comments into a JPEG file.

libjpeg.[so,a] library is used by many programs for reading and writing JPEG format files.

Libpng-1.2.8

Introduction to Libpng

The libpng package contains libraries used by other programs for reading and writing PNG files.

Package Information

- Download (HTTP): <http://prdownloads.sourceforge.net/libpng/libpng-1.2.8.tar.bz2>
- Download (FTP):
- Download MD5 sum: 00cea4539bea4bd34cbf8b82ff9589cd
- Download size: 376 KB
- Estimated disk space required: 5.75 MB
- Estimated build time: 0.13 SBU

Additional Downloads

- Required Patch to explicitly link libpng against system libraries:
http://www.linuxfromscratch.org/blfs/downloads/6.1/libpng-1.2.8-link_to_proper_libs-1.patch

Installation of Libpng

Install libpng by running the following commands:

```
patch -Np1 -i ../libpng-1.2.8-link_to_proper_libs-1.patch &&
make prefix=/usr ZLIBINC= \
  ZLIBLIB= -f scripts/makefile.linux
```

To test the results, issue: **make -f scripts/makefile.linux test**.

Now, as the `root` user:

```
make prefix=/usr install -f scripts/makefile.linux
```

Command Explanations

`ZLIBINC=;` `ZLIBLIB=`: This forces libpng to look for the Zlib includes and libraries in the default locations (`/usr/include` and `/usr/lib` respectively).

`-f scripts/makefile.linux`: This points **make** at the Linux version of the Makefile as libpng doesn't use an Autoconf routine. Instead, it has 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

Installed Programs:	libpng-config and libpng12-config
Installed Libraries:	libpng.[so,a] and libpng12.[so,a]
Installed Directory:	/usr/include/libpng12

Short Descriptions

libpng-config

is a symlink to **libpng12-config**.

libpng12-config

provides configuration information for libpng.

libpng.[so,a] and
libpng12.[so,a]

are 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.

Libtiff-3.7.3

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):
- Download (FTP): <ftp://ftp.remotesensing.org/libtiff/tiff-3.7.3.tar.gz>
- Download MD5 sum: 8a4511793f4b20b91ddee0e53bc08dea
- Download size: 1.3 MB
- Estimated disk space required: 17.7 MB
- Estimated build time: 0.5 SBU

Libtiff Dependencies

Optional

libjpeg-6b, X (XFree86-4.5.0 or X.org-6.8.2) and freeglut-2.4.0

Installation of Libtiff

Install libtiff by running the following commands:

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

To test the results, issue: **make check**.

Now, as the `root` user:

```
make install
```

Contents

Installed Programs:	bmp2tiff, fax2ps, fax2tiff, gif2tiff, pal2rgb, ppm2tiff, ras2tiff, raw2tiff, rgb2ycbcr, thumbnail, tiff2bw, tiff2pdf, tiff2ps, tiff2rgba, tiffcmp, tiffcp, tiffdither, tiffdump, tiffgt, tiffinfo, tiffmedian, tiffset, and tiffsplit
Installed Libraries:	libtiff.[so,a] and libtiffxx.[so,a]
Installed Directory:	/usr/share/doc/tiff-3.7.3

Short Descriptions

bmp2tiff	converts a Microsoft Windows Device Independent Bitmap image file to a TIFF image.
-----------------	------------------------------------------------------------------------------------

fax2ps	converts a TIFF facsimile to compressed PostScript file.
fax2tiff	creates a TIFF Class F fax file from raw fax data.
gif2tiff	creates a TIFF file from a GIF87 format image file.
pal2rgb	converts a palette color TIFF image to a full color image.
ppm2tiff	creates a TIFF file from a PPM image file.
ras2tiff	creates a TIFF file from a Sun rasterfile.
raw2tiff	converts a raw byte sequence into TIFF.
rgb2ycbcr	converts non-YCbCr TIFF images to YCbCr TIFF images.
thumbnail	creates a TIFF file with thumbnail images.
tiff2bw	converts a color TIFF image to grayscale.
tiff2pdf	converts a TIFF image to a PDF document.
tiff2ps	converts a TIFF image to a PostScript file.
tiff2rgba	converts a wide variety of TIFF images into an RGBA TIFF image.
tiffcmp	compares two TIFF files.
tiffcp	copies (and possibly converts) a TIFF file.
tiffdither	converts a grayscale image to bilevel using dithering.
tiffdump	prints verbatim information about TIFF files.
tiffgt	displays an image stored in a TIFF file in an X window.
tiffinfo	prints information about TIFF files.
tiffmedian	applies the median cut algorithm to data in a TIFF file.
tiffset	sets the value of a TIFF header to a specified value.
tiffsplit	splits a multi-image TIFF into single-image TIFF files.
<code>libtiff.[so,a]</code>	contains the API functions used by the libtiff programs as well as other programs to read and write TIFF files.
<code>libtiffxx.[so,a]</code>	contains the C++ API functions used by programs to read and write TIFF files.

Libungif-4.1.3

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 claimed 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://prdownloads.sourceforge.net/libungif/libungif-4.1.3.tar.bz2>
- Download (FTP):
- Download MD5 sum: 8c198831cc0495596c78134b8849e9ad
- Download size: 430 KB
- Estimated disk space required: 6.2 MB
- Estimated build time: 0.16 SBU

Libungif Dependencies

Optional

X (XFree86-4.5.0 or X.org-6.8.2)

Installation of Libungif

Install libungif by running the following commands:

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

This package does not come with a test suite.

Now, as the root user:

```
make install &&  
install -v -m755 -d /usr/share/doc/libungif-4.1.3/html &&  
install -v -m644 doc/*.{png,html} \  
    /usr/share/doc/libungif-4.1.3/html &&  
install -v -m644 doc/*.txt \  
    /usr/share/doc/libungif-4.1.3
```

Contents

Installed Programs: gif2epsn, gif2ps, gif2rgb, gif2x11, gifasm, gifbg, gifburst, gifclip, gifclrm, gifcolor,

gifcomb, gifcompose, giffiltr, giffix, gifflip, gifhisto, gifinfo, gifinter, gifinto, gifovly, gifpos, gifrotat, gifrsize, gifspnge, gifttext, gifwedge, icon2gif, raw2gif, rgb2gif, and text2gif

Installed Library: libungif.[so,a]
Installed Directory: /usr/share/doc/libungif-4.1.3

Short Descriptions

gif2epsn dumps images saved as GIF files on Epson type printers.

gif2ps print GIF files on laser printers supporting PostScript.

gif2rgb convert images saved as GIF to 24-bit RGB image(s).

gif2x11 display images saved as GIF files under X Window System.

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.

gifclrm 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.

gifo-libungifvly 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.

gifrsize 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.

Giflib-4.1.3

Introduction to Giflib

The giflib package contains libraries for reading and writing GIFs 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.

Package Information

- Download (HTTP): <http://prdownloads.sourceforge.net/libungif/giflib-4.1.3.tar.bz2>
- Download (FTP):
- Download MD5 sum: 22efc9599ccf91d288374dcf0679abf1
- Download size: 440 KB
- Estimated disk space required: 6.2 MB
- Estimated build time: 0.16 SBU

Giflib Dependencies

Optional

X (XFree86-4.5.0 or X.org-6.8.2)

Installation of Giflib

Install giflib by running the following commands:

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

Now, as the root user:

```
make install &&
install -v -m755 -d /usr/share/doc/giflib-4.1.3/html &&
install -v -m644 doc/*.{png,html} \
    /usr/share/doc/giflib-4.1.3/html &&
install -v -m644 doc/*.txt \
    /usr/share/doc/giflib-4.1.3
```

Contents

Installed Programs:	gif2epsn, gif2ps, gif2rgb, gif2x11, gifasm, gifbg, gifburst, gifclip, gifclrm, gifcolor, gifcomb, gifcompose, giffiltr, giffix, gifflip, gifhisto, gifinfo, gifinter, gifinto, gifovly, gifpos, gifrotat, gifsize, gifspnge, giftext, gifwedge, icon2gif, raw2gif, rgb2gif, and text2gif
Installed Library:	libgif.[so,a]
Installed Directory:	/usr/share/doc/giflib-4.1.3

Short Descriptions

gif2epsn	dumps images saved as GIF files on Epson type printers.
gif2ps	prints GIF files on laser printers supporting PostScript.
gif2rgb	converts images saved as GIF to 24-bit RGB images.
gif2x11	displays images saved as GIF files under X Window System.
gifasm	assembles multiple GIFs into one, or burst a multiple-image GIF.
gifbg	generates a single-color test pattern GIF.
gifburst	bursts a GIF image into subrectangles.
gifclip	clips or crops a GIF image.
gifclrmp	modifies GIF image colormaps.
gifcolor	generates color test patterns.
gifcomb	combines two GIF images of exactly the same size into one.
gifcompose	uses giflib tools to compose images.
giffiltr	is a template for filtering a GIF sequentially.
giffix	clumsily attempts to fix truncated GIF images.
gifflip	flips a GIF image along the X or Y axis or rotates an image by 90 degrees.
gifhisto	generate a color-frequency histogram from a GIF.
gifinfo	gives information about a GIF file.
gifinter	converts between interlaced and non-interlaced images.
gifinto	is an end-of-pipe fitting for GIF-processing pipelines.
gifovly	generates one composite GIF from a multiple-image GIF.
gifpos	changes a GIF's screen size or reconditions it.
gifrotat	rotates a GIF through any desired angle.
gifrsize	resizes a GIF by deletion or duplication of bits.
gifspnge	is a template for filtering a GIF with in-core operations.
gifttext	prints (text only) general information about a GIF file.
gifwedge	creates a test GIF image resembling a color monitor test pattern.
icon2gif	is a converter/deconverter to/from an editable text format.
raw2gif	converts raw 8-bit image data into GIF files.
rgb2gif	converts 24 bit images to a GIF image using color quantization.
text2gif	generates GIF images out of regular text in 8x8 font.

`libgif.[so,a]` contains API functions required by the giflib programs and any other programs needing library functionality to read, write and manipulate GIF images.

Lcms-1.14

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-1.14.tar.gz>
- Download (FTP):
- Download MD5 sum: 5a803460aeb10e762d97e11a37462a69
- Download size: 654 KB
- Estimated disk space required: 18.4 MB
- Estimated build time: 0.34 SBU (includes building the Python module)

Additional Downloads

- Required patch (if building the Python module):
<http://www.linuxfromscratch.org/blfs/downloads/6.1/lcms-1.14-gcc343-1.patch>

Lcms Dependencies

Optional

`libtiff-3.7.3`, `libjpeg-6b` and `Python-2.4.1` (with SWIG)

Installation of Lcms

Install `lcms` by running the following commands:

```
patch -Np1 -i ../lcms-1.14-gcc343-1.patch &&
./configure --prefix=/usr &&
make
```

To test the results, issue: **make check**.

Now, as the `root` user:

```
make install &&
install -v -m755 -d /usr/share/doc/lcms-1.14 &&
install -v -m644 doc/* /usr/share/doc/lcms-1.14
```

Contents

Installed Programs: `icc2ps`, `icclink`, `icctrans`, `wtpt` and optionally, `tifficc` and `jpegicc`
Installed Libraries: `liblcms.[so,a]` and the optional `_lcms.so` Python module
Installed Directory: `/usr/share/doc/lcms-1.14`

Short Descriptions

icc2ps	generates PostScript CRD or CSA from ICC profiles.
icclink	links two or more profiles into a single device link profile.
icctrans	is a color space conversion calculator.
wtpt	shows media white of profiles, identifying black body locus.
tifficc	is an ICC profile applier for TIFF files.
jpegicc	is an ICC profile applier for JPEG files.
<code>liblcms.[so,a]</code>	is used by the lcms programs as well as other programs to provide color management facilities.

Libmng-1.0.9

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://prdownloads.sourceforge.net/libmng/libmng-1.0.9.tar.gz>
- Download (FTP):
- Download MD5 sum: ff1205ef70855a75c098ea09690413c6
- Download size: 554 KB
- Estimated disk space required: 7.1 MB
- Estimated build time: 0.11 SBU

Libmng Dependencies

Required

libjpeg-6b and lcms-1.14

Installation of Libmng

Install libmng by running the following commands:

```
cp makefiles/makefile.linux Makefile &&
make
```

Now, as the root user:

```
make prefix=/usr install &&
install -v -m644 doc/man/*.3 /usr/share/man/man3 &&
install -v -m644 doc/man/*.5 /usr/share/man/man5 &&
install -v -m755 -d /usr/share/doc/libmng-1.0.9 &&
install -v -m644 doc/*.{png,txt} /usr/share/doc/libmng-1.0.9
```

Command Explanations

cp makefiles/makefile.linux Makefile: There are no autotools shipped with this package. The Linux Makefile is copied to the root of the source tree, facilitating the installation.

install ...: The documentation files are not installed by the installation procedure, so they are copied manually.

Contents

Installed Programs: None

Installed Library: libmng.[so,a]

Installed Directory: /usr/share/doc/libmng-1.0.9

Short Descriptions

`libmng.[so,a]` provides functions for programs wishing to read and write MNG files which are animation files without the patent problems associated with certain other formats.

FreeType-2.1.10

Introduction to FreeType2

The FreeType2 package contains a library to allow applications to properly render TrueType fonts.

Package Information

- Download (HTTP): <http://prdownloads.sourceforge.net/freetype/freetype-2.1.10.tar.bz2>
- Download (FTP):
- Download MD5 sum: a4012e7d1f6400df44a16743b11b8423
- Download size: 1.0 MB
- Estimated disk space required: 19.1 MB
- Estimated build time: 0.3 SBU

Installation of FreeType2

Install FreeType2 by running the following commands:

```
sed -i -r 's:.*(.*BYTE.*) .*:~1:' \
    include/freetype/config/ftoption.h &&
./configure --prefix=/usr &&
make
```

This package does not come with a test suite.

Now, as the root user:

```
make install
```

Command Explanations

`sed -i -r 's:.*(.*BYTE.*) .*:~1:' include/freetype/config/ftoption.h`: Uncomments configuration options.

Contents

Installed Program: freetype-config
Installed Library: libfreetype.[so,a]
Installed Directory: /usr/include/freetype2

Short Descriptions

`freetype-config` is used to get FreeType compilation and linking information.
`libfreetype.[so,a]` contains functions to add TrueType font capabilities to the X Window system.

Fontconfig-2.3.2

Introduction to Fontconfig

The Fontconfig package is a library for configuring and customizing font access.

Package Information

- Download (HTTP): <http://fontconfig.org/release/fontconfig-2.3.2.tar.gz>
- Download (FTP):
- Download MD5 sum: 7354f9f125ea78a8f2851cb9c31d4866
- Download size: 942 KB
- Estimated disk space required: 13.0 MB
- Estimated build time: 0.2 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 2.3.90 is a beta release and the most current release is of the form 2.3.2

Fontconfig Dependencies

Required

FreeType-2.1.10 and expat-1.95.8

Optional

DocBook-utils-0.6.14



Note

If you have DocBook-utils installed and you remove the `--disable-docs` parameter from the **configure** command below, you must have SGMLSpn and JadeTeX-3.13 installed also, or the Fontconfig build will fail.

Installation of Fontconfig

Install Fontconfig by running the following commands:

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

To test the results, issue: **make check**.

Now, as the root user:

```
make install &&
```

```
install -v -m755 -d /usr/share/doc/fontconfig/fontconfig-devel &&
install -v -m644 doc/*.3 /usr/share/man/man3 &&
install -v -m644 doc/*.5 /usr/share/man/man5 &&
install -v -m644 doc/*.{html,pdf,txt} /usr/share/doc/fontconfig &&
install -v -m644 doc/fontconfig-devel/* \
    /usr/share/doc/fontconfig/fontconfig-devel
```

Command Explanations

`--disable-docs`: This switch avoids building the documentation (the release tarball includes pre-generated documentation).

Configuring Fontconfig

Config Files

`/etc/fonts/*` and `/etc/fonts/conf.d/*`

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, create (or update) the `/etc/fonts/local.conf` file with your local information. The default location of fonts in Fontconfig is:

- `/usr/share/fonts`
- `~/.fonts`



Note

X also includes an internal (and older) version of Fontconfig and unless it is explicitly disabled when building Xorg or XFree86, the internal version is created leaving two slightly incompatible libraries on your system. It is recommended that you only install one version.

Contents

Installed Programs: `fc-cache`, `fc-list`, and `fc-match`
Installed Library: `libfontconfig.[so,a]`
Installed Directories: `/etc/fonts` and `/usr/include/fontconfig`

Short Descriptions

fc-cache is used to create font information caches.
fc-list is used to create font lists.
fc-match is used to match available fonts, or find fonts that match a given pattern.
libfontconfig.[so,a] contains functions used by the Fontconfig programs and also by other programs

to configure or customize font access.

Libart_lgpl-2.3.17

Introduction to Libart_lgpl

The `libart_lgpl` package contains the `libart` libraries. These are useful for high-performance 2D graphics.

Package Information

- Download (HTTP): http://ftp.gnome.org/pub/GNOME/sources/libart_lgpl/2.3/libart_lgpl-2.3.17.tar.bz2
- Download (FTP): ftp://ftp.gnome.org/pub/GNOME/sources/libart_lgpl/2.3/libart_lgpl-2.3.17.tar.bz2
- Download MD5 sum: `dfca42529393c8a8f59dc4dc10675a46`
- Download size: 289 KB
- Estimated disk space required: 4.7 MB
- Estimated build time: 0.14 SBU

Installation of Libart_lgpl

Install `libart_lgpl` by running the following commands:

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

This package does not come with a test suite.

Now, as the `root` user:

```
make install
```

Contents

Installed Program:	<code>libart2-config</code>
Installed Library:	<code>libart_lgpl_2.[so,a]</code>
Installed Directory:	<code>/usr/include/libart-2.0</code>

Short Descriptions

`libart_lgpl_2.[so,a]` is used as the anti-aliased render engine for `libgnomecanvas` and as a graphics support library for many other packages.

Librsvg-2.9.5

Introduction to Librsvg

The librsvg package contains librsvg libraries and tools used to manipulate, convert and view Scalable Vector Graphic (SVG) images.

Package Information

- Download (HTTP): <http://ftp.gnome.org/pub/GNOME/sources/librsvg/2.9/librsvg-2.9.5.tar.bz2>
- Download (FTP): <ftp://ftp.gnome.org/pub/GNOME/sources/librsvg/2.9/librsvg-2.9.5.tar.bz2>
- Download MD5 sum: 44799d75e940eb4150acdae4f63cbe2a
- Download size: 392 KB
- Estimated disk space required: 9.8 MB
- Estimated build time: 0.3 SBU

Librsvg Dependencies

Required

GTK+-2.6.7, libxml2-2.6.20, libart_lgpl-2.3.17 and popt-1.7-5

Optional

libcoco-0.6.0, libgsf-1.12.0, GNOME Virtual File System-2.10.1, libgnomeprintui-2.10.2, Mozilla-1.7.8, GTK-Doc-1.3 and DocBook-utils-0.6.14

Installation of Librsvg

Install librsvg by running the following commands:

```
./configure --prefix=/usr --sysconfdir=/etc \
  --disable-gtk-doc &&
make
```

Now, as the root user:

```
make install
```

Command Explanations

--disable-gtk-doc: This option prevents the rebuilding of documentation during the **make** command.

Contents

Installed Programs: rsvg and rsvg-view
Installed Libraries: librsvg-2.[so,a], GTK+ modules and Mozilla plugins
Installed Directories: /usr/include/librsvg-2 and /usr/share/gtk-doc/html/rsvg

Short Descriptions

rsvg is used to convert SVG images into PNG, JPEG and ICO raster images.

rsvg-view is used to view an SVG file in an X window.

`librsvg-2.[so,a]` libraries provide the functions to render Scalable Vector Graphics.

Imlib-1.9.15

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-1.9.15.tar.bz2>
- Download (FTP): <ftp://ftp.gnome.org/pub/GNOME/sources/imlib/1.9/imlib-1.9.15.tar.bz2>
- Download MD5 sum: 7db987e6c52e4daf70d7d0f471238eae
- Download size: 668 KB
- Estimated disk space required: 12 MB
- Estimated build time: 0.43 SBU

Imlib Dependencies

Required

GTK+-1.2.10, and libungif-4.1.3 or giflib-4.1.3

Installation of Imlib

Install Imlib by running the following commands:

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

This package does not come with a test suite.

Now, as the root user:

```
make install &&
install -v -m755 -d /usr/share/doc/imlib-1.9.15 &&
install -v -m644 doc/{index.html,*.gif} /usr/share/doc/imlib-1.9.15
```

Command Explanations

`--sysconfdir=/etc/imlib`: This installs and combines the configuration files into `/etc/imlib` instead of `/usr/etc`.

Configuring Imlib

Config Files

`/etc/imlib/imrc`

Contents

Installed Programs: imlib-config and imlib_config
Installed Libraries: libgdk_imlib.[so,a], libimlib-*. [so,a], and libImlib.[so,a]
Installed Directories: /etc/imlib and /usr/share/doc/imlib-1.9.15

Short Descriptions

`libimlib-*. [so,a]` 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://prdownloads.sourceforge.net/aa-project/aalib-1.4rc5.tar.gz>
- Download (FTP): <ftp://ftp.ratmir.tver.ru/pub/FreeBsd/ports/distfiles/aalib-1.4rc5.tar.gz>
- Download MD5 sum: 9801095c42bba12edebd1902bcf0a990
- Download size: 388 KB
- Estimated disk space required: 6.5 MB
- Estimated build time: 0.15 SBU

AAlib Dependencies

Optional

X (XFree86-4.5.0 or X.org-6.8.2), slang-1.4.9 and GPM-1.20.1

Installation of AAlib

Install AAlib by running the following commands:

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

This package does not come with a test suite.

Now, as the `root` user:

```
make install
```

Contents

Installed Programs:	aafire, aainfo, aalib-config, aasavefont, and aatest
Installed Library:	libaa.[so,a]
Installed Directories:	None

Short Descriptions

aafire	is little toy of AAlib, rendering an animated fire in ASCII Art.
aainfo	provides information for your current settings related to AAlib.
aalib-config	provides configuration info for AAlib.

aatest shows the abilities of AALib in a little test.

`libaa.[so,a]` 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.

Imlib2-1.2.1

Introduction to Imlib2

Imlib2 is a graphics library for fast file loading, saving, rendering and manipulation.

Package Information

- Download (HTTP): <http://prdownloads.sourceforge.net/enlightenment/imlib2-1.2.1.tar.gz>
- Download (FTP):
- Download MD5 sum: e32970d03d8aee2885782312d0a7f15f
- Download size: 879 KB
- Estimated disk space required: 12.5 MB
- Estimated build time: 0.4 SBU

Imlib2 Dependencies

Required

FreeType-2.1.10, libpng-1.2.8 and libjpeg-6b

Recommended

X (XFree86-4.5.0 or X.org-6.8.2)

Optional

libtiff-3.7.3, and libungif-4.1.3 or giflib-4.1.3

Installation of Imlib2

Install Imlib2 by running the following commands:

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

Now, as the root user:

```
make install &&
install -v -m755 -d /usr/share/doc/imlib2-1.2.1 &&
install -v -m644 doc/{*.gif,index.html} \
  /usr/share/doc/imlib2-1.2.1
```

Command Explanations

--without-x: Add this parameter if you do not have an X Window System installed.

Contents

Installed Programs: imlib2_bumpmap, imlib2_colorspace, imlib2-config, imlib2_conv, imlib2_poly,

`imlib2_show`, `imlib2_test`, and `imlib2_view`

Installed Libraries: `libImlib2.[so,a]` and various filters and image loader modules.

Installed Directories: `/usr/lib/imlib2`, `/usr/share/doc/imlib2-1.2.0`, and `/usr/share/imlib2`

Short Descriptions

`libImlib2.[so,a]` provides the functions for programs to deal with various image data formats.

libexif-0.6.12

Introduction to libexif

The libexif package contains a library for parsing, editing, and saving EXIF data. Most digital cameras produce EXIF files, which are JPEG files with extra tags that contain information about the image. All EXIF tags described in EXIF standard 2.1 are supported.

Package Information

- Download (HTTP): <http://prdownloads.sourceforge.net/libexif/libexif-0.6.12.tar.bz2>
- Download (FTP):
- Download MD5 sum: 9f952ee8db0be7c53a075c34e8286d91
- Download size: 378 KB
- Estimated disk space required: 6 MB
- Estimated build time: 0.1 SBU

Installation of libexif

Install libexif by running the following commands:

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

To test the results, issue: **make check**.

Now, as the `root` user:

```
make install
```

Contents

Installed Programs:	None
Installed Library:	libexif.[so,a]
Installed Directory:	/usr/include/libexif

Short Descriptions

`libexif.[so,a]` contains functions used for parsing, editing, and saving EXIF data.

FriBidi-0.10.5

Introduction to FriBidi

The FriBidi package is an implementation of the Unicode Bidirectional Algorithm (bidi). This is useful for supporting Arabic and Hebrew alphabets in other packages.

Package Information

- Download (HTTP): <http://fribidi.org/download/fribidi-0.10.5.tar.gz>
- Download (FTP):
- Download MD5 sum: 4f187c7e6bbb9d03bd1cd7ddc12d3069
- Download size: 491 KB
- Estimated disk space required: 4.4 MB
- Estimated build time: less than 0.1 SBU

Installation of FriBidi

Install FriBidi by running the following commands:

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

To test the results, issue: **make check**.

Now, as the root user:

```
make install
```

Contents

Installed Programs:	fribidi and fribidi-config
Installed Library:	libfribidi.[so,a]
Installed Directory:	/usr/include/fribidi

Short Descriptions

fribidi	is a command-line interface to the <code>libfribidi</code> library and can be used to convert a logical string to visual output.
fribidi-config	is used to acquire information about the installed <code>libfribidi</code> library.
<code>libfribidi.[so,a]</code>	contains functions used to implement the Unicode Bidirectional Algorithm.

Chapter 10. General Utilities

This chapter contains various utilities that do not fit conveniently into other chapters. Programs include a command line calculator, several utilities for manipulating text and graphics, and a program to interface with a palm-pilot.

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 MD5 sum: d44b5dddebd8a7a7309aea6c36fda117
- Download size: 278 KB
- Estimated disk space required: 2.31 MB
- Estimated build time: 0.04 SBU

Additional Downloads

- Required patch: http://www.linuxfromscratch.org/blfs/downloads/6.1/bc-1.06-flex_invocation-1.patch
- Required patch: <http://www.linuxfromscratch.org/blfs/downloads/6.1/bc-1.06-readline-1.patch>

Bc Dependencies

Optional

libedit (as an alternative to readline)

Installation of Bc

Install bc by running the following commands:

```
patch -Np1 -i ../bc-1.06-flex_invocation-1.patch &&
patch -Np1 -i ../bc-1.06-readline-1.patch &&
./configure --prefix=/usr --with-readline &&
make
```

This package does not come with a test suite.

Now, as the root user:

```
make install
```

Contents

Installed Programs: bc and dc

Installed Libraries: None

Installed Directories: None

Short Descriptions

bc is a calculator.

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. Starting at rep-gtk-0.15, the package contains the bindings to GTK and uses the same instructions. Both can be installed, if needed.

Package Information

- Download (HTTP): <http://prdownloads.sourceforge.net/rep-gtk/rep-gtk-0.18.tar.gz>
- Download (FTP):
- Download MD5 sum: 220b0d728656472c068e40823f0a3b22
- 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/blfs/downloads/6.1/rep-gtk-0.18-gtk2.4-1.patch>

Rep-gtk Dependencies

Required

GTK+-2.6.7, libglade-2.5.1 and librep-0.17

Installation of Rep-gtk

Install rep-gtk by running the following commands:

```
patch -Np1 -i ../rep-gtk-0.18-gtk2.4-1.patch &&
./configure --prefix=/usr &&
make
```

This package does not come with a test suite.

Now, as the root user:

```
make install
```

Contents

Installed Programs:	None
Installed Libraries:	Lisp bindings
Installed Directory:	/usr/lib/rep/i686-pc-linux-gnu/gui/

Short Descriptions

Lisp bindings are libraries stored in `/usr/lib/rep/i686-pc-linux-gnu/gui/` that assist communication 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):
- Download MD5 sum: c45b54f67cc5d3580a18e4113219bc26
- Download size: 28 KB
- Estimated disk space required: 520 KB
- Estimated build time: 0.01 SBU

Additional Downloads

- Required Patch: <http://www.linuxfromscratch.org/blfs/downloads/6.1/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
```

This package does not come with a test suite.

Now, as the `root` user:

```
make install
```

Contents

Installed Programs:	compface and uncompface
Installed Library:	libcompface.[so,a]
Installed Directories:	None

Short Descriptions

compface	is a filter for generating highly compressed representations of 48x48x1 face image files.
uncompface	is an inverse filter which performs an inverse transformation with no loss of data.

`libcompface.[so,a]` allows the compression and decompression algorithms to be used in other programs such as MTAs.

ImageMagick-6.2.3-5

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://www.imagemagick.org/download/ImageMagick-6.2.3-5.tar.bz2>
- Download (FTP): <ftp://ftp.imagemagick.net/pub/ImageMagick/ImageMagick-6.2.3-5.tar.bz2>
- Download MD5 sum: 599d9a01d825c138882374922c3cda96
- Download size: 4.8 MB
- Estimated disk space required: up to 150 MB (depends which dependencies are installed)
- Estimated build time: up to 4 SBU (Additional 1.1 SBU for the test suite)

ImageMagick Dependencies

Required

X (XFree86-4.5.0 or X.org-6.8.2)

Optional (Install Based on the Required Format Support and Tools)

lcms-1.14, ESP Ghostscript-7.07.1 or AFPL Ghostscript-8.51, libpng-1.2.8, libjpeg-6b, FreeType-2.1.10, libtiff-3.7.3, libxml2-2.6.20, Mozilla-1.7.8, TeX-3.0, GIMP-2.2.8, SANE-1.0.15, Wget-1.9.1, Enscript-1.6.4, libexif-0.6.12, GraphViz, FlashPIX (or FlashPIX library), Jasper, JBIG-KIT, libwmf, AutoTrace, RALCGM, DCRaw, Transfig, Gnuplot, hp2xx, html2ps, Netpbm, MPEG-2 Video Codec, POV-Ray, Utah Raster Toolkit (or source), txt2html, Radiance, corefonts, Electric Fence and Dmalloc

Installation of ImageMagick

Install Imagemagick by running the following commands:

```
sed -i -e 's/\$(LIBLTDL) \$/\$/ ' Makefile.in &&
./configure --prefix=/usr --with-modules &&
make
```

Now, as the `root` user:

```
make install
```

To test the results, as an unprivileged user, issue: **make check**.

Additional Configure Options

There are additional switches that can be passed to ImageMagick to customize the installation to your needs. See `advanced-unix-installation.html` in the `www` directory.

Command Explanations

sed -i -e 's/\\$(LIBLTDL) \\$/\\$/' Makefile.in: The package will build and install a different version of the Libtool library in `/usr/lib`. This command forces the package to link to the installed version of `libltdl`, and not replace it.

--with-modules: Enables support for dynamically loadable modules.

Contents

Installed Programs:	animate, compare, composite, conjure, convert, display, identify, import, Magick-config, Magick++-config, mogrify, montage, and Wand-config
Installed Libraries:	libMagick.[so,a], libMagick++. [so,a], libWand.[so,a], the Magick.so Perl module, and numerous plugin modules
Installed Directories:	/usr/include/magick, /usr/include/wand, /usr/lib/ImageMagick-6.2.3, /usr/lib/perl5/site_perl/5.8.5/i686-linux/auto/Image/Magick, and /usr/share/ImageMagick-6.2.3

Short Descriptions

animate	animates a sequence of images.
compare	compares an image to a reconstructed image.
composite	composites various images into the given base image.
conjure	processes a MSL script to create an image.
convert	converts image(s) from one format to another.
display	displays an image.
identify	describes the format and characteristics of an image file.
import	captures an X window.
Magick-config	show information about the installed versions of ImageMagick and Magick++.
and mogrify Magick++-config	transforms an image.
montage	composites various images into a new image.
Wand-config	shows the options required to use the Wand library.
Image::Magick	allows the reading, manipulation and writing of a large number of image file formats using the ImageMagick library. Run make in the <code>PerlMagick/demo</code> directory of the package source tree to see a nice demo of the module's capabilities.

Hd2u-1.0.0

Introduction to Hd2u

The hd2u package contains an any to any text format converter.

Package Information

- Download (HTTP): http://www.megaloman.com/~hany/_data/hd2u/hd2u-1.0.0.tgz
- Download (FTP):
- Download MD5 sum: 21249099fbb04b98e30e35d6a89061dd
- Download size: 54 KB
- Estimated disk space required: 312 KB
- Estimated build time: 0.1 SBU

Hd2u Dependencies

Required

popt-1.7-5

Installation of Hd2u

Install hd2u by running the following commands:

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

This package does not come with a test suite.

Now, as the root user:

```
make install
```

Contents

Installed Program:	dos2unix
Installed Libraries:	None
Installed Directories:	None

Short Descriptions

dos2unix converts text between various OS formats (such as converting from DOS format to Unix).

GTK-Doc-1.3

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 any pre-built documentation to your system.

Package Information

- Download (HTTP): <http://ftp.gnome.org/pub/GNOME/sources/gtk-doc/1.3/gtk-doc-1.3.tar.bz2>
- Download (FTP): <ftp://ftp.gnome.org/pub/GNOME/sources/gtk-doc/1.3/gtk-doc-1.3.tar.bz2>
- Download MD5 sum: d105d5b28e7e023ab1b7e85fb65e45c3
- Download size: 145 KB
- Estimated disk space required: 1.6 MB
- Estimated build time: less than 0.1 SBU

GTK-Doc Dependencies

Required

OpenJade-1.3.2, libxslt-1.1.14, DocBook XML DTD-4.4 and DocBook XSL Stylesheets-1.68.1

Optional

DocBook SGML DTD-4.4 and DocBook DSSSL Stylesheets-1.79

Installation of GTK-Doc

Install GTK-Doc by running the following commands:

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

Now, as the root user:

```
make install
```

Contents

Installed Programs:	gtkdocize, gtkdoc-fixxref, gtkdoc-mkdb, gtkdoc-mkhtml, gtkdoc-mkman, gtkdoc-mktmpl, gtkdoc-scan, gtkdoc-scangobj, and gtkdoc-scanobj
Installed Libraries:	None
Installed Directories:	/usr/share/gtk-doc and /usr/share/sgml/gtk-doc

Short Descriptions

gtkdoc* these are all Perl scripts used by package `Makefile` scripts to generate documentation for the package being built.

Intltool-0.33

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/0.33/intltool-0.33.tar.bz2>
- Download (FTP): <ftp://ftp.gnome.org/pub/GNOME/sources/intltool/0.33/intltool-0.33.tar.bz2>
- Download MD5 sum: 7d3b6d421b0fb9beee7faf97daab45e6
- Download size: 126 KB
- Estimated disk space required: 1.5 MB
- Estimated build time: less than 0.1 SBU

Intltool Dependencies

Required

XML::Parser

Installation of Intltool

Install intltool by running the following commands:

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

To test the results, issue: **make check**.

Now, as the `root` user:

```
make install
```

Contents

Installed Programs:	intltoolize, intltool-extract, intltool-merge, intltool-prepare, and intltool-update
Installed Libraries:	None
Installed Directory:	/usr/share/intltool

Short Descriptions

intltoolize	prepares a package to use intltool.
intltool-extract	generates header files that can be read by gettext .

intltool-merge	merges translated strings into various file types.
intltool-prepare	updates pot files and merges them with translation files.
intltool-update	updates the po template files and merges them with the translations.

Screen-4.0.2

Introduction to Screen

Screen is a terminal multiplexor that runs several separate processes, typically interactive shells, on a single physical character-based terminal. Each virtual terminal emulates a DEC VT100 plus several ANSI X3.64 and ISO 2022 functions and also supports configurable input and output translation, serial port support, configurable logging, multi-user support, and UTF-8 character encoding support (currently not supported by LFS). Screen sessions can be detached and resumed later on a different terminal.

Package Information

- Download (HTTP): <http://ftp.gnu.org/pub/gnu/screen/screen-4.0.2.tar.gz>
- Download (FTP): <ftp://ftp.gnu.org/pub/gnu/screen/screen-4.0.2.tar.gz>
- Download MD5 sum: ed68ea9b43d9fba0972cb017a24940a1
- Download size: 825 KB
- Estimated disk space required: 5.8 MB
- Estimated build time: 0.2 SBU

Screen Dependencies

Optional

Linux-PAM-0.80

Installation of Screen

Install Screen by running the following commands:

```
./configure --prefix=/usr --with-socket-dir=/var/run/screen \
  --with-sys-screenrc=/etc/screenrc &&
sed -i -e "s%/usr/local/etc/screenrc%/etc/screenrc%" {etc,doc}/* &&
make
```

This package does not come with a test suite.

Now, as the root user:

```
make install &&
install -m 644 etc/etcscreenrc /etc/screenrc
```

Command Explanations

`--with-socket-dir=/var/run/screen`: This option places the per-user sockets in a standard location.

`--with-sys-screenrc=/etc/screenrc`: This option places the global screenrc file in /etc.

`sed -i -e "s%/usr/local/etc/screenrc%/etc/screenrc%" {etc,doc}/*`: This command corrects the configuration and documentation files to the location that is used here for the global screenrc file.

Configuring Screen

Config Files

`/etc/screenrc` and `~/ .screenrc`

Configuration Information

You may want to look at the example configuration file that was installed and customize it for your needs.

Contents

Installed Program:	screen
Installed Libraries:	None
Installed Directory:	<code>/var/run/screen</code>

Short Descriptions

screen is a terminal multiplexor with VT100/ANSI terminal emulation.

HTML Tidy-050722

Introduction to HTML Tidy

The HTML Tidy package contains a command line tool and libraries used to read HTML, XHTML and XML files and write cleaned up markup. It detects and corrects many common coding errors and strives to produce visually equivalent markup that is both W3C compliant and compatible with most browsers.

Package Information

- Download (HTTP): http://tidy.sourceforge.net/src/tidy_src_050722.tgz
- Download (FTP):
- Download MD5 sum: 0ef3bf907a8429b2bc1e66e43bfff3d7
- Download size: 254 KB
- Estimated disk space required: 10.3 MB
- Estimated build time: 0.2 SBU



Note

HTML Tidy is updated very frequently by its maintainers, and the source package listed above may not be available at the listed URL due to the release of a newer version. The most current source package can be always be downloaded from <http://tidy.sourceforge.net/src/>. If this version is newer than the version listed above, the following instructions should work, but have not yet been tested by BLFS. If you'd rather download the version listed above, you can find it at <http://tidy.sourceforge.net/src/old/>.

Additional Downloads

Documentation

- Documentation: http://tidy.sourceforge.net/docs/tidy_docs_050705.tgz
- Download MD5 sum: 2e6533fc48b077ff6243deaf21a781de
- Download size: 150 KB

Patches

- Required patch:
http://www.linuxfromscratch.org/blfs/downloads/6.1/tidy-050722-prevent_PRE_newlines-1.patch

HTML Tidy Dependencies

Recommended (To Build the Man Page and Quick Reference Docs)

libxslt-1.1.14

Optional

Dmalloc

Installation of HTML Tidy

The HTML Tidy documentation is contained in a separate tarball. Unpack both the source and docs tarballs before starting the build.

Install HTML Tidy by running the following commands:

```
patch -Np1 -i ../tidy-050722-prevent_PRE_newlines-1.patch &&
sh build/gnuauto/setup.sh &&
./configure --prefix=/usr &&
make
```

This package does not come with a test suite.

Now, as the root user:

```
make install
```

If you have libxslt-1.1.14 installed, issue the following commands as an unprivileged user to build the man page and HTML documentation:

```
cd htmldoc &&
tidy -xml-help > tidy-help.xml &&
tidy -xml-config > tidy-config.xml &&
xsltproc -o tidy.1 tidy1.xsl tidy-help.xml &&
xsltproc -o quickref.html quickref-html.xsl tidy-config.xml &&
cd ..
```

If you built the man page and the Quick Reference HTML file, install the man page by issuing the following command as the root user:

```
install -v -m644 htmldoc/tidy.1 /usr/share/man/man1
```

Now finish the installation by installing the pre-built documentation as the root user:

```
install -v -m755 -d /usr/share/doc/tidy &&
cp -v -R htmldoc/* /usr/share/doc/tidy
```

Command Explanations

sh build/gnuauto/setup.sh: This command prepares the source tree for building using the GNU “Auto” tools.

Configuring HTML Tidy

Config Files

The absolute path of the file specified in `$HTML_TIDY`.

Configuration Information

The default configuration options can be set in the file defined in `$HTML_TIDY`. Additional configuration options can be passed to **tidy** via command line parameters or the `-config <file>` parameter.

Contents

Installed Programs: tab2space and tidy
Installed Library: libtidy.[so,a]
Installed Directory: /usr/share/doc/tidy

Short Descriptions

tab2space is a utility to expand tabs and ensure consistent line endings.
tidy validates, corrects, and pretty-prints HTML files.
libtidy.[so,a] libraries provide the HTML Tidy API functions to **tidy** and can also be called by other programs.

desktop-file-utils-0.10

Introduction to desktop-file-utils

The desktop-file-utils package contains command line utilities for working with desktop entries. These utilities are used by GNOME-2 and other applications to manipulate the MIME-types application databases and help adhere to the desktop entries standards specification.

Package Information

- Download (HTTP): <http://freedesktop.org/software/desktop-file-utils/releases/desktop-file-utils-0.10.tar.gz>
- Download (FTP):
- Download MD5 sum: 8b930e9ad08ac6b8205dd00a1d694b0c
- Download size: 341 KB
- Estimated disk space required: 2.7 MB
- Estimated build time: less than 0.1 SBU

desktop-file-utils Dependencies

Required

GLib-2.6.4 and popt-1.7-5

Optional

Emacs-21.4a

Installation of desktop-file-utils

Install desktop-file-utils by running the following commands:

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

Now, as the root user:

```
make install
```

Configuring desktop-file-utils

Configuration Information

The default location for the MIME-types application database is `/usr/share/applications/mimeinfo.cache`. If you are going to install, or have already installed, a desktop environment such as GNOME or KDE in a prefix other than `/usr`, you'll need to update the `XDG_DATA_DIRS` environment variable so that additional MIME-types application databases are properly maintained. Add the following to the system-wide or personal profile:

For GNOME:

```
XDG_DATA_DIRS=$XDG_DATA_DIRS:$GNOME_PREFIX/share
export XDG_DATA_DIRS
```

For KDE:

```
XDG_DATA_DIRS=$XDG_DATA_DIRS:$KDE_PREFIX/share
export XDG_DATA_DIRS
```

If you're installing both GNOME and KDE:

```
XDG_DATA_DIRS=$XDG_DATA_DIRS:$GNOME_PREFIX/share:$KDE_PREFIX/share
export XDG_DATA_DIRS
```

Contents

Installed Programs:	desktop-file-install, desktop-file-validate, and update-desktop-database
Installed Libraries:	None
Installed Directories:	None

Short Descriptions

desktop-file-install	is used to install a new, or modify an existing desktop file entry. It is also used to rebuild or modify the MIME-types application database.
desktop-file-validate	is used to verify the integrity of a desktop file.
update-desktop-database	is used to update the MIME-types application database.

XScreenSaver-4.21

Introduction to XScreenSaver

The XScreenSaver is a modular screen saver and locker for the X Window System. It is highly customizable and allows the use of any program that can draw on the root window as a display mode. The purpose of XScreenSaver is to display pretty pictures on your screen when it is not in use, in keeping with the philosophy that unattended monitors should always be doing something interesting, just like they do in the movies. However, XScreenSaver can also be used as a screen locker, to prevent others from using your terminal while you are away.

Package Information

- Download (HTTP): <http://www.jwz.org/xscreensaver/xscreensaver-4.21.tar.gz>
- Download (FTP): <ftp://ftp.fu-berlin.de/unix/X11/graphics/xscreensaver/xscreensaver-4.21.tar.gz>
- Download MD5 sum: 3ea7d0bc9b7159523855296e175d7ac7
- Download size: 4.3 MB
- Estimated disk space required: 99.2 MB
- Estimated build time: 1.0 SBU

XScreenSaver Dependencies

Required

bc-1.06 and libglade-2.5.1 (alternatively LessTif-0.94.4 but not recommended)

Optional

libjpeg-6b, GLE, Netpbm, XDaliClock, Linux-PAM-0.80, krb4, and Heimdal-0.7 or MIT krb5-1.4.1

Installation of XScreenSaver

Install XScreenSaver by running the following commands:

```
./configure --prefix=/usr --libexecdir=/usr/lib &&  
make
```

Now, as the root user:

```
make install
```

Command Explanations

`--with-setuid-hacks`: This switch allows some demos to be installed setuid root which is needed in order to ping other hosts.

`--enable-locking`: This switch provides support for locking the display.

Configuring XScreenSaver

Config Files

`/etc/X11/app-defaults/XScreenSaver`, `~/ .xscreensaver` and
`/etc/pam.d/xscreensaver` or `/etc/pam.conf`

Contents

Installed Programs: `xscreensaver`, `xscreensaver-command`, `xscreensaver-demo`, `xscreensaver-getimage`,
`xscreensaver-getimage-file`, `xscreensaver-getimage-video`, `xscreensaver-gl-helper`,
and `xscreensaver-text`

Installed Libraries: None

Installed Directories: `/usr/lib/xscreensaver` and `/usr/share/xscreensaver`

Short Descriptions

xscreensaver is a screen saver and locker daemon.

xscreensaver-command controls a running **xscreensaver** process by sending it client messages.

xscreensaver-demo is a graphical front-end for setting the parameters used by the background **xscreensaver** daemon.

xscreensaver-getimage is a helper program for the **xscreensaver** modules that manipulate images.

xscreensaver-getimage-file is a helper program for the **xscreensaver** modules that manipulate images.

xscreensaver-getimage-video is a helper program for the **xscreensaver** modules that manipulate images.

xscreensaver-gl-helper is a helper program for the **xscreensaver** OpenGL modules.

xscreensaver-text prints some text to stdout, for use by screen savers.

Pilot-link-0.11.8

Introduction to Pilot-link

The pilot-link package provides a suite of tools containing a series of conduits, libraries, and language bindings for moving information to and from your Palm device and your desktop or server/workstation system, as well as across a network.

Package Information

- Download (HTTP): <http://downloads.pilot-link.org/pilot-link-0.11.8.tar.bz2>
- Download (FTP): <ftp://ftp.fu-berlin.de/unix/linux/mirrors/gentoo/distfiles/pilot-link-0.11.8.tar.bz2>
- Download MD5 sum: 586f84add601e8b86da3093ab784e997
- Download size: 649 KB
- Estimated disk space required: 15 MB
- Estimated build time: 0.5 SBU

Additional Downloads

- Required patch: http://www.linuxfromscratch.org/blfs/downloads/6.1/pilot-link-0.11.8-bindings_fix-1.patch

Pilot-link Dependencies

Optional

libpng-1.2.8, JDK-1.5.0, Tcl-8.4.11, Python-2.4.1 and Electric Fence

Kernel Configuration

You may need to configure the “USB_SERIAL_VISOR” device into the kernel before your system can communicate with your Palm device. Add this device by enabling the following kernel parameter setting and rebuilding the kernel (and modules, if applicable):

```
Device Drivers:
  USB support:
    USB Serial Converter support:
      USB Handspring Visor / Palm m50x / Sony Client Driver
```

For additional information about connecting your USB Palm device, see: <http://www.pilot-link.org/README.usb>.

Installation of Pilot-link

Install pilot-link by running the following commands:

```
patch -Np1 -i ../pilot-link-0.11.8-bindings_fix-1.patch &&
./configure --prefix=/usr &&
make
```

To test the results, issue: **make check**.

Now, as the root user:

```
make install
```

Command Explanations

`--with-perl` `--with-java` `--with-tcl=/usr/lib` `--with-python`: Use any or all of these options to enable the respective language bindings desired.

Contents

Installed Programs:	addresses, ccexample, debugsh, dlpsh, hinotes, ietf2datebook, install-datebook, install-expenses, install-hinote, install-memo, install-netsync, install-todo, install-todos, install-user, memos, money2qif, pi-csd, pi-getram, pi-getrom, pi-getromtoken, pi-nreaddir, pilot-addresses, pilot-archive, pilot-clip, pilot-datebook, pilot-dedupe, pilot-file, pilot-foto, pilot-prc, pilot-schlep, pilot-undelete, pilot-xfer, pitclsh, read-expenses, read-ical, read-notepad, read-palmpix, read-todos, reminders, and sync-plan
Installed Libraries:	libpisock.[so,a], libpisock++. [so,a], and libpisynd.[so,a]
Installed Bindings:	libjpisock.so JDK library, libpitcl.[so,a] Tcl library, Python and Perl modules
Installed Directory:	/usr/lib/perl5/site_perl/5.8.6/i686-linux/[,auto/]PDA, /usr/share/pilot-link

Short Descriptions

pilot-link programs and utilities

Describing the functionality of each pilot-link program and utility would take several pages. Instead, after you've installed the package, review the pilot-link man page (**man pilot-link**). If you wish to review before installing the package, unpack the tarball and issue **man doc/man/pilot-link.7.in**.

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. 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 MD5 sum: 2c63e827d755527950d9d13fe3d87692
- Download size: 556 KB
- Estimated disk space required: 6.7 MB
- Estimated build time: 0.09 SBU

Additional Downloads

- Recommended Patch: <http://www.linuxfromscratch.org/blfs/downloads/6.1/gpm-1.20.1-segfault-1.patch>
- Recommended Patch: <http://www.linuxfromscratch.org/blfs/downloads/6.1/gpm-1.20.1-silent-1.patch>

Installation of GPM

Install GPM by running the following commands:

```
patch -Np1 -i ../gpm-1.20.1-segfault-1.patch &&
patch -Np1 -i ../gpm-1.20.1-silent-1.patch &&
./configure --prefix=/usr --sysconfdir=/etc &&
LDFLAGS="-lm" make
```

Now, as the root user:

```
make install &&
cp -v conf/gpm-root.conf /etc &&
ldconfig
```

Command Explanations

LDFLAGS="-lm": The math library must be linked with **gpm**, as `ceil()` is used in some cursor scrolling logic.

Configuring GPM

Boot Script

Install the `/etc/rc.d/init.d/gpm` init script included in the `blfs-bootscripts-6.1` package.

```
make install-gpm
```

Config Files

`/etc/gpm-root.conf` and `~/.gpm-root`: The default and individual user **gpm-root** configuration 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 as the root user:

```
cat > /etc/sysconfig/mouse << "EOF"
# Begin /etc/sysconfig/mouse

MDEVICE="[yourdevice]"
PROTOCOL="[yourprotocol]"
GPMOPTS="[additional options]"

# End /etc/sysconfig/mouse
EOF
```

Configuration Information

Examples of values to set `MDEVICE`, `PROTOCOL`, and `GPMOPTS` to are:

```
MDEVICE="/dev/psaux"
PROTOCOL="imps2"
GPMOPTS=""
```

A list of which protocol values are known can be found by running **gpm -t -help**. The `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. `GPMOPTS` is the 'catch all' for any additional options that are needed for your hardware.

Contents

Installed Programs: `disable-paste`, `gpm`, `gpm-root`, `hltest`, `mev`, and `mouse-test`
Installed Libraries: None
Installed Directories: None

Short Descriptions

disable-paste is a security mechanism used to disable the paste buffer.
gpm is a cut and paste utility and mouse server for virtual consoles.

- gpm-root** is a default handler for **gpm**. It is used to draw menus on the root window.
- hltest** is a simple sample application using the high-level library, meant to be read by programmers trying to use the high-level library.
- mev** is a program to report mouse events.
- mouse-test** is a tool for determining the mouse type and device it's attached to.

Fcron-2.9.7

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/archives/fcron-2.9.7.src.tar.gz>
- Download (FTP): <ftp://ftp.seul.org/pub/fcron/fcron-2.9.7.src.tar.gz>
- Download MD5 sum: 9ead65bd13ea6a3278e167f88c572ddb
- Download size: 409 KB
- Estimated disk space required: 3.6 MB
- Estimated build time: 0.10 SBU

Fcron Dependencies

Optional

MTA, Linux-PAM-0.80, SELinux, DocBook-utils-0.6.14

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` (perform as the root user):

```
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 (again as the root user).

```
/etc/rc.d/init.d/sysklogd reload
```

For security reasons, an unprivileged user and group for Fcron should be created (perform as the root user):

```
groupadd -g 22 fcron &&
useradd -d /dev/null -c "Fcron User" -g fcron -s /bin/false -u 22 fcron
```

Install Fcron by running the following commands:

```
./configure --without-sendmail --with-boot-install=no &&
make
```

This package does not come with a test suite.

Now, as the `root` user:

```
make install
```

Command Explanations

`--without-sendmail`: Fcron will use an installed MTA to email you the results of the **fcron** script. Omit the switch and use `--with-sendmail=[/path/to/MTA]` if you wish to utilize this feature.

`--with-boot-install=no`: This prevents installation of the bootscript included with the package.

Configuring Fcron

Config Files

`/etc/fcron.conf`, `/etc/fcron.allow`, and `/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`.

The default text editor used is `/usr/bin/vi`, and this is installed by LFS.

fcron scripts are written using **fcrontab**. Refer to the **fcrontab** man page for proper parameters to address your situation.

If Linux-PAM is installed, two PAM configuration files are installed in `/etc/pam.d`. Alternatively if `/etc/pam.d` is not used, the installation will append two configuration sections to the existing `/etc/pam.conf` file. You should ensure the files match your preferences. Modify them as required to suit your needs.

Boot Script

Install the `/etc/rc.d/init.d/fcron` init script from the `blfs-bootscripts-6.1` package.

```
make install-fcron
```

Contents

Installed Programs: `fcron`, `ferondyn`, `fcronsighup`, and `fcrontab`
Installed Libraries: None
Installed Directories: `/usr/share/doc/fcron-2.9.7` and `/var/spool/fcron`

Short Descriptions

fcron is the scheduling daemon.
ferondyn is a user tool intended to interact with a running **fcron** daemon.

fcronshup instructs **fcron** to reread the Fcron tables.

fcrontab is a program used to install, edit, list and remove the tables used by **fcron**.

Hdparm-6.1

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, it is recommended that you leave the default kernel parameters alone.

Package Information

- Download (HTTP): <http://prdownloads.sourceforge.net/hdparm/hdparm-6.1.tar.gz>
- Download (FTP):
- Download MD5 sum: b883944bc26a480dcccac837c4ddf732
- Download size: 40 KB
- Estimated disk space required: 360 KB
- Estimated build time: 0.1 SBU

Installation of Hdparm

Build `hdparm` by running the following command:

```
make
```

This package does not come with a test suite.

Now, as the `root` user:

```
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 command with the following:

```
make binprefix=/usr install
```

Contents

Installed Program: `hdparm`
Installed Libraries: `None`
Installed Directories: `None`

Short Descriptions

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 or absence of the **which** program in the main LFS book is probably one of the most contentious issues on the mailing lists. It has resulted in at least one flame war in the past. To hopefully put an end to this once and for all, presented here are two 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 which package.

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 MD5 sum: 830b83af48347a9a3520f561e47cbc9b
- Download size: 123 KB
- Estimated disk space required: 940 KB
- Estimated build time: less than 0.1 SBU

Installation of Which

Install which by running the following commands:

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

This package does not come with a test suite.

Now, as the `root` user:

```
make install
```

Contents

Installed Program:	which
Installed Libraries:	None
Installed Directories:	None

Short Descriptions

which shows the full path of (shell) commands installed in your `PATH`.

The 'which' Script

The second option (for those who don't want to install the package) is to create a simple script (execute as the

root user):

```
cat > /usr/bin/which << "EOF"
#!/bin/bash
type -pa "$@" | head -n 1 ; exit ${PIPESTATUS[0]}
EOF
chmod -v 755 /usr/bin/which
chown -v root:root /usr/bin/which
```

This should work OK and is probably the easiest solution for most cases, but is not the most comprehensive implementation.

UnZip-5.52

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.mirrorservice.org/sites/ftp.info-zip.org/pub/infozip/src/unzip552.tar.gz>
- Download (FTP): <ftp://ftp.info-zip.org/pub/infozip/src/unzip552.tar.gz>
- Download MD5 sum: 9d23919999d6eac9217d1f41472034a9
- Download size: 1.1 MB
- Estimated disk space required: 7.2 MB
- Estimated build time: 0.09 SBU

Additional Downloads

- Required patch: http://www.linuxfromscratch.org/blfs/downloads/6.1/unzip-5.52-fix_Makefile-1.patch
- Required patch: http://www.linuxfromscratch.org/blfs/downloads/6.1/unzip-5.52-fix_libz-1.patch
- Recommended patch:
http://www.linuxfromscratch.org/blfs/downloads/6.1/unzip-5.52-dont_make_noise-1.patch

Installation of UnZip

Install UnZip by running the following commands:

```
patch -Np1 -i ../unzip-5.52-fix_Makefile-1.patch &&
patch -Np1 -i ../unzip-5.52-fix_libz-1.patch &&
patch -Np1 -i ../unzip-5.52-dont_make_noise-1.patch &&
cp -v unix/Makefile . &&
make prefix=/usr LOCAL_UNZIP=-DUSE_UNSHRINK linux &&
make prefix=/usr LOCAL_UNZIP=-DUSE_UNSHRINK linux_shlibz
```

To test the results, issue: **LD_LIBRARY_PATH=\$PWD && make check.**

Now, as the root user:

```
make prefix=/usr LOCAL_UNZIP=-DUSE_UNSHRINK install &&
cp -v -d libunzip.so* /usr/lib
```

Command Explanations

make prefix=/usr LOCAL_UNZIP=-DUSE_UNSHRINK linux: This command overrides the `prefix` variable that is set to `/usr/local` in the Makefile, sets the `LOCAL_UNZIP` environment variable to instruct UnZip to use the shrinking algorithm based on the LZW compression algorithm, and builds the executables for a Linux system. The alternatives to 'linux' can be seen with a **make list** command.

make ... linux_shlibz: Build shared `libunzip` and link UnZip against it and `zlib`.

Contents

Installed Programs:	funzip, unzip, unzipfsx, zipgrep, and zipinfo
Installed Library:	libunzip.so
Installed Directories:	None

Short Descriptions

funzip	allows the output of unzip commands to be redirected.
unzip	lists, tests or extracts files from a ZIP archive.
unzipfsx	is a 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	searches files in a ZIP archive for lines matching a pattern.
zipinfo	produces technical information about the files in a ZIP archive, including file access permissions, encryption status, type of compression, etc.
<code>libunzip.so</code>	contains the API functions required by the UnZip programs.

Zip-2.31

Introduction to Zip

The Zip package contains Zip utilities. These are useful for compressing files into ZIP archives.

Package Information

- Download (HTTP): <http://www.mirrorservice.org/sites/ftp.info-zip.org/pub/infozip/src/zip231.tar.gz>
- Download (FTP): <ftp://ftp.info-zip.org/pub/infozip/src/zip231.tar.gz>
- Download MD5 sum: 6bfc076664416251d7624ab3538d1cb9
- Download size: 781 KB
- Estimated disk space required: 4.1 MB
- Estimated build time: 0.04 SBU

Installation of Zip

Install Zip by running the following commands:

```
sed -i -e 's@$(INSTALL) man/zip.1@$(INSTALL_PROGRAM) man/zip.1@' \
    unix/Makefile &&
make prefix=/usr -f unix/Makefile generic_gcc
```

This package does not come with a test suite.

Now, as the `root` user:

```
make prefix=/usr -f unix/Makefile install
```

Command Explanations

sed -i -e ... unix/Makefile: The `Makefile` has a bug which causes the installation to fail. This command fixes the problem.

make prefix=/usr -f unix/Makefile generic_gcc: This command overrides the `prefix` variable that is set to `/usr/local` in the `unix/Makefile` which is used as a `Makefile` and builds the executables for a Linux system. The alternatives to `generic_gcc` can be seen with a **make -f unix/Makefile list** command.

Contents

Installed Programs: zip, zipcloak, zipnote, and zipsplit
Installed Libraries: None
Installed Directories: None

Short Descriptions

zip compresses files into a ZIP archive.

- zipcloak** is disabled in this version of Zip. It will display a message about how to support encryption by recompiling with `zcrypt27.zip`.
- zipnote** reads or writes comments stored in a ZIP file.
- 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 MD5 sum: 2b3b2147b7bc91f362be55cb49fa1c4e
- Download size: 107 KB
- Estimated disk space required: 1.04 MB
- Estimated build time: 0.01 SBU

PCI Utilities Dependencies

Required

which-2.16

Installation of PCI Utilities

Install PCI Utilities by running the following commands:

```
make PREFIX=/usr
```

Now, as the `root` user:

```
make PREFIX=/usr install
```

Some packages require the PCI static library. To install the library and headers, issue the following commands as the `root` user:

```
install -v -m755 -d /usr/include/pci &&
install -v -m 644 lib/libpci.a /usr/lib &&
install -v -m 644 lib/*.h /usr/include/pci
```

Configuring PCI Utilities

The current version of PCI Utilities is a bit dated (2003). The application works quite well, but the default data file, `pci.ids`, is out of date. To get a current version of this file, run `update-pciids` as the `root` user. This program uses `wget` or `lynx` to fetch the most current file and place it in `/usr/share`.

Contents

Installed Programs: `lspci`, `setpci` and `update-pciids`

Installed Libraries: libpci.a
Installed Directories: /usr/include/pci

Short Descriptions

lspci is a utility for displaying information about all PCI buses in the system and all devices connected to them.

setpci is a utility for querying and configuring PCI devices.

update-pciids fetches the current version of the PCI ID list. Requires Wget-1.9.1 or Lynx-2.8.5.

`libpci.a` is the static library that allows applications to access the PCI subsystem.

Pkg-config-0.19

Introduction to Pkg-config

The Pkg-config package contains tools for passing the include path and/or library paths to build tools during the **make** file execution.

Package Information

- Download (HTTP): <http://pkgconfig.freedesktop.org/releases/pkg-config-0.19.tar.gz>
- Download (FTP):
- Download MD5 sum: 25f106d2cc82a0013f5bdc89875d5790
- Download size: 947 KB
- Estimated disk space required: 11 MB
- Estimated build time: 0.21 SBU

Installation of Pkg-config



Note

Till version 0.18, this package was called Pkgconfig.

Install Pkg-config by running the following commands:

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

To test the results, issue: **make check**.

Now, as the `root` user:

```
make install
```

Configuring Pkg-config

The default setting for `PKG_CONFIG_PATH` is `/usr/lib/pkgconfig` because of the prefix used to install Pkg-config. 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

Installed Program: pkg-config
Installed Libraries: None
Installed Directories: None

Short Descriptions

pkg-config is a function that returns meta information for the specified library.

Cpio-2.6

Introduction to Cpio

The cpio package contains tools for archiving.

Package Information

- Download (HTTP): <http://ftp.gnu.org/pub/gnu/cpio/cpio-2.6.tar.gz>
- Download (FTP): <ftp://ftp.gnu.org/pub/gnu/cpio/cpio-2.6.tar.gz>
- Download MD5 sum: 76b4145f33df088a5bade3bf4373d17d
- Download size: 561 KB
- Estimated disk space required: 5.3 MB
- Estimated build time: 0.1 SBU

Additional Downloads

- Required Patch: http://www.linuxfromscratch.org/blfs/downloads/6.1/cpio-2.6-security_fixes-1.patch

Installation of Cpio

Install cpio by running the following commands:

```
sed -i -e "s/invalid_arg/argmatch_invalid/" src/mt.c &&
patch -Np1 -i ../cpio-2.6-security_fixes-1.patch &&
./configure CPIO_MT_PROG=mt --prefix=/usr \
  --bindir=/bin --libexecdir=/tmp \
  --with-rmt=/usr/sbin/rmt &&
echo "#define HAVE_SETLOCALE 1" >> config.h &&
echo "#define HAVE_LSTAT 1" >> config.h &&
make
```

To test the results, issue: **make check**.

Now, as the root user:

```
make install
```

Command Explanations

`sed -i -e "s/invalid_arg/argmatch_invalid/" src/mt.c`: This command fixes a build problem with the **mt** program.

`CPIO_MT_PROG=mt`: This parameter forces the building and installation of the **mt** program.

`--bindir=/bin`: This parameter installs **cpio** to `/bin` instead of `/usr/bin` as recommended by the FHS guidelines.

`--libexecdir=/tmp`: This parameter is used so that `/usr/libexec` is not created.

`--with-rmt=/usr/sbin/rmt`: This parameter inhibits building the **rmt** program as it is already installed

by the Tar package in LFS.

echo "#define HAVE_SETLOCALE 1" >> config.h: This command specifies that the system Libc implements the setlocale function since it is not detected by **configure**.

echo "#define HAVE_LSTAT 1" >> config.h: This define fixes a bug that causes **cpio** to convert symlinks into regular files during archive creation.

Contents

Installed Programs: cpio and mt

Installed Libraries: None

Installed Directories: None

Short Descriptions

cpio copies files to and from archives.

mt controls magnetic tape drive operations.

MC-4.6.1

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-4.6.1.tar.gz>
- Download (FTP): <ftp://ftp.uni-koeln.de/util/shell/mc-4.6.1.tar.gz>
- Download MD5 sum: 18b20db6e40480a53bac2870c56fc3c4
- Download size: 3.8 MB
- Estimated disk space required: 29 MB
- Estimated build time: 0.4 SBU

MC Dependencies

Required

GLib-1.2.10 or GLib-2.6.4

Optional

GPM-1.20.1, X (XFree86-4.5.0 or X.org-6.8.2), Samba-3.0.14a, slang-1.4.9, Zip-2.31, UnZip-5.52 and GNOME Libraries-1.4.2

Installation of MC

Install MC by running the following commands:

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

This package does not come with a test suite.

Now, as the `root` user:

```
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

Installed Programs: mc, mcedit, mcmfmt, and mcview

Installed Libraries: None

Installed Directories: /usr/share/mc and /usr/lib/mc

Short Descriptions

mc is a visual shell.

mcedit is an internal file editor.

mcview is an internal file viewer.

Sysstat-6.0.0

Introduction to Sysstat

The Sysstat package contains utilities to monitor system performance and usage activity. Sysstat contains the `sar` utility, common to many commercial Unixes, and tools you can schedule via cron to collect and historize performance and activity data.

Package Information

- Download (HTTP): <http://perso.wanadoo.fr/sebastien.godard/sysstat-6.0.0.tar.bz2>
- Download (FTP): <ftp://ibiblio.org/pub/linux/system/status/sysstat-6.0.0.tar.bz2>
- Download MD5 sum: 706044b99a29b7de7bf4b06310bbe6a6
- Download size: 118 KB
- Estimated disk space required: 2 MB
- Estimated build time: less than 0.1 SBU

Sysstat Dependencies

Recommended

Fcron-2.9.7

Installation of Sysstat

Install Sysstat by running the following commands:

```
make config &&  
make
```

This package does not come with a test suite.

Now, as the `root` user:

```
make install
```

Command Explanations

make config: Runs the interactive configuration process. The first question prompts you for an “Installation directory”. Reply with `/usr`, as this is equivalent to Autoconf’s `--prefix=/usr` parameter to **configure**. For all other prompts, you may press **Enter** to accept the (very sane) defaults. When prompted for “Number of daily data files to keep: [7]”, you may wish to keep a larger number of files. However, don’t exceed 25 because Sysstat will reuse existing files the next month, leading to erroneous daily reports.

Configuring Sysstat

Cron Information

To begin gathering Sysstat history information, you must add to, or create a privileged user's crontab. The default history data location is `/var/log/sa`. The user running Sysstat utilities via cron must have write access to this location.

Below is an example of what to install in the crontab. Adjust the parameters to suit your needs. Use **man sa1** and **man sa2** for information about the commands.

```
# 8am-7pm activity reports every 10 minutes during weekdays
0 8-18 * * 1-5 /usr/lib/sa/sa1 600 6 &

# 7pm-8am activity reports every hour during weekdays
0 19-7 * * 1-5 /usr/lib/sa/sa1 &

# Activity reports every hour on Saturday and Sunday
0 * * * 0,6 /usr/lib/sa/sa1 &

# Daily summary prepared at 19:05
5 19 * * * /usr/lib/sa/sa2 -A &
```

Ensure you submit the revised crontab to the cron daemon.

System Startup Information

At system startup, a LINUX RESTART message must be inserted in the daily data file to reinitialize the kernel counters. This can be automated by installing the `/etc/rc.d/init.d/sysstat` init script included in the `blfs-bootscripts-6.1` package using the following command as the root user:

```
make install-sysstat
```

Contents

Installed Programs: iostat, mpstat, sar, sa1, sa2, sadc and sadf
Installed Libraries: None
Installed Directories: /usr/lib/sa, /usr/share/doc/sysstat-6.0.0 and /var/log/sa

Short Descriptions

iostat reports CPU statistics and input/output statistics for devices and partitions.
mpstat reports individual or combined processor related statistics.
sar collects, reports and saves system activity information.
sa1 collects and stores binary data in the system activity daily data file. It is a front end to `sadc` designed to be run from cron.
sa2 writes a summarized daily activity report. It is a front end to **sar** designed to be run from cron.
sadc is the system activity data collector, used as a backend for **sar**.
sadf is used for displaying the contents of data files created by the **sar** command. But unlike **sar**, **sadf** can

write its data in many different formats.

Apache Ant-1.6.2

Introduction to Apache Ant

The Apache Ant package is a Java-based build tool. In theory, it is kind of like **make**, but without **make**'s wrinkles. Ant is different. Instead of a model where it is extended with shell-based commands, Ant is extended using Java classes. Instead of writing shell commands, the configuration files are XML-based, calling out a target tree where various tasks get executed. Each task is run by an object that implements a particular task interface.

Package Information

- Download (HTTP): <http://archive.apache.org/dist/ant/source/apache-ant-1.6.2-src.tar.bz2>
- Download (FTP): <ftp://ftp.oregonstate.edu/pub/apache/ant/source/apache-ant-1.6.2-src.tar.bz2>
- Download MD5 sum: 83c3adefdbf90bcbc4b804d4c55c0778
- Download size: 6.2 MB
- Estimated disk space required: 92 MB
- Estimated build time: 0.47 SBU

Additional Downloads

- Required Patch: http://www.linuxfromscratch.org/blfs/downloads/6.1/apache-ant-1.6.2-blfs_install-1.patch

Apache Ant Dependencies

Required

JDK-1.5.0

Installation of Apache Ant



Note

You may need additional libraries to satisfy the build requirements of various packages installed using Apache Ant. Review the table at <http://ant.apache.org/manual/install.html#librarydependencies> for any prerequisite libraries you may need. One such library is the JUnit testing framework library. Many Ant-installed packages will use this library to perform the unit tests during the build process. To install the JUnit library along with the Apache Ant package, download it from <http://www.junit.org/>, unzip the distribution file (requires UnZip-5.52) and copy the `junit.jar` file into the `lib` subdirectory of the Apache Ant source tree before beginning the Apache Ant build.

Install Apache Ant by running the following commands:

```
patch -Np1 -i ../apache-ant-1.6.2-blfs_install-1.patch
```

Now, as the `root` user:

```
./build.sh -Ddist.dir=/opt/ant-1.6.2 dist &&
ln -v -sf /etc/ant /opt/ant-1.6.2/etc &&
ln -v -sf ant-1.6.2 /opt/ant
```

Command Explanations

./build.sh -Ddist.dir=/opt/ant-1.6.2 dist: This command does everything. It builds the package, then installs the package into `/opt/ant-1.6.2`.

ln -v -sf /etc/ant /opt/ant-1.6.2/etc: The patch changes the configuration directory to `/etc/ant` to conform with FHS guidelines. This command creates a symlink from the configuration directory back to the installation directory as the package is expecting to find the files there.

ln -v -sf ant-1.6.2 /opt/ant: This command is optional, and creates a convenience symlink.

Configuring Apache Ant

Config Files

`/etc/ant/ant.conf`, `~/.ant/ant.conf`, and `~/.antrc`

Configuration Information

Some packages will require **ant** to be in the search path and the `$ANT_HOME` environment variable defined. Satisfy these requirements by adding the following lines to `/etc/profile` or to individual user's `~/.profile` or `~/.bashrc` files:

```
export PATH=$PATH:/opt/ant/bin
export ANT_HOME=/opt/ant
```

Contents

Installed Programs: `ant`, `antRun`, `antRun.pl`, `complete-ant-cmd.pl`, `runant.pl`, and `runant.py`

Installed Libraries: `ant-*.jar`, `xercesImpl.jar`, and `xml-apis.jar`

Installed Directories: `/etc/ant` and `/opt/ant-1.6.2`

Short Descriptions

ant	is a Java based build tool used by many packages instead of the conventional make program.
antRun	is a support script used to start ant build scripts in a given directory.
antRun.pl	is a Perl script that provides similar functionality offered by the antRun script.
complete-ant-cmd.pl	is a Perl script that allows Bash to complete an ant command-line.
runant.pl	is a Perl wrapper script used to invoke ant .
runant.py	is a Python wrapper script used to invoke ant .

`ant-*.jar`

files are the Apache Ant Java class libraries.

`xercesImpl.jar`

is a Java class library used by Apache Ant to perform XML parsing.

`xml-apis.jar`

contains the DOM Java classes required by the Apache Ant XML formatter.

Chapter 12. Programming

A base LFS system can be used as a development platform, however the base system only includes language support for C, C++ and Perl. This chapter provides instructions to build many popular programming environments to greatly expand your system's development capabilities.

DejaGnu-1.4.4

Introduction to DejaGnu

DejaGnu is a framework for running test suites on GNU tools. It is written in **expect**, which uses Tcl (Tool command language).

Package Information

- Download (HTTP): http://freshmeat.net/redirect/dejagnu/12564/url_tgz/dejagnu-1.4.4.tar.gz
- Download (FTP): <ftp://ftp.gnu.org/pub/gnu/dejagnu/dejagnu-1.4.4.tar.gz>
- Download MD5 sum: 053f18fd5d00873de365413cab17a666
- Download size: 1.08 MB
- Estimated disk space required: 8.5 MB
- Estimated build time: .04 SBU

DejaGnu Dependencies

Required

Expect-5.43.0

Optional

DocBook-utils-0.6.14

Installation of DejaGnu

Install DejaGnu by running the following commands:

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

Now, as the `root` user:

```
make install &&  
make install-doc
```

To test the installation, issue **make check** as an unprivileged user.

Contents

Installed Program: `runtest`

Installed Libraries: None

Installed Scripts: There are numerous Expect scripts installed in the `/usr/share/dejagnu` hierarchy.

Installed Directory: `/usr/share/dejagnu`

Short Descriptions

runtest is the DejaGnu test driver program. It is used to control what tests to run, and variations on how to run them.

Doxygen-1.4.3

Introduction to Doxygen

The Doxygen package contains a documentation system for C++, C, Java, Objective-C, Corba IDL and to some extent PHP, C# and D. This is useful for generating HTML documentation and/or an off-line reference manual from a set of documented source files. There is also support for generating output in RTF, PostScript, hyperlinked PDF, compressed HTML, and Unix man pages. The documentation is extracted directly from the sources, which makes it much easier to keep the documentation consistent with the source code.

You can also configure Doxygen to extract the code structure from undocumented source files. This is very useful to quickly find your way in large source distributions. Used along with GraphViz, you can also visualize the relations between the various elements by means of include dependency graphs, allance diagrams, and collaboration diagrams, which are all generated automatically.

Package Information

- Download (HTTP): <http://ftp.stack.nl/pub/users/dimitri/doxygen-1.4.3.src.tar.gz>
- Download (FTP): <ftp://ftp.stack.nl/pub/users/dimitri/doxygen-1.4.3.src.tar.gz>
- Download MD5 sum: 6cad81b86c1271777b8ee7c953a496ac
- Download size: 2.7 MB
- Estimated disk space required: 41 MB (additional 6.3 MB to install docs)
- Estimated build time: 1.4 SBU

Doxygen Dependencies

Optional

Qt-3.3.4, TeX-3.0 and GraphViz

Installation of Doxygen

Install Doxygen by running the following commands:

```
rm src/unistd.h &&
./configure --prefix /usr --docdir /usr/share/doc &&
make
```

This package does not come with a test suite.

Now, as the `root` user:

```
make install
```

If you wish to generate and install the package documentation (note that man pages have already been installed), you must have TeX installed, then issue the following command as the `root` user:

```
make install_docs
```

**Tip**

If you don't have TeX installed but wish to generate and install the HTML documentation (very good docs), issue the following commands:

```
make docs
```

Now, as the `root` user:

```
install -v -m755 -d /usr/share/doc/doxygen &&  
cp -v -R examples html /usr/share/doc/doxygen
```

Command Explanations

rm src/unistd.h: There is a bug in Flex-2.5.31 which causes **make** to use this file instead of the system installed version. Removing this file allows the GUI front-end to build successfully. This command is not required if you don't pass the `--with-doxywizard` parameter (but won't affect the build otherwise).

`--with-doxywizard:` Use this parameter if Qt is installed and you wish to build the GUI front-end.

Configuring Doxygen

There is no real configuration necessary for the Doxygen package although three additional packages are required if you wish to use extended capabilities. If you need to use the language translation features, you must have Python-2.4.1 installed. If you require formulas to create PDF documentation, then you must have TeX-3.0 installed. If you require formulas to convert PostScript files to bitmaps, then you must have AFPL Ghostscript-8.51 or ESP Ghostscript-7.07.1 installed.

Contents

Installed Programs: doxygen, doxytag, and optionally, doxywizard
Installed Libraries: None
Installed Directory: /usr/share/doc/doxygen

Short Descriptions

doxygen is a command-line based utility used to generate template configuration files and then generate documentation from these templates. Use **doxygen --help** for an explanation of the command-line parameters.

doxytag is used to generate a tag file and/or a search index for a set of HTML files.

doxywizard is a GUI front-end for configuring and running **doxygen**.

Expect-5.43.0

Introduction to Expect

The Expect package contains tools for automating interactive applications such as **telnet**, **ftp**, **passwd**, **fsck**, **rlogin**, **tip**, etc. Expect is also useful for testing these same applications as well as easing all sorts of tasks that are prohibitively difficult with anything else.

Package Information

- Download (HTTP): <http://expect.nist.gov/old/expect-5.43.0.tar.gz>
- Download (FTP):
- Download MD5 sum: 230400129630335b3060a42f66fec11d
- Download size: 525 KB
- Estimated disk space required: 4.6 MB
- Estimated build time: 0.07 SBU

Additional Downloads

- Required Patch: <http://www.linuxfromscratch.org/blfs/downloads/6.1/expect-5.43.0-spawn-2.patch>

Expect Dependencies

Required

Tcl-8.4.11

Optional

Tk-8.4.11

Installation of Expect

Install Expect by running the following commands:

```
patch -Np1 -i ../expect-5.43.0-spawn-2.patch &&
./configure --prefix=/usr --with-tcl=/usr/lib \
    --with-tclinclude=/usr/include/tcl8.4 --enable-shared &&
make
```

Now, as the `root` user:

```
make install &&
ln -sf ../libexpect5.43.a /usr/lib/expect5.43
```

Command Explanations

- `--enable-shared`: This option enables building the shared library.
- `--with-tk=/usr/lib`: Use this option to link in the Tk library.

ln -sf ../libexpect5.43.a /usr/lib/expect5.43: This command creates a required link to the static library.

Configuring Expect

Config Files

`$exp_library/expect.rc` and `~/.expect.rc`

Configuration Information

Reference the **expect** man page for information about utilizing the `expect.rc` configuration files. Additionally, many of the tools contained in the Expect package will use their own configuration files. Reference the respective man page, or examine the script directly for configuration file information.

Contents

Installed Programs:	autoexpect, autopasswd, cryptdir, decryptdir, dislocate, expect, ftp-rfc, kibitz, lpunlock, mkpasswd, passmass, rftp, rlogin-cwd, timed-read, timed-run, unbuffer, weather, and optionally (if Expect was linked against Tk), expectk, multixterm, tknewsbiff, tkpasswd, xkibitz, and xpstat
Installed Library:	libexpect5.43.[so,a]
Installed Directory:	/usr/lib/expect5.43

Short Descriptions

autoexpect	generates an Expect script from watching a session.
autopasswd	is a wrapper to make passwd(1) be non-interactive.
cryptdir	encrypts all files in a directory.
decryptdir	decrypts all files in a directory.
dislocate	allows processes to be disconnected and reconnected to a terminal.
expect	is a program that “talks” to other interactive programs according to a script.
ftp-rfc	retrieves an RFC (or the index) from UUNET.
kibitz	allows two (or more) people to interact with one shell (or any arbitrary program).
lpunlock	unhangs a printer which claims it is “waiting for lock”.
mkpasswd	generates passwords and can apply them automatically to users.
passmass	changes a password on multiple machines.
rftp	is much like ftp except it uses <code>~g</code> and <code>~p</code> instead of <code>mget</code> and <code>mput</code> .
rlogin-cwd	is rlogin except it uses the local current directory as the current working directory on the remote machine.

timed-read	reads a complete line from stdin and aborts after a given number of seconds.
timed-run	runs a program for a given amount of time.
unbuffer	disables the output buffering that occurs when program output is redirected.
weather	retrieves a weather report (courtesy University of Michigan) for a given city or geographical area.
expectk	is a combination of Expect with Tk and should run any wish or Expect script.
multixterm	creates multiple xterms that can be driven together or separately.
tknewsbiff	pops up a window when there is unread news in your favorite newsgroups and removes the window after you've read the news.
tkpasswd	is a script to change passwords using expectk .
xkibitz	allows users in separate xterms to share one shell (or any program that runs in an xterm).
xpstat	is a script that acts as a front-end for xpilot .
<code>libexpect5.43.[so,a]</code>	contains functions that allow Expect to be used as a Tcl extension or to be used directly from C or C++ (without Tcl).

GCC-3.4.3

Introduction to GCC

The GCC package contains GNU compilers. This is useful for compiling programs written in C, C++, Fortran, Java, Objective C and Ada.

Package Information

- Download (HTTP): <http://mirrors.rcn.net/pub/sourceware/gcc/releases/gcc-3.4.3/gcc-3.4.3.tar.bz2>
- Download (FTP): <ftp://mirrors.rcn.net/pub/sourceware/gcc/releases/gcc-3.4.3/gcc-3.4.3.tar.bz2>
- Download MD5 sum: e744b30c834360fccac41eb7269a3011
- Download size: 27.4 MB
- Estimated disk space required: 1.62 GB
- Estimated build time: 45.50 SBU (build and install all compilers)

Additional Downloads

- Required patch: http://www.linuxfromscratch.org/blfs/downloads/6.1/gcc-3.4.3-no_fixincludes-1.patch
- Required patch: <http://www.linuxfromscratch.org/blfs/downloads/6.1/gcc-3.4.3-linkonce-1.patch>

GCC Dependencies

Recommended

DejaGnu-1.4.4



Note

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 MD5 sum: 57c060cd1ccef8b1ae9165b11d98780a
- Download size: 13.4 MB
- Estimated build time: less than 0.1 SBU

GNAT Dependencies

Required

Tcsh-6.14.00

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 the following command as the `root` user:

```
./doinstall
```

The GNAT compiler can be invoked by executing the `gcc` binary installed by the above script.

You may now remove the GNAT source directory:

```
cd .. &&
rm -rf gnat-3.15p-i686-pc-linux-gnu-bin
```

Prepare to compile GCC by placing the GNAT `gcc` at the beginning of the `PATH` variable by using the following commands:

```
PATH_HOLD=$PATH &&
export PATH=/opt/gnat/bin:$PATH
```

Installation of GCC

Install GCC by running the following commands:



Important

The installation process may overwrite your existing GCC compiler and libraries. It is highly recommended that you have the Tcl, Expect and DejaGnu packages installed before beginning the build so you can run the full suite of tests.

Do not continue with the `make install` command until you're confident the build was successful. You can compare your test results with those found at <http://gcc.gnu.org/ml/gcc-testresults/>. There's also an i686 platform test result produced by an LFS-6.1 system at http://linuxfromscratch.org/~randy/gcc343_test.txt. You may also want to refer to the information found in the GCC-Pass 2 section of Chapter 5 in the LFS book (<http://lfs/view/stable/chapter05/gcc-pass2.html>).

```
patch -Np1 -i ../gcc-3.4.3-no_fixincludes-1.patch &&
patch -Np1 -i ../gcc-3.4.3-linkonce-1.patch &&
sed -i 's/install_to_$(INSTALL_DEST) //' libiberty/Makefile.in &&
mkdir ../gcc-build &&
cd ../gcc-build &&
../gcc-3.4.3/configure --prefix=/usr --libexecdir=/usr/lib \
  --enable-shared --enable-threads=posix --enable-__cxa_atexit \
  --enable-clocale=gnu --enable-languages=c,c++,objc,f77,ada,java &&
```

```
make bootstrap &&
make -C gcc gnatlib-shared &&
make -C gcc gnattools &&
make -k check &&
../gcc-3.4.3/contrib/test_summary
```

Now, as the root user:

```
make install &&
ln -v -sf ../usr/bin/cpp /lib &&
ln -v -sf gcc /usr/bin/cc &&
ln -v -sf g77 /usr/bin/f77 &&
chown -v -R root:root \
    /usr/lib/gcc/i686-pc-linux-gnu/3.4.3/include &&
chown -v -R root:root \
    /usr/lib/gcc/i686-pc-linux-gnu/3.4.3/ada{lib,include}
```

There is a bug in the installation of the `libffi` interface headers. The architecture specific `ffitarget.h` file is not installed. If you included Java as one of the installed languages, install the missing file using the command below. Substitute for the `[arch]` in the command with the appropriate directory path for your system.

```
install -v -m644 ../gcc-3.4.3/libffi/src/[arch]/ffitarget.h \
    /usr/include
```

As the root user, remove the GNAT installation:

```
rm -rf /opt/gnat
```

Now, as the unprivileged user, restore your old `PATH`:

```
export PATH=$PATH_HOLD &&
unset PATH_HOLD
```



Note

Some of the Java programs installed by the GCC package conflict (have the same names) with programs from the JDK-1.5.0 package. If you installed the Java language from the GCC package but you wish to use the programs from the JDK as the defaults, ensure `$JAVA_HOME/bin` is listed before `/usr/bin` in your `PATH` variable.

Command Explanations

`sed -i 's/install_to_$(INSTALL_DEST) //' libiberty/Makefile.in`: This command suppresses the installation of `libiberty.a` as the version provided by Binutils is used instead.

`mkdir ../gcc-build; cd ../gcc-build`: The GCC documentation recommends building the package in a dedicated build directory.

`--enable-shared --enable-threads=posix --enable-__cxa_atexit`: These commands are required to build the C++ libraries to published standards.

`--enable-locale=gnu`: This command is a failsafe for incomplete locale data.

`--enable-languages=c,c++,objc,f77,ada,java`: This command identifies which languages to build. You may modify this command to remove undesired languages.

make -C gcc gnatlib-shared: This command builds the Ada shared and static libraries. Skip this step if you have not enabled Ada as one of the languages.

make -C gcc gnattools: This command builds the Ada development tools and binaries. Skip this step if you have not enabled Ada as one of the languages.

make -k check: This command runs the test suite without stopping should any errors be encountered.

`../gcc-3.4.3/contrib/test_summary`: This command will produce a summary of the test suite results. You can append `| grep -A7 Summ` to the command to produce an even more condensed version of the summary. You may also wish to redirect the output to a file for review and comparison later on.

ln -sf ../usr/bin/cpp /lib: This command creates a link to the C PreProcessor as some packages expect it to be installed in the `/lib` directory.

ln -sf gcc /usr/bin/cc; ln -sf g77 /usr/bin/f77: These links are created as some packages refer to the C and Fortran compilers using an alternate name.

chown -R root:root /usr/lib/gcc/i686-pc-linux-gnu/...: If the package is built by a user other than root, the ownership of the installed `include` and `adalib` directories (and their contents) will be incorrect. These commands change the ownership to root:root. Omit the command changing the Ada directories if you did not include Ada as one of the installed languages.

Contents

Installed Programs:	<code>addr2name.awk</code> , <code>cc</code> , <code>c++</code> , <code>cpp</code> , <code>f77</code> , <code>g++</code> , <code>g77</code> , <code>gcc</code> , <code>gccbug</code> , <code>gcj</code> , <code>gcjh</code> , <code>gcov</code> , <code>gij</code> , <code>gnat</code> , <code>gnatbind</code> , <code>gnatbl</code> , <code>gnatchop</code> , <code>gnatclean</code> , <code>gnatfind</code> , <code>gnatkr</code> , <code>gnatlink</code> , <code>gnatls</code> , <code>gnatmake</code> , <code>gnatname</code> , <code>gnatprep</code> , <code>gnatxref</code> , <code>gpr2make</code> , <code>gprcmd</code> , <code>grepjar</code> , <code>jar</code> , <code>jcf-dump</code> , <code>jv-convert</code> , <code>jv-scan</code> , <code>rmic</code> , <code>rmiregistry</code> and architecture specific names for <code>c++</code> , <code>g++</code> , <code>gcc</code> , <code>gcc-3.4.3</code> , <code>gcj</code> , and <code>gcjh</code>
Installed Libraries:	<code>lib-org-w3c-dom.[so,a]</code> , <code>lib-org-xml-sax.[so,a]</code> , <code>libffi-2.00-beta.so</code> , <code>libffi.[so,a]</code> , <code>libfrtbegin.a</code> , <code>libg2c.[so,a]</code> , <code>libgcc_s.so</code> , <code>libgcj.[so,a]</code> , <code>libobjc.[so,a]</code> , <code>libstdc++.so.6,a</code> , <code>libsupc++.a</code> , and numerous other run-time libraries and executables in <code>/usr/lib/gcc</code>
Installed Directories:	<code>/usr/include/c++</code> , <code>/usr/include/gcj</code> , <code>/usr/include/gnu</code> , <code>/usr/include/java</code> , <code>/usr/include/javax</code> , <code>/usr/lib/gcc</code> , <code>/usr/lib/security</code> , <code>/usr/share/gnat</code> , and <code>/usr/share/java</code>

Short Descriptions

Some program and library descriptions are not listed here, but can be found at ../.../lfs/view/stable/chapter06/gcc.html#contents-gcc.

addr2name.awk emulates some of the functionality of `addr2line`.

f77 is a symlink to `g77`, created for compatibility purposes.

g77	is the Fortran compiler invoked by gcc .
gcj	is an ahead-of-time compiler for the Java language.
gcjh	generates header files from Java class files.
gij	is the GNU interpreter for Java bytecode.
gnat	is the Ada compiler invoked by gcc .
gnatbind	is used to bind compiled objects.
gnatbl	is the Ada linker.
gnatchop	is useful for renaming files to meet the standard Ada default file naming conventions.
gnatclean	is used to remove files associated with a GNAT project.
gnatfind	is the GNAT definition/use finder.
gnatkr	is used to determine the crunched name for a given file, when crunched to a specified maximum length.
gnatlink	is used to link programs and build an executable file.
gnatls	is the compiled unit browser.
gnatmake	is an automatic make facility.
gnatname	will list the files associated with a GNAT project.
gnatprep	is the GNAT external preprocessor.
gnatxref	is the GNAT cross-referencer.
gpr2make	is a tool used to create <code>Makefiles</code> that support compilation by multiple languages.
gprcmd	is a utility used by <code>Makefile.generic</code> to handle multi-language builds. It provides a set of commands so that the <code>Makefiles</code> do not need to depend on Unix utilities not available on all targets.
grepjar	searches <code>jar</code> files for a pattern.
jar	is an archive tool for Java archives.
jcf-dump	prints information about Java class files.
jv-convert	converts files from one encoding to another.
jv-scan	prints information about Java source files.
rmic	generates stubs for Remote Method Invocation.
rmiregistry	starts a remote object registry on the current host.

GCC-3.3.4

Introduction to GCC-3.3.4

The reason for installing GCC-3.3.4 is that some BLFS packages (such as compiled Java and OpenOffice) have not been updated to be compilable by GCC-3.4.3. Additionally, some pre-compiled packages may require the GCC-3.3.4 libraries.

Package Information

- Download (HTTP): <http://ftp.gnu.org/gnu/gcc/gcc-3.3.4/gcc-3.3.4.tar.bz2>
- Download (FTP): <ftp://ftp.gnu.org/gnu/gcc/gcc-3.3.4/gcc-3.3.4.tar.bz2>
- Download MD5 sum: a1c267b34f05c8660b24251865614d8b
- Download size: 23 MB
- Estimated disk space required: 489 MB
- Estimated build time: 5.72 SBU (additional 12.54 SBU to run the test suite)

Additional Downloads

- Required patch: http://www.linuxfromscratch.org/blfs/downloads/6.1/gcc-3.3.4-no_fixincludes-1.patch
- Required patch: <http://www.linuxfromscratch.org/blfs/downloads/6.1/gcc-3.3.4-linkonce-1.patch>

GCC-3.3.4 Dependencies

DejaGnu-1.4.4 (required to run the full test suite)

Installation of GCC-3.3.4

Install GCC-3.3.4 by running the following commands:

```
patch -Np1 -i ../gcc-3.3.4-no_fixincludes-1.patch &&
patch -Np1 -i ../gcc-3.3.4-linkonce-1.patch &&
mkdir ../gcc-build &&
cd ../gcc-build &&
../gcc-3.3.4/configure \
  --prefix=/opt/gcc-3.3.4 \
  --enable-shared --enable-languages=c,c++ \
  --enable-threads=posix &&
make bootstrap
```

If desired, run the test suite using the following commands. The **test_summary** commands create log files which can be compared to known good results located at http://linuxfromscratch.org/~randy/gcc-334-lfs-6.0-test_summary.log and http://linuxfromscratch.org/~randy/gcc-334-lfs-6.0-test_summary_short.log.

```
make -k check &&
../gcc-3.3.4/contrib/test_summary >test_summary.log 2>&1 &&
../gcc-3.3.4/contrib/test_summary | \
  grep -A7 Summ >test_summary_short.log 2>&1
```

Now, as the `root` user:

```
make install &&
mv -v /opt/gcc-3.3.4/lib/libstdc++.so.5* /usr/lib &&
ln -v -sf /usr/lib/libstdc++.so.5.0.6 /opt/gcc-3.3.4/lib &&
ln -v -sf libstdc++.so.5.0.6 /opt/gcc-3.3.4/lib/libstdc++.so.5 &&
chown -v -R root:root \
/opt/gcc-3.3.4/lib/gcc-lib/i686-pc-linux-gnu/3.3.4/include
```

Command Explanations

mkdir ../gcc-build; cd ../gcc-build: The GCC development team recommends building in a separate directory.

--enable-shared --enable-languages=c,c++ --enable-threads=posix: Configures GCC to build the C and C++ compilers and enable the related C++ options.

mv -v /opt/gcc-3.3.4/lib/libstdc++.so.5* /usr/lib: Moves the C++ libraries to the standard lib directory to avoid having to add `/opt/gcc-3.3.4/lib` to `/etc/ld.so.conf`.

Configuring GCC-3.3.4

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`.

If you only need the GCC-3.3.4 libraries, you may delete `/opt/gcc-3.3.4`.

Whenever you need to use GCC-3.3.4 instead of your system installed compiler, add `/opt/gcc-3.3.4/bin` to the front of your `PATH` or (preferably) set the `CC` environment variable before compiling the concerned package.

Contents

Installed Programs:	<code>c++</code> , <code>cpp</code> , <code>g++</code> , <code>gcc</code> , <code>gccbug</code> , <code>gcov</code> , and architecture specific names of these programs.
Installed Libraries:	<code>libgcc_s.so</code> , <code>libiberty.a</code> , <code>libstdc++.a</code> , <code>libstdc++.so</code> , <code>libsupc++.a</code> , and other support libraries and files.
Installed Directory:	<code>/opt/gcc-3.3.4</code>

Short Descriptions

The GCC-3.3.4 package contains the **gcc-3.3.4** C and C++ compilers and the GCC-3.3.4 `libstdc++.so` library that is required by some commercial and pre-compiled packages.

Guile-1.6.7

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-1.6.7.tar.gz>
- Download (FTP): <ftp://ftp.gnu.org/pub/gnu/guile/guile-1.6.7.tar.gz>
- Download MD5 sum: c2ff2a2231f0cbb2e838dd8701a587c5
- Download size: 3.0 MB
- Estimated disk space required: 37.4 MB
- Estimated build time: 0.86 SBU

Installation of Guile

Install Guile by running the following commands:

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

To test the results, issue: **make check**.

Now, as the `root` user:

```
make install
```

Contents

Installed Programs:	guile, guile-config, guile-snarf, and guile-tools
Installed Libraries:	libguile.[so,a], libguilereadline-v-12.[so,a], libguile-ltdl.[so,a], libguile-srfi-13-14-v-1.[so,a], libguile-srfi-srfi-4-v-1.[so,a], and optionally, libqthreads.[so,a]
Installed Directories:	/usr/include/guile, /usr/include/guile-readline, /usr/include/libguile, and /usr/share/guile

Short Descriptions

guile	is a stand-alone Scheme interpreter for Guile.
guile-config	is a Guile script which provides the information necessary to link your programs against the Guile library, in much the same way <code>pkg-config-0.19</code> does.
guile-snarf	is a script to parse declarations in your C code for Scheme visible C functions, i Scheme objects to be used by C code, etc.

guile-tools

is a wrapper program installed along with **guile** which knows where a particular module is installed and calls it passing its args to a program.

JDK-1.5.0

Introduction to JDK

The JDK 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.

In order to use the source code and patches, you must read and agree to the Sun Java Research License. In addition, the source code cannot be downloaded from some countries, so for users in those countries, the binary is the only option.

If you plan on compiling the JDK source, you will still need to download the binary version to bootstrap the JDK build. You will need to download a total of four files to complete the source build: `jdk-1_5_0_03-linux-i586.bin`, `jdk-1_5_0-src-jrl.zip`, `jdk-1_5_0-bin-jrl.zip`, and `jdk-1_5_0-mozilla_headers-unix.zip`.

Package Information

- Binary download: <http://java.sun.com/j2se/1.5.0/download.jsp>
- Version used (binary): 1.5.0_03
- Download MD5 sum (binary): bc221641fcfdc9268499001326fc8ebb
- Source download: http://java.sun.com/j2se/jrl_download.html
- Download MD5 sum (source):
<http://anduin.linuxfromscratch.org/sources/BLFS/SVN/I-K/JDK/jdk-1.5.0.md5sums>
- Download size (binary): 48.7 MB
- Download size (source): 65.7 MB (three .zip files)
- Estimated disk space required: 1444 MB
- Estimated build time: 33.06 SBU

Additional Downloads

Required Patches

- http://www.linuxfromscratch.org/blfs/downloads/6.1/jdk-1.5.0-gcc_3.4.2+-3.patch
- http://www.linuxfromscratch.org/blfs/downloads/6.1/jdk-1.5.0-motif_mkmsgcat-1.patch
- <http://www.linuxfromscratch.org/blfs/downloads/6.1/jdk-1.5.0-nptl-1.patch>
- http://www.linuxfromscratch.org/blfs/downloads/6.1/jdk-1.5.0-remove_broken_demo-1.patch
- http://www.linuxfromscratch.org/blfs/downloads/6.1/jdk-1.5.0-remove_fixed_paths-1.patch

Recommended Patches

- http://www.linuxfromscratch.org/blfs/downloads/6.1/jdk-1.5.0-remove_debug_image-1.patch (skips compiling of the JDK debug image)
- http://www.linuxfromscratch.org/blfs/downloads/6.1/jdk-1.5.0-static_cxx-1.patch (forces dynamic linking to

GCC libs)

Optional Patch

- <http://www.linuxfromscratch.org/blfs/downloads/6.1/jdk-1.5.0-xorg-6.8.1-1.patch> (only required if building against X.org-6.8.2)

JDK Dependencies

Required (to Build JDK from Source)

X (XFree86-4.5.0 or X.org-6.8.2), Zip-2.31, UnZip-5.52, cpio-2.6, ALSA-1.0.9, and Tcsh-6.14.00

Installation of JDK

Both versions will be installed in parallel. You may choose to keep either or both.

Install the precompiled JDK with the following commands:

```
export VERSION=1.5.0_03 &&
export MV=`echo $VERSION | cut -d "_" -f 1,1` &&
export V=`echo ${VERSION} | sed -e "s/\./_/g"` &&
sed -i "s:^PATH=.*::" jdk-${V}-linux-i?86.bin &&
chmod -v +x jdk-${V}-linux-i?86.bin &&
mkdir -v -p bin &&
ln -v -sf /bin/true bin/more &&
yes | PATH=$PWD/bin:$PATH ./jdk-${V}-linux-i?86.bin &&
cd jdk${VERSION}
```

Now, as the root user:

```
install -v -d /opt/jdk/jdk-precompiled-${MV} &&
mv -v * /opt/jdk/jdk-precompiled-${MV}
chown -v -R root:root /opt/jdk/jdk-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 installed JDK to the path.

```
export JAVA_HOME=/opt/jdk/jdk-precompiled-${MV} &&
export PATH=$PATH:${JAVA_HOME}/bin
```

Unzip the sources:

```
mkdir jdk-build &&
cd jdk-build &&
VERSION=1.5.0 &&
V=`echo $VERSION | sed -e "s/\./_/g"` &&
unzip ../jdk-${V}-src-jrl.zip &&
unzip ../jdk-${V}-bin-jrl.zip &&
unzip ../jdk-${V}-mozilla_headers-unix.zip
```

Apply all the patches downloaded above.

```
for PATCH in ../jdk-1.5.0*.patch
do patch -Np1 -i ${PATCH}
done
```

Set/unset some variables which affect the build:

```
export ALT_BOOTDIR="$JAVA_HOME" &&
unset JAVA_HOME &&
unset CLASSPATH
unset CFLAGS
unset CXXFLAGS
unset LDFLAGS
export ALT_DEVTOOLS_PATH="/usr/bin" &&
export BUILD_NUMBER="blfs-6.1" &&
export DEV_ONLY=true &&
export ALT_MOZILLA_PATH=$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. -O3, even in OTHER_C{,XX}FLAGS, is known to cause a build failure.

Additionally, if you would like to **make** in parallel, add the following:

```
export HOTSPOT_BUILD_JOBS=[ 3 ]
```

Build the JDK with the following commands. There will be a lot of messages about missing files that look like errors. These are caused by not meeting the expected build environment (Red Hat). As long as the build doesn't stop, the messages are harmless.

```
cd control/make &&
make &&
cd ../build/linux-i?86
```

Now, as the root user, install the JDK:

```
cp -v -a j2sdk-image /opt/jdk/jdk-1.5.0 &&
chown -v -R root:root /opt/jdk/jdk-1.5.0 &&
ln -sf motif21/libmawt.so /opt/jdk/jdk-1.5.0/jre/lib/i386/
```

Restore the unprivileged user's environment using the following commands:

```
unset VERSION &&
unset MV &&
unset V &&
```

```
unset ALT_BOOTDIR &&
unset ALT_DEVTOOLS_PATH &&
unset BUILD_NUMBER &&
unset DEV_ONLY &&
unset ALT_MOZILLA_PATH &&
unset INSANE &&
unset MAKE_VERBOSE &&
unset ALT_CACERTS_FILE
```

Command Explanations

export ALT_BOOTDIR="\$JAVA_HOME": This variable sets the location of the bootstrap JDK.

export ALT_MOZILLA_PATH=\$PWD: This tells the build where to find the base directory of the plugin path (which contains the Mozilla headers).

export ALT_DEVTOOLS_PATH="/usr/bin": This changes the location where the build finds the needed executables.

export BUILD_NUMBER="blfs-6.1": This will help you identify the compiled version of the runtime environment and virtual machine by appending this information to the version string.

export DEV_ONLY=true: This command skips compiling the documentation and eliminates a dependency on rpm.

unset JAVA_HOME: This clears the JAVA_HOME variable as recommended by the build instructions.

unset CLASSPATH: This clears the CLASSPATH variable as recommended by the build instructions.

unset CFLAGS/CXXFLAGS...: These variables cause miscompilation of the build. Never set them.

export INSANE=true: The certified platform for the build is Redhat Enterprise Advanced Server 2.1. This variable ensures that all the errors related to compiling on a non-certified platform will be displayed as warnings instead of errors.

export MAKE_VERBOSE=true: Allows the compiler commands to be displayed on the console.

export ALT_CACERTS_FILE...: Specifies the certificate file to use (from the installed binary JDK).

ln -sf motif21/libmawt.so /opt/jdk/jdk-1.5.0/jre/lib/i386/: This fixes linking issues with other applications that expect to find the motif libraries with the other JDK libraries.

Configuring JDK

Configuration Information

There are now two Java 2 SDKs installed in `/opt/jdk`. You should decide on which one you would like to use as the default. For example if you decide to use the source compiled JDK, do the following as the root user:

```
ln -v -nsf jdk-1.5.0 /opt/jdk/jdk
```

Add the following `jdk.sh` shell startup file to the `/etc/profile.d` directory with the following commands as the root user:

```

cat > /etc/profile.d/jdk.sh << "EOF"
# Begin /etc/profile.d/jdk.sh

# Set JAVA_HOME directory
JAVA_HOME=/opt/jdk/jdk
export JAVA_HOME

# Adjust PATH
pathappend ${JAVA_HOME}/bin PATH

# Auto Java Classpath Updating
# Create symlinks to this directory for auto classpath setting
AUTO_CLASSPATH_DIR=/usr/lib/classpath
if [ -z ${CLASSPATH} ]; then
    CLASSPATH=.:${AUTO_CLASSPATH_DIR}
else
    CLASSPATH="${CLASSPATH}.:${AUTO_CLASSPATH_DIR}"
fi

# Check for empty AUTO_CLASSPATH_DIR
ls ${AUTO_CLASSPATH_DIR}/*.jar &> /dev/null &&
for i in ${AUTO_CLASSPATH_DIR}/*.jar
do CLASSPATH=${CLASSPATH}: "${i}"
done
export CLASSPATH

# End /etc/profile.d/jdk.sh
EOF

```

The Java plugin is located in `$JAVA_HOME/jre/plugin/i?86/ns7/`. Make a symbolic link to the file in that directory from your browser(s) plugins directory.



Important

The plugin must be a symlink for it to work. If not, the browsers will crash when you attempt to load a Java application.

Contents

Installed Programs: appletviewer, extcheck, idlj, jar, jarsigner, java, javac, javadoc, javah, javap, javaws, jdb, keytool, native2ascii, orbd, policytool, rmic, rmid, rmiregistry, serialver, servertool, and tnameserv

Installed Libraries: `$JAVA_HOME/lib/*`, `$JAVA_HOME/jre/lib/*`, and `libjavaplugin_oji.so`

Installed Directory: `/opt/jdk`

Short Descriptions

appletviewer runs Java applets outside of the context of a browser.

extcheck	checks a specified JAR file for title and version conflicts with any extensions installed in the JDK software.
idlj	generates Java bindings from a given IDL file.
jar	combines multiple files into a single JAR archive file.
jarsigner	signs JAR (Java ARchive) files and verifies the signatures and integrity of a signed JAR.
java	launches a Java application by starting a Java runtime environment, loading a specified class and invoking its main method.
javac	reads class and interface definitions, written in the Java programming language, and compiles them into bytecode class files.
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	generates C header and source files that are needed to implement native methods.
javap	disassembles a Java class file.
javaws	launches Java application/applets hosted on a network.
jdb	is a simple command-line debugger for Java classes.
keytool	is a key and certificate management utility.
native2ascii	converts files that contain non-supported character encoding into files containing Latin-1 or Unicode-encoded characters.
orbd	is used to enable clients to transparently locate and invoke persistent objects on servers in the CORBA environment.
policytool	creates and manages a policy file graphically.
rmic	generates stub and skeleton class files for remote objects from the names of compiled Java classes that contain remote object implementations.
rmid	starts the activation system daemon.
rmiregistry	creates and starts a remote object registry on the specified port on the current host.
serialver	returns the serialVersionUID for one or more classes in a form suitable for copying into an evolving class.
servertool	provides an ease-of-use interface for application programmers to register, unregister, startup and shutdown a server.
tnameserv	starts the Java IDL name server.

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://prdownloads.sourceforge.net/librep/librep-0.17.tar.gz>
- Download (FTP):
- Download MD5 sum: ad4ad851ff9f82a5d61024cd96bc2998
- Download size: 1.2 MB
- Estimated disk space required: 13.4 MB
- Estimated build time: 0.47 SBU

Librep Dependencies

Required

GDBM-1.8.3

Optional

GMP-4.1.4 and GCC-3.4.3 (build Java so that `libffi` is built)

Installation of Librep

Install librep by running the following commands:

```
./configure --prefix=/usr --libexecdir=/usr/lib &&
make
```

Now, as the `root` user:

```
make install
```

Command Explanations

`--libexecdir=/usr/lib`: This parameter installs files to `/usr/lib/rep` instead of `/usr/libexec/rep`.

Contents

Installed Programs: `rep`, `rep-config`, `rep-remote`, `rep-xgettext`, and `repdoc`

Installed Libraries: `librep.so` and numerous modules installed in the `/usr/lib/rep` hierarchy

Installed Directories: `/usr/lib/rep`, `/usr/share/emacs/site-lisp`, and `/usr/share/rep`

Short Descriptions

rep is the Lisp interpreter.

`librep.so` contains the functions necessary for the Lisp interpreter.

NASM-0.98.39

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://prdownloads.sourceforge.net/nasm/nasm-0.98.39.tar.bz2>
- Download (FTP):
- Download MD5 sum: 2032ad44c7359f7a9a166a40a633e772
- Download size: 543 KB
- Estimated disk space required: 17.3 MB (includes building and installing all docs)
- Estimated build time: 0.2 SBU

Additional Downloads

- Required patch to fix a buffer overrun vulnerability:
http://www.linuxfromscratch.org/blfs/downloads/6.1/nasm-0.98.39-security_fix-1.patch

NASM Dependencies

Optional (for Building Documentation)

TeX-3.0, and ESP Ghostscript-7.07.1 or AFPL Ghostscript-8.51

Installation of NASM

Install NASM by running the following commands:

```
patch -Np1 -i ../nasm-0.98.39-security_fix-1.patch &&
./configure --prefix=/usr &&
make &&
make -C rdoff/doc &&
make -C rdoff/doc html
```

To build the base NASM documentation, ensure you have Ghostscript installed and issue:

```
make doc
```

To build the RDOFF Postscript documentation, ensure you have TeX-3.0 installed and issue:

```
sed -i -e "s/dvips \$</& -o rdoff.ps/" rdoff/doc/Makefile &&
make -C rdoff/doc ps
```

To build the RDOFF PDF documentation, ensure you have Ghostscript installed and issue:

```
make -C rdoff/doc pdf
```

This package does not come with a test suite.

Now, as the `root` user:

```
make install &&
make install_rdf &&
install -v -m644 rdoff/doc/rdoff.info /usr/share/info &&
install -v -m755 -d /usr/share/doc/nasm/html &&
install -v -m644 rdoff/doc/v1-v2.txt /usr/share/doc/nasm &&
cp -v -R rdoff/doc/rdoff /usr/share/doc/nasm/html
```

If you built the Ghostscript generated documentation, install it using the following commands as the `root` user:

```
make install_doc &&
install -v -m644 rdoff/doc/rdoff.pdf /usr/share/doc/nasm
```

Lastly, if you built the RDOFF Postscript documentation, install it using the following command as the `root` user:

```
install -v -m644 rdoff/doc/rdoff.ps /usr/share/doc/nasm
```

Contents

Installed Programs: nasm, ndisasm, ldrdf, rdf2bin, rdf2com, rdf2ihx, rfdump, rdflib, and rdx
Installed Libraries: None
Installed Directories: /usr/share/doc/nasm

Short Descriptions

nasm is a portable 80x86 assembler.
ndisasm is an 80x86 binary file disassembler.
ldrdf is an RDOFF linker.
rfdump dumps the contents of an RDOFF file.
rdflib is an RDOFF librarian.
rdx is used to load and execute an RDOFF module.

PDL-2.4.2

Introduction to PDL

PDL (Perl Data Language) gives standard Perl the ability to compactly store and quickly manipulate the large N-dimensional data arrays common to scientific computing. PDL turns Perl into an array-oriented, numerical language similar to such commercial packages as IDL and MatLab. One can write simple Perl expressions to manipulate entire numerical arrays all at once.

PDL provides extensive numerical and semi-numerical functionality with support for two- and three-dimensional visualisation as well as a variety of I/O formats. The goal is to allow PDL to interact with a variety of external numerical packages, graphics and visualisation systems. Easy interfacing to such systems is one of the core design features of PDL.

Package Information

- Download (HTTP): <http://prdownloads.sourceforge.net/pdl/PDL-2.4.2.tar.gz>
- Download (FTP):
- Download MD5 sum: edd056a006eae8b46e8ef804b9774a93
- Download size: 2.1 MB
- Estimated disk space required: 74 MB
- Estimated build time: 2.56 SBU

PDL Dependencies

PDL is a collection of over 90 Perl modules. Some of these modules require additional libraries and/or Perl modules for full functionality. Listed below are the modules which require additional software or configuration. If you don't need a particular module's functionality, you don't need to install its dependencies. The dependency tree for each module is listed downward, meaning you'll need to start at the bottom of a module's tree and work up. The dependencies are listed in the same order as they are in the `DEPENDENCIES` file, found in the package source tree.

PDL::NiceSlice

The `PDL::NiceSlice` module is used to enhance PDL's slice syntax. "Slicing" is a term used in the process of creating a cross-section, or slice, of a PDL object (piddle).

- Filter-1.30

Inline::Pdlpp

The `Inline::Pdlpp` module allows you to define fast PP code inline in your scripts.

- Inline-0.44
 - Parse-RecDescent-1.94

PerlIdl

perldl is a simple shell (written in Perl) which allows interactive use of PDL.

- Term-ReadLine-Gnu-1.15

PDL::Graphics::TriD

The PDL::Graphics::TriD module implements a generic 3D plotting interface for PDL. Points, lines and surfaces (among other objects) are supported.

- OpenGL (XFree86-4.5.0 or X.org-6.8.2)

PDL::Graphics::PGPLOT

The PDL::Graphics::PGPLOT module is a convenience interface to the PGPLOT commands, implemented using the object oriented PGPLOT plotting package in the PDL::Graphics::PGPLOT::Window module.

- pgperl
 - ExtUtils-F77-1.14
 - GCC-3.4.3 (Fortran compiler)
 - PGPLOT
 - X (XFree86-4.5.0 or X.org-6.8.2), LessTif-0.94.4, Tk-8.4.11 and GCC-3.4.3 (Fortran compiler)

PDL::Graphics::PLPLOT

The PDL::Graphics::PLPLOT module is a simple interface to the PLplot plotting library.

- PLplot
 - pkg-config-0.19, X (XFree86-4.5.0 or X.org-6.8.2), GTK+-1.2.10, FreeType-2.1.10, GD, SVGAlib, GNOME Libraries-1.4.2, JDK-1.5.0, Tk-8.4.11, Python-2.4.1 (with the Numerical Extension), GCC-3.4.3 (Fortran compiler), SWIG, iTcl

PDL::Graphics::IIS

The PDL::Graphics::IIS module provides an interface to any image display “device” which supports the “IIS protocol”.

- SAOimage
 - X (XFree86-4.5.0 or X.org-6.8.2)
- X11 IRAF
 - X (XFree86-4.5.0 or X.org-6.8.2) and Tk-8.4.11

PDL::Graphics::Karma

The PDL::Graphics::Karma module is an interface to Karma visualisation applications.

- Karma
 - X (XFree86-4.5.0 or X.org-6.8.2)

Note: You may need to modify the `WHERE_KARMA => undef` line in the source tree `perldl.conf` file to point to your installation of Karma

PDL::IO::Pic

The PDL::IO::Pic module implements I/O for a number of popular image formats by exploiting the **xxtppnm** and **pnmtoppnm** converters from the Netpbm package and the **cjpeg** and **djpeg** converters. It also contains the routine `wmpeg` to write MPEG movies from piddles representing image stacks.

- Netpbm, libjpeg-6b and `mpeg_encode`

PDL::Slatec

The PDL::Slatec module serves the dual purpose of providing an interface to parts of the slatec library and showing how to interface PDL to an external library. The module provides routines to manipulate matrices, calculate FFTs, fit data using polynomials, and interpolate/integrate data using piecewise cubic Hermite interpolation.

- ExtUtils-F77-1.14
 - GCC-3.4.3 (Fortran compiler)

PDL::GSL

The PDL::GSL module is an interface to the functions provided by the Gnu Scientific Library.

- GSL

PDL::FFTW

The PDL::FFTW module is a means to interface PDL with the FFTW library. It's similar to the standard FFT routine but it's usually faster and has support for real transforms. It works well for the types of piddles for which the library was compiled (otherwise it must do conversions).

- FFTW-2.x

PDL::IO::Browser

The PDL::IO::Browser module is a 2D cursor terminal data browser for piddles.

There is no additional software required to use the module. However, the default is to not install the module because some platforms don't provide a curses compatible library. To enable the module, issue the following command:

```
sed -i -e "s/WITH_IO_BROWSER => 0/WITH_IO_BROWSER => 1/" \
perlidl.conf
```

PDL::IO::NDF

The PDL::IO::NDF module adds the ability to read and write Starlink N-dimensional data files as N-dimensional piddles.

- Astro-FITS-Header-2.8.1
 - Astro-FITS-CFITSIO-1.03
 - CFITSIO
- NDFPERL-1.45
 - Starlink-Config-1.00
 - Starlink IMG
 - Starlink NDF
 - GCC-3.4.3 (Fortran compiler)
- GSDPERL-1.13
 - Starlink-Config-1.00
 - Starlink GSD
 - GCC-3.4.3 (Fortran compiler)

Installation of PDL

Install PDL (and all the dependency Perl modules) by running the following commands:

```
perl Makefile.PL &&
make &&
make test
```

Now, as the root user:

```
make install
```

Configuring PDL

Config Files

`~/.perldlrc` and `local.perldlrc` in the current directory

Configuration Information

See [http://pdl.sourceforge.net/PDLdocs/perldl.html#the startup file ~/.perldlrc](http://pdl.sourceforge.net/PDLdocs/perldl.html#the%20startup%20file%20~/.perldlrc) for information about configuring **perldl** to suit your needs.

Contents

Installed Programs: `pdl`, `pdlldoc`, `perldl`, and `pptemplate`
Installed Modules: 90+ individual Perl modules
Installed Directories: `/usr/lib/perl5/site_perl/5.8.6/i686-linux/{,auto/}PDL`

Short Descriptions

pdl is a binary program called from PDL scripts which is used to interface **perldl**.
pdlldoc is a shell interface to PDL documentation.
perldl is a simple shell (written in Perl) for interactive use of PDL.
pptemplate is a script to generate `Makefile.PL` and `PP` file skeletons.

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. Most references to Perl modules are in the form of `Module`, `Module::SubName` or `Module::Sub::Name`, however occasionally you'll also see `Module`, `Module-SubName` or `Module-Sub-Name`. Most references on this page are in the latter form, as these are the official package names.

- Download MD5 sums (HTTP):
http://anduin.linuxfromscratch.org/sources/BLFS/SVN/Perl_Modules/Perl_Modules.gz.md5sums
- Download MD5 sums (FTP):
ftp://anduin.linuxfromscratch.org/BLFS/SVN/Perl_Modules/Perl_Modules.gz.md5sums

The Module::Info Module

One module in particular is shown first, as this module's usefulness warrants installation, even though it won't be required by many other modules. The `Module::Info` module can tell you if a particular module is included in, or has been installed into your Perl installation. Additionally, `Module::Info` can tell you what versions are installed and what dependencies are required for them. You can even use `Module::Info` to gather dependencies of uninstalled modules.

- `Module-Info-0.28` (build and installation instructions)

The Test::Pod Module

Another useful module, and one which is (typically optionally) used by other modules during the build process is the `Test:Pod` module. This module is used to check the validity of POD (Plain Old Documentation) files. The `Test::Pod` module is typically included by module authors to automatically find and check all POD files in a module distribution. This module and all the dependencies can be installed using the build and installation instructions.

- `Test-Pod-1.20`
 - `Pod-Simple-3.02`
 - `Pod-Escapes-1.04`
- `Test-Builder-Tester-1.01`

The Module::Build Module

The `Module::Build` module is a system for building, testing, and installing Perl modules. It is meant to be an alternative to `ExtUtils::MakeMaker`. Developers may alter the behavior of the module through subclassing in a much more straightforward way than with `MakeMaker`. It also does not require a **make** command on your system. Most of the `Module::Build` code is pure-Perl and written in a very cross-platform way.

The `Module::Build` module (as well as any other Perl module that uses the `Module::Build` build system) uses

modified build instructions. All the dependencies can be installed using the build and installation instructions.



Note

The Compress::Zlib module requires the following `sed` after untarring the distribution tarball (before any other build commands) to use the system-installed copy of Zlib.

```
sed -i -e "s|BUILD_ZLIB = True|BUILD_ZLIB = False|" \
      -e "s|INCLUDE = ./zlib-src|INCLUDE = /usr/include|" \
      -e "s|LIB = ./zlib-src|LIB = /usr/lib|" \
      config.in
```

- Module-Build-0.2611
 - Module-Signature-0.44 (optional)
 - Digest-SHA-5.28
 - PAR-Dist-0.07
 - GnuPG-1.4.1
 - ExtUtils-ParseXS-2.11
 - ExtUtils-CBuilder-0.12
 - Archive-Tar-1.24
 - IO-Zlib-1.04
 - Compress-Zlib-1.34
 - Test::Pod
 - YAML-0.39

Module::Build Build and Installation Instructions

```
perl Build.PL &&
./Build test
```

Now, as the `root` user:

```
./Build install
```

The HTML::Parser Module

The HTML::Parser distribution is a collection of modules that parse and extract information from HTML documents. In order to use the included HTML::HeadParser module, you will also need to install LWP. The two

modules listed below can be installed using the Perl Module build and installation instructions.

- HTML-Parser-3.45
 - HTML-Tagset-3.04

The XML::Parser Module

The XML::Parser module is a Perl extension interface to James Clark's XML parser, expat. The module can be installed using the Perl Module build and installation instructions.

- XML-Parser-2.34
 - expat-1.95.8

The SGMLSpM Module

The SGMLSpM module is a Perl library used for parsing the output from James Clark's SGMLS and NSGMLS parsers. This module requires modified installation instructions, shown below.

- SGMLSpM-1.03ii

If your system's Perl version is different than 5.8.6, you'll need to modify the **sed** command below to reflect the version you have installed.

```
sed -i -e "s@/usr/local/bin@/usr/bin@" \
      -e "s@/usr/local/lib/perl5@/usr/lib/perl5/site_perl/5.8.6@" \
      -e "s@/usr/local/lib/www/docs@/usr/share/doc/perl5@" \
      Makefile
```

Now, as the root user:

```
make install &&
install -v -d -m755 /usr/share/doc/perl5 &&
make install_html &&
rm -v -f /usr/share/doc/perl5/SGMLSpM/sample.pl &&
install -v -m644 DOC/sample.pl /usr/share/doc/perl5/SGMLSpM
```

The Tk Module

The Tk module is a Perl interface to the Tk package. The goal of this release is Unicode support via Perl's and core-Tk's use of UTF-8. Tk-804.027 builds and loads into a threaded Perl but is NOT yet thread safe. The module can be installed using the Perl Module build and installation instructions.

- Tk-804.027
 - Tk-8.4.11 and libjpeg-6b

The Net::DNS Module

Net::DNS is a DNS resolver implemented in Perl. It can be used to perform nearly any type of DNS query from a Perl script. The Net::DNS module and all its dependencies can be installed using the Perl Module build and installation instructions.

- Net-DNS-0.52
 - Digest-HMAC-1.01
 - Digest-SHA1-2.10
 - Net-IP-1.23
 - IO-Socket-INET6-2.51 (required for IPv6 support)
 - Socket6-0.18
 - Digest-BubbleBabble-0.01 (optional, only used during the test suite)

The LWP Module

The libwww-perl (LWP) collection is a set of Perl modules which provides a simple and consistent application programming interface to the World-Wide Web. The main focus of the library is to provide classes and functions that allow you to write WWW clients. The library also contains modules that are of more general use and even classes that help you implement simple HTTP servers. The LWP modules and all its Perl module dependencies can be installed using the Perl Module build and installation instructions.



Note

The Compress::Zlib module requires the following `sed` after untarring the distribution tarball (before any other build commands) to use the system-installed copy of Zlib.

```
sed -i -e "s|BUILD_ZLIB = True|BUILD_ZLIB = False|" \
      -e "s|INCLUDE = ./zlib-src|INCLUDE = /usr/include|" \
      -e "s|LIB = ./zlib-src|LIB = /usr/lib|" \
      config.in
```

- LWP-5.803
 - URI-1.35
 - Business-ISBN-1.80 (optional, only used during the test suite)
 - Business-ISBN-Data-1.10
 - Test::Pod
 - Test-Prereq-1.027

- Module::Info
 - Module::Build (optional)
 - Module-CoreList-2.02
-
- HTML::Parser
 - Compress-Zlib-1.34
 - Crypt-SSLeay-0.51 (optional, for HTTPS support)
 - OpenSSL-0.9.7g

The Date::Manip Module

Date::Manip is a set of routines designed to make any common date/time manipulation easy to do. Operations such as comparing two times, calculating a time a given amount of time from another, or parsing international times are all easily done. From the very beginning, the main focus of Date::Manip has been to be able to do ANY desired date/time operation easily.

- DateManip-5.44 (build and installation instructions)

The Finance::Quote Module

Finance::Quote is used to get stock quotes from various Internet sources, including Yahoo! Finance, Fidelity Investments, and the Australian Stock Exchange. There are two methods of using this module – a functional interface that is depreciated, and an object-orientated method that provides greater flexibility and stability. With the exception of straight currency exchange rates, all information is returned as a two-dimensional hash (or a reference to such a hash, if called in a scalar context).

After you've installed the package, issue **perldoc Finance::Quote** for full information. Alternatively, you can issue **perldoc lib/Finance/Quote.pm** after unpacking the distribution tarball and changing into the top-level directory. The module and dependencies can be installed using the Perl module build and installation instructions.



Note

To run the regression test suite, you'll need to create a symbolic link to the `test` directory using the following command after unpacking the tarball and changing into the root directory of the sources:

```
ln -s test t
```

Some tests will fail depending on certain conditions. See the `INSTALL` file for full details.

- Finance-Quote-1.10
 - HTML-TableExtract-2.02
 - HTML::Parser
 - LWP

The Finance::QuoteHist Module

The Finance::QuoteHist bundle is several modules designed to fetch historical stock quotes from the web. The module and dependencies can be installed using the Perl module build and installation instructions.

- Finance-QuoteHist-1.00
 - HTML-TableExtract-2.02
 - HTML::Parser
 - LWP
 - Date::Manip
 - Text-CSV_XS-0.23

Standard Installation of Perl Modules

Install Perl modules by running the following commands:

```
perl Makefile.PL &&
make &&
make test
```

Now, as the `root` user:

```
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. You may still need to install dependent library packages before running the automated installation method.

The first time you run this command, you'll be prompted to enter some information regarding download locations and methods. This information is retained in files located in `~/ .cpan`. Start the perl shell with the following command as the `root` user:

```
perl -MCPAN -e shell
```

Each module may now be installed from this shell with the command:

```
install [Module::Name]
```

For additional commands and help, type **help**.

Alternatively, for scripted or non-interactive installations, use the following syntax as the `root` user:

```
perl -MCPAN -e 'install [Module::Name]'
```

PHP-5.0.4

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-5.0.4.tar.bz2>
- Download (FTP): <ftp://ftp.isu.edu.tw/pub/Unix/Web/PHP/distributions/php-5.0.4.tar.bz2>
- Download MD5 sum: fb1aac107870f897d26563a9cc5053c0
- Download size: 4.7 MB
- Estimated disk space required: 126 MB
- Estimated build time: 1.82 SBU

Additional Downloads

- Required patch for Berkeley DB:
<http://www.linuxfromscratch.org/blfs/downloads/6.1/php-5.0.4-db43-1.patch>

PHP Dependencies

Required

Apache-2.0.54

Optional

libxml2-2.6.20, libxslt-1.1.14, OpenSSL-0.9.7g, ClibPDF, libjpeg-6b, libtiff-3.7.3, cURL-7.14.0, QDBM, cdb, GDBM-1.8.3, Berkeley DB-4.3.28, FAM-2.7.0, GD, libpng-1.2.8, X (X.org-6.8.2 or XFree86-4.5.0), FreeType-2.1.10, t1lib, GMP-4.1.4 MySQL-4.1.12, PCRE-6.1, PostgreSQL-8.0.3, Aspell-0.60.3, pkg-config-0.19, HTML Tidy-050722, OpenLDAP-2.2.24, Cyrus SASL-2.1.21, MIT krb5-1.4.1 or Heimdal-0.7, libmcrypt, mhash, OSSP mm, Net-SNMP, SQLite, Dmalloc, mnoGoSearch, Mini SQL, Empress, Birdstep, DBMaker, Adabas, FrontBase, Caudium, WDDX, FDF Toolkit, Hyperwave, Monetra, expat-1.95.8 and MTA

Installation of PHP



Note

You can use PHP for server-side scripting, command line scripting or client-side GUI applications. The book provides instructions for setting up PHP for server-side scripting as it is the most common form.

If you have Berkeley DB installed and wish to utilize it, apply the following patch:

```
patch -Np1 -i ../php-5.0.4-db43-1.patch
```

Install PHP by running the following commands:

```
./configure --prefix=/usr \
--sysconfdir=/etc \
--with-apxs2 \
--with-config-file-path=/etc \
--with-zlib \
--enable-bcmath \
--with-bz2 \
--enable-calendar \
--enable-dba \
--enable-exif \
--enable-ftp \
--with-gettext \
--enable-mbstring \
--with-ncurses \
--with-readline \
--disable-libxml &&
make
```

To test the results, issue: **make test**.

Now, as the root user:

```
make install &&
cp -v php.ini-recommended /etc/php.ini
```

Remove the `--disable-libxml` switch if you have `libxml2-2.6.20` installed otherwise **pear** will not be built.



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.

Command Explanations

`--with-apxs2`: This parameter builds the Apache 2.0 module.

`--with-config-file-path=/etc`: This parameter puts the `php.ini` configuration file in `/etc`.

`--with-zlib`: This parameter adds support for Zlib compression.

`--enable-bcmath`: Enables bc style precision math functions.

`--with-bz2`: Add support for bz2 compression functions.

`--enable-calendar`: This parameter provides support for calendar conversion.

`--enable-dba`: This parameter enables numerous database support including Berkeley DB functions.

`--enable-exif`: Enables functions to access metadata from images.

`--enable-ftp`: This parameter enables FTP functions.

`--with-gettext`: Enables functions that use Gettext text translation.

`--enable-mbstring`: This parameter enables multibyte string support.

`--with-ncurses`: Provides ncurses terminal independent cursor handling.

`--with-readline`: This parameter enables command line readline support.

`--disable-libxml`: This parameter disables XML support functions.

Configuring PHP

Config Files

`/etc/php.ini`, `/etc/pear.conf`

Configuration Information

To enable PHP support in the Apache web server, a new `LoadModule` (which should be handled automatically by the **make install** command) and `AddType` directives must be added to the `httpd.conf` file:

```
LoadModule php5_module lib/apache/libphp5.so
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.

You'll need to restart the Apache web server after making any modifications to the `httpd.conf` file.

Contents

Installed Programs: pear, php, php-config, phpevtdist, and phpize

Installed Library: libphp5.so

Installed Directories: `/usr/include/php` and `/usr/lib/php`

Short Descriptions

php is a command line interface that enables you to parse and execute PHP code.

pear is the PHP Extension and Application Repository (PEAR) package manager.

Python-2.4.1

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 entire applications.

Package Information

- Download (HTTP): <http://www.python.org/ftp/python/2.4.1/Python-2.4.1.tar.bz2>
- Download (FTP): <ftp://ftp.python.org/pub/python/2.4.1/Python-2.4.1.tar.bz2>
- Download MD5 sum: de3e9a8836fab6df7c7ce545331afeb3
- Download size: 7.8 MB
- Estimated disk space required: 115 MB
- Estimated build time: 0.91 SBU (additional 2.20 SBU to run the testsuite)

Additional Downloads

- Required patch: <http://www.linuxfromscratch.org/blfs/downloads/6.1/Python-2.4.1-gdbm-1.patch>

Python Dependencies

Optional

OpenSSL-0.9.7g, Tk-8.4.11, GDBM-1.8.3 and Berkeley DB-4.3.28

Installation of Python

Install Python by running the following commands:

```
patch -Np1 -i ../Python-2.4.1-gdbm-1.patch &&
./configure --prefix=/usr --enable-shared &&
make
```

To test the results, issue: **make test**.

Now, as the `root` user:

```
make install
```



Note

There is no documentation installed using the instructions above. However, There are LaTeX sources included with the distribution. See the `Doc/README` file in the source distribution for instructions to format the LaTeX sources. Alternatively, you can download preformatted documentation from <http://www.python.org/doc/current/download.html>.

Contents

Installed Programs: pydoc, python, python2.4, smtpd.py, and optionally if Tk is installed, idle
Installed Libraries: libpython2.4.so and numerous modules installed in /usr/lib/python2.4/lib-dynload
Installed Directories: /usr/include/python2.4 and /usr/lib/python2.4

Short Descriptions

idle is a wrapper script that opens a Python aware GUI editor.
pydoc is the Python documentation tool.
python is an interpreted, interactive, object-oriented programming language.
python2.4 is a version-specific name for the **python** program.
smtpd.py is an SMTP proxy implemented in Python.

Ruby-1.8.2

Introduction to Ruby

The Ruby package contains the Ruby development environment. This is useful for object-oriented scripting.

Package Information

- Download (HTTP): <http://www.ibiblio.org/pub/languages/ruby/ruby/ruby-1.8.2.tar.gz>
- Download (FTP): <ftp://ftp.ruby-lang.org/pub/ruby/ruby-1.8.2.tar.gz>
- Download MD5 sum: 8ffc79d96f336b80f2690a17601dea9b
- Download size: 3.5 MB
- Estimated disk space required: 55.2 MB
- Estimated build time: 0.9 SBU

Additional Downloads

- Required patch to fix a vulnerability which allows remote attackers to execute arbitrary commands: <http://www.ruby-lang.org/patches/ruby-1.8.2-xmlrpc-ipimethods-fix.diff>

Ruby Dependencies

Optional

OpenSSL-0.9.7g, Tk-8.4.11, Berkeley DB-4.3.28 and GDBM-1.8.3

Installation of Ruby

Install Ruby by running the following commands:

```
patch -Np1 -i ../ruby-1.8.2-xmlrpc-ipimethods-fix.diff &&
./configure --prefix=/usr --enable-shared \
    --enable-pthread --enable-install-doc &&
make
```

To test the results, issue: **make test**.

Now, as the `root` user:

```
make install
```

Command Explanations

`--enable-shared`: This parameter builds the `libruby` shared library.

`--enable-pthread`: This parameter links the threading library into the Ruby build.

Contents

Installed Programs: ruby, irb, erb, rdoc, ri, and testrb

Installed Libraries: libruby.so and numerous modules located in the /usr/lib/ruby hierarchy.

Installed Directories: /usr/lib/ruby and /usr/share/ri

Short Descriptions

ruby is an interpreted scripting language for quick and easy object-oriented programming.

irb is the interactive interface for Ruby.

erb is Tiny eRuby. It interprets a Ruby code embedded text file.

ri displays documentation from a database on Ruby classes, modules and methods.

libruby.so contains the API functions required by Ruby.

Tcl-8.4.11

Introduction to Tcl

The Tcl package contains the Tool Command Language, a robust general-purpose scripting language.

Package Information

- Download (HTTP): <http://prdownloads.sourceforge.net/tcl/tcl8.4.11-src.tar.gz>
- Download (FTP):
- Download MD5 sum: 629dfea34e4087eb4683f834060abb63
- Download size: 3.4 MB
- Estimated disk space required: 22.5 MB
- Estimated build time: 0.3 SBU (additional 0.9 SBU to run the test suite)

Installation of Tcl



Note

This package is also installed in LFS during the bootstrap phase. At the time of the LFS-6.1 release, 8.4.11 was not available. The significant difference between the two installations (other than installing to `/usr`) is that the package is installed in such a way that there is no need to keep the build directory around after installation.

Install Tcl by running the following commands:

```
export VERSION=8.4.11 &&
export V=`echo $VERSION | cut -d "." -f 1,2` &&
export DIR=$PWD &&
cd unix &&
./configure --prefix=/usr --enable-threads &&
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}.so\", \" tclConfig.sh
```

To test the results, issue: **make test**.

Now, as the root user:

```
make install &&
install -v -d /usr/include/tcl${V}/unix &&
install -v -m644 *.h /usr/include/tcl${V}/unix/ &&
install -v -d /usr/include/tcl${V}/generic &&
install -v -c -m644 ../generic/*.h /usr/include/tcl${V}/generic/ &&
rm -v -f /usr/include/tcl${V}/generic/{tcl,tclDecls,tclPlatDecls}.h &&
ln -v -nsf ../../include/tcl${V} /usr/lib/tcl${V}/include &&
ln -v -sf libtcl${V}.so /usr/lib/libtcl.so &&
ln -v -sf tclsh${V} /usr/bin/tclsh
```

Clean up the unprivileged user's environment using the following commands:

```
unset VERSION &&
unset V &&
unset DIR
```

Command Explanations

--enable-threads: This switch forces the package to build with thread support.

sed -i ...: The Tcl package assumes that the source 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 -v -sf ...: These commands create compatibility symbolic links.

Contents

Installed Programs: tclsh and tclsh8.4
Installed Libraries: libtcl.so and libtclstub8.4.a
Installed Directories: /usr/include/tcl8.4 and /usr/lib/tcl8.4

Short Descriptions

tclsh is a symlink to the **tclsh8.4** program.
tclsh8.4 is a simple shell containing the Tcl interpreter.
libtcl.so contains the API functions required by Tcl.

Tk-8.4.11

Introduction to Tk

The Tk package contains a TCL GUI Toolkit.

Package Information

- Download (HTTP): <http://prdownloads.sourceforge.net/tcl/tk8.4.11-src.tar.gz>
- Download (FTP):
- Download MD5 sum: 408e34fe8a1cec497f98f05bbe89b348
- Download size: 3.1 MB
- Estimated disk space required: 21.6 MB
- Estimated build time: 0.4 SBU

Tk Dependencies

Required

X (XFree86-4.5.0 or X.org-6.8.2) and Tcl-8.4.11

Installation of Tk

Install Tk by running the following commands:

```
export VERSION=8.4.11 &&
export V=`echo $VERSION | cut -d "." -f 1,2` &&
export DIR=$PWD &&
cd unix &&
./configure --prefix=/usr --enable-threads &&
make &&
sed -i "s:${DIR}/unix:/usr/lib:" tkConfig.sh &&
sed -i "s:${DIR}:/usr/include/tk${V}:" tkConfig.sh
```

The test is not recommended. Some tests may crash your X Server. To test the results, issue: **make test**. Ensure you run it from an X Window display device with the GLX extensions loaded, else the tests will hang.

Now, as the root user:

```
make install &&
install -v -d /usr/include/tk${V}/unix &&
install -v -m644 *.h /usr/include/tk${V}/unix/ &&
install -v -d /usr/include/tk${V}/generic &&
install -v -m644 ../generic/*.h /usr/include/tk${V}/generic/ &&
rm -v -f /usr/include/tk${V}/generic/{tk,tkDecls,tkPlatDecls}.h &&
ln -v -nsf ../../include/tk${V} /usr/lib/tk${V}/include &&
ln -v -sf libtk${V}.so /usr/lib/libtk.so &&
ln -v -sf wish${V} /usr/bin/wish
```

Clean up the unprivileged user's environment using the following commands:

```
unset VERSION &&
unset V &&
unset DIR
```

Command Explanations

--enable-threads: This switch forces the package to build with thread support.

sed -i ...: The Tk package assumes that the source 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 -v -sf ...: These commands create compatibility symbolic links.

Contents

Installed Programs: wish and wish8.4
Installed Libraries: libtk.so and libtkstub8.4.a
Installed Directories: /usr/include/tk8.4 and /usr/lib/tk8.4

Short Descriptions

wish is a symlink to the **wish8.4** program.

wish8.4 is a simple shell containing the Tk toolkit that creates a main window and then processes Tcl commands.

libtk.so contains the API functions required by Tk.

Other Programming Tools

Introduction

This section is provided to show you some additional programming tools for which instructions have not yet been created in the book or for those that are not appropriate for the book. Note that these packages may not have been tested by the BLFS team, but their mention here is meant to be a convenient source of additional information.

Boost

Boost provides free peer-reviewed portable C++ source libraries. The emphasis is on libraries which work well with the C++ Standard Library. The libraries are intended to be widely useful, and are in regular use by thousands of programmers across a broad spectrum of applications, platforms and programming environments.

- Project Home Page: <http://www.boost.org/>
- Download Location: <http://prdownloads.sourceforge.net/boost/>

DDD (GNU Data Display Debugger)

GNU DDD is a graphical front-end for command-line debuggers such as GDB, DBX, WDB, Ladebug, JDB, XDB, the Perl debugger, the Bash debugger, or the Python debugger. Besides “usual” front-end features such as viewing source texts, DDD has an interactive graphical data display, where data structures are displayed as graphs..

- Project Home Page: <http://www.gnu.org/software/ddd/>
- Download Location: <http://ftp.gnu.org/gnu/ddd/>

cachecc1

cachecc1 is a GCC cache. It can be compared with the well known ccache package. It has some unique features including the use of an LD_PRELOADED shared object to catch invocations to **cc1**, **cc1plus** and **as**, it transparently supports all build methods, it can cache GCC bootstraps and it can be combined with distcc to transparently distribute compilations.

- Project Home Page: <http://cachecc1.sourceforge.net/>
- Download Location: <http://prdownloads.sourceforge.net/cachecc1>

ccache

ccache is a compiler cache. It acts as a caching pre-processor to C/C++ compilers, using the `-E` compiler switch and a hash to detect when a compilation can be satisfied from cache. This often results in 5 to 10 times faster speeds in common compilations.

- Project Home Page: <http://ccache.samba.org/>
- Download Location: <http://ccache.samba.org/ftp/ccache/>

distcc

distcc is a program to distribute builds of C, C++, Objective C or Objective C++ code across several machines on a network. distcc should always generate the same results as a local build, is simple to install and use, and is usually much faster than a local compile. distcc does not require all machines to share a filesystem, have synchronized clocks, or to have the same libraries or header files installed. They can even have different processors or operating systems, if cross-compilers are installed.

- Project Home Page: <http://distcc.samba.org/>
- Download Location: <http://distcc.samba.org/download.html>

Euphoria

Euphoria is a simple, flexible, and easy-to-learn programming language. It lets you quickly and easily develop programs for Windows, DOS, Linux and FreeBSD. Euphoria was first released in 1993. Since then Rapid Deployment Software has been steadily improving it with the help of a growing number of enthusiastic users. Although Euphoria provides subscript checking, uninitialized variable checking and numerous other run-time checks, it is extremely fast. People have used it to develop high-speed DOS games, Windows GUI programs, and Linux X Windows programs. It is also very useful for CGI (Web-based) programming.

- Project Home Page: <http://www.rapideuphoria.com/>
- Download Location: <http://www.rapideuphoria.com/v20.htm>

FFTW (Fastest Fourier Transform in the West)

FFTW is a C subroutine library for computing the discrete Fourier transform (DFT) in one or more dimensions, of arbitrary input size, and of both real and complex data (as well as of even/odd data, i.e., the discrete cosine/sine transforms or DCT/DST).

- Project Home Page: <http://www.fftw.org/>
- Download Location: <http://www.fftw.org/download.html>

GDB (GNU Debugger)

GDB is the GNU Project debugger. It allows you to see what is going on “inside” another program while it executes. It also allows you to see what another program was doing at the moment it crashed.

- Project Home Page: <http://www.gnu.org/software/gdb/>
- Download Location: <ftp://ftp.gnu.org/gnu/gdb/>

GOB (GObject Builder)

GOB (GOB2 anyway) is a preprocessor for making GObjects with inline C code so that generated files are not edited. Syntax is inspired by Java and Yacc or Lex. The implementation is intentionally kept simple, and no C actual code parsing is done.

- Project Home Page: <http://www.5z.com/jirka/gob.html>
- Download Location: <http://ftp.5z.com/pub/gob/>

gocache (GNU Object Cache)

ccache is clone of ccache, with the goal of supporting other compilers than GCC and adding additional features.

Embedded compilers will especially be in focus.

- Project Home Page: <http://sourceforge.net/projects/gocache/>
- Download Location: <http://prdownloads.sourceforge.net/gocache/>

GTK+/GNOME Language Bindings (wrappers)

GTK+/GNOME language bindings allow GTK+ to be used from other programming languages, in the style of those languages.

- Project Home Page: <http://www.gtk.org/bindings.html>

gtkmm

gtkmm is the official C++ interface for the popular GUI library GTK+. Highlights include typesafe callbacks, widgets extensible via allance and a comprehensive set of widgets. You can create user interfaces either in code or with the Glade designer, using libglademm.

- Project Home Page: <http://www.gtkmm.org/>
- Download Location: <http://www.gtkmm.org/download.shtml>

Java-GNOME

Java-GNOME is a set of Java bindings for the GNOME and GTK+ libraries that allow GNOME and GTK+ applications to be written in Java. The Java-GNOME API has been carefully designed to be easy to use, maintaining a good OO paradigm, yet still wrapping the entire functionality of the underlying libraries. Java-GNOME can be used with the Eclipse development environment and Glade user interface designer to create applications with ease.

- Project Home Page: <http://java-gnome.sourceforge.net/cgi-bin/bin/view>
- Download Location: http://java-gnome.sourceforge.net/cgi-bin/bin/view/Main/GetJavaGnome#Source_Code

gtk2-perl

gtk2-perl is the collective name for a set of perl bindings for GTK+ 2.x and various related libraries. These modules make it easy to write GTK and GNOME applications using a natural, perlish, object-oriented syntax.

- Project Home Page: <http://gtk2-perl.sourceforge.net/>
- Download Location: <http://prdownloads.sourceforge.net/gtk2-perl>

PyGTK

PyGTK provides a convenient wrapper for the GTK library for use in Python programs, and takes care of many of the boring details such as managing memory and type casting. When combined with PyORBit and gnome-python, it can be used to write full featured GNOME applications.

- Project Home Page: <http://www.pygtk.org/>
- Download Location: <http://www.pygtk.org/downloads.html>

KDE Language Bindings

KDE and most KDE applications are implemented using the C++ programming language, however there are number of bindings to other languages are available. These include scripting languages like Perl, Python and Ruby, and systems programming languages such as Java and C#.

- Project Home Page: <http://developer.kde.org/language-bindings/>

Numerical Python (Numpy)

Numerical Python adds a fast array facility to the Python language.

- Project Home Page: <http://numeric.scipy.org/>
- Download Location: <http://prdownloads.sourceforge.net/numpy/>

Perl Scripts and Additional Modules

There are many Perl scripts and additional modules located on the Comprehensive Perl Archive Network (CPAN) web site. Here you will find “All Things Perl”.

- Project Home Page: <http://cpan.org/>

SCons

SCons is an Open Source software construction tool, i.e, a next-generation build tool. Think of SCons as an improved, cross-platform substitute for the classic **make** utility with integrated functionality similar to Autoconf/Automake and compiler caches such as **ccache**.

- Project Home Page: <http://scons.sourceforge.net/>
- Download Location: <http://prdownloads.sourceforge.net/scons/>

strace

strace is a system call tracer, i.e., a debugging tool which prints out a trace of all the system calls made by another process or program.

- Project Home Page: <http://www.liacs.nl/~wichert/strace/>
- Download Location: <http://prdownloads.sourceforge.net/strace/>

SWIG

SWIG is a software development tool that connects programs written in C and C++ with a variety of high-level programming languages. SWIG is used with different types of languages including common scripting languages such as Perl, Python, Tcl/Tk and Ruby. The list of supported languages also includes non-scripting languages such as C#, Common Lisp (Allegro CL), Java, Modula-3 and OCAML. Also several interpreted and compiled Scheme implementations (Chicken, Guile, MzScheme) are supported. SWIG is most commonly used to create high-level interpreted or compiled programming environments, user interfaces, and as a tool for testing and prototyping C/C++ software. SWIG can also export its parse tree in the form of XML and Lisp s-expressions.

- Project Home Page: <http://www.swig.org/>

- Download Location: <http://prdownloads.sourceforge.net/swig/>

Valgrind

Valgrind is a collection of five tools: two memory error detectors, a thread error detector, a cache profiler and a heap profiler used for debugging and profiling Linux programs. Features include automatic detection of many memory management and threading bugs as well as detailed profiling to speed up and reduce memory use of your programs.

- Project Home Page: <http://valgrind.org/>
- Download Location: http://valgrind.org/downloads/source_code.html

Part IV. Connecting to a Network

The LFS book covers setting up networking by connecting to a LAN with a static IP address. There are other methods used to connect to a LAN and other networks (such as the Internet). The most popular methods are covered in this chapter.

Chapter 13. Dial-up Networking

This chapter provides utilities for system interaction with a modem.

PPP-2.4.3

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-2.4.3.tar.gz>
- Download (FTP): <ftp://ftp.samba.org/pub/ppp/ppp-2.4.3.tar.gz>
- Download MD5 sum: 848f6c3cafeb6074ffeb293c3af79b7c
- Download size: 672 KB
- Estimated disk space required: 6.2 MB
- Estimated build time: 0.13 SBU

PPP Dependencies

Required

libpcap-0.9.3

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:

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

This package does not come with a test suite.

Now, as the root user:

```
make install &&
make install-etcppp
```

Command Explanations

make install-etcppp: This command puts example configuration files in `/etc/ppp`.

Configuring PPP

Config Files

`/etc/ppp/*`

Configuration Information

The PPP daemon 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-1.54.0.

Contents

Installed Programs: chat, pppd, pppdump, pppoe-discovery and pppstats
Installed Libraries: Several plugin modules installed in `/usr/lib/pppd/2.4.3`
Installed Directories: `/etc/ppp`, `/usr/include/pppd` and `/usr/lib/pppd`

Short Descriptions

chat 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 **pppd** process.

pppd is the Point to Point Protocol daemon.

pppdump is used to convert PPP record files to a readable format.

pppstats is used to print PPP statistics.

WvDial-1.54.0

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-1.54.0.tar.gz>
- Download (FTP): <ftp://ftp.ing-steen.se/pub/unix/unsort/wvdial-1.54.0.tar.gz>
- Download MD5 sum: 8648c044305fc66ee33ecc55d36f8c8b
- Download size: 66 KB
- Estimated disk space required: 2.7 MB
- Estimated build time: 0.06 SBU

WvDial Dependencies

Required

WvStreams-4.0.1 and PPP-2.4.3

Installation of WvDial

Install WvDial by running the following commands:

```
make PREFIX=/usr
```

Now, as the root user:

```
make PREFIX=/usr install
```

Configuring WvDial

Config Files

`/etc/wvdial.conf` and `/etc/ppp/peers/*`

Configuration Information

Perform the following two commands as the root user:

```
touch /etc/wvdial.conf &&  
wvdialconf /etc/wvdial.conf
```

wvdialconf will test that you have a working modem and try to determine its 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. Also, have a look at the Non-Root Dial Out HOWTO if you want to give non-root users access to **wvdial**.

Contents

Installed Programs: wvdial and wvdialconf
Installed Libraries: None
Installed Directory: /etc/ppp/peers

Short Descriptions

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 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.

BLFS currently provides installation instructions for two DHCP clients, **dhclient** (from the `dhcp` package) and **dhcpcd**. BLFS presents both sets of installation instructions and discusses how to create an appropriate service script to work with the **network** bootscrip and the DHCP client of your choice.

DHCP-3.0.2 Client

The DHCP package comes with both a client (**dhclient**) and a server program for using DHCP. If you want to install this package, the instructions can be found at DHCP-3.0.2. 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**).

Configuring DHCP Client

To configure **dhclient**, you need to first install the `network` service script, `/etc/sysconfig/network-devices/services/dhclient` included in the `blfs-bootscrip-6.1` package (as root):

```
make install-service-dhclient
```

Next, create the `/etc/sysconfig/network-devices/ifconfig.eth0/dhclient` configuration file with the following commands as the root user. Adjust as necessary for additional interfaces:

```
install -v -d /etc/sysconfig/network-devices/ifconfig.eth0 &&
cat > /etc/sysconfig/network-devices/ifconfig.eth0/dhclient << "EOF"
ONBOOT="yes"
SERVICE="dhclient"
DHCP_START="-q [add additional start parameters here]"
DHCP_STOP="-q -r [add additional stop parameters here]"

# Set PRINTIP="yes" to have the script print
# the DHCP assigned IP address
PRINTIP="no"

# Set PRINTALL="yes" to print the DHCP assigned values for
# IP, SM, DG, and 1st NS. This requires PRINTIP="yes".
PRINTALL="no"
EOF
```

For more information on the appropriate `DHCP_START` and `DHCP_STOP` values, examine the man page for **dhclient**.

Finally, you should create the `/etc/dhclient.conf` file using the following commands as the root user:

**Note**

You'll need to add a second interface definition 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
```

Dhcpd-1.3.22-pl4

Introduction to Dhcpd

The `dhcpd` package contains the **dhcpd** 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/dhcpd-1.3.22-pl4.tar.gz>
- Download (FTP): <ftp://ftp.phystech.com/pub/dhcpd-1.3.22-pl4.tar.gz>
- Download MD5 sum: dd627a121e43835bead3ffef5b1a72fd
- Download size: 145 KB
- Estimated disk space required: 944 KB
- Estimated build time: 0.04 SBU

Additional Downloads

- Required Patch: <http://www.linuxfromscratch.org/blfs/downloads/6.1/dhcpd-1.3.22-pl4-fhs-1.patch>

Installation of Dhcpd

Install `dhcpd` by running the following commands:

```
patch -Np1 -i ../dhcpd-1.3.22-pl4-fhs-1.patch &&
./configure --prefix="" --sysconfdir=/var/lib &&
make
```

Now, as the `root` user:

```
make install
```

Command Explanations

patch -Np1 -i ../dhcpd-1.3.22-pl4-fhs-1.patch: `dhcpd` unpatched puts all configuration and temporary files in `/etc/dhpcp`. This becomes very annoying when `dhcpd` 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/dhpcp`. 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 **dhcpd** 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 installs configuration files in the `/var/lib` directory.

Configuring Dhcpd

Config Files

```
/var/lib/dhccpc/*
```

Configuration Information

To configure **dhccpd**, you need to first install the network service script, `/etc/sysconfig/network-devices/services/dhccpd` included in the `blfs-bootscripts-6.1` package (as user `root`):

```
make install-service-dhccpd
```

Finally, as the `root` user create the `/etc/sysconfig/network-devices/ifconfig.eth0/dhccpd` configuration file using the following commands. Adjust appropriately for additional interfaces:

```
install -v -d /etc/sysconfig/network-devices/ifconfig.eth0 &&
cat > /etc/sysconfig/network-devices/ifconfig.eth0/dhccpd << "EOF"
ONBOOT="yes"
SERVICE="dhccpd"
DHCP_START="[insert appropriate start options here]"
DHCP_STOP="-k [insert additional stop options here]"

# Set PRINTIP="yes" to have the script print
# the DHCP assigned IP address
PRINTIP="no"

# Set PRINTALL="yes" to print the DHCP assigned values for
# IP, SM, DG, and 1st NS. This requires PRINTIP="yes".
PRINTALL="no"
EOF
```

For more information on the appropriate `DHCP_START` and `DHCP_STOP` values, examine the man page for **dhccpd**.



Note

The default behavior of **dhccpd** is to overwrite (after making backup copies) `/etc/resolv.conf`, `/etc/yp.conf` and `/etc/ntp.conf` with new files containing information from the DHCP server. If this is undesirable, review the **dhccpd** man page for switches to add to the `DHCP_START` value.

Contents

Installed Program: `dhccpd`
Installed Libraries: `None`
Installed Directory: `/var/lib/dhccpc`

Short Descriptions

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 the information becomes 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/penguin/pppoe/rp-pppoe-3.5.tar.gz>
- Download (FTP): <ftp://ftp.fu-berlin.de/unix/linux/mirrors/gentoo/distfiles/rp-pppoe-3.5.tar.gz>
- Download MD5 sum: 97972f8f8f6a3ab9b7070333a6a29c4b
- Download size: 185 KB
- Estimated disk space required: 2.2 MB
- Estimated build time: 0.05 SBU

RP-PPPoE Dependencies

Required

PPP-2.4.3 and Net-tools-1.60 (you may omit Net-tools by using the following patch to utilize IPRoute2 instead: <http://www.linuxfromscratch.org/blfs/downloads/6.1/rp-pppoe-3.5-iproute2-1.patch>)

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`.

Fix the location of the logger executable in several ADSL scripts:

```
sed -i s%/usr/bin/logger%/bin/logger% \  
scripts/adsl-{connect,setup,stop}.in
```

Install RP-PPPoE by running the following commands:

```
cd src &&  
./configure &&  
make
```

This package does not come with a test suite.

Now, as the `root` user:

```
make install
```

Command Explanations

These are the standard installation commands that will install the package 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-6.1` package (as user `root`).

```
make install-service-pppoe
```

Now create the config file for use with the `pppoe` service script (as user `root`):



Note

If you have previously configured the network interface that will now use PPPoE, you should remove the interface configuration files for that interface (as user `root`):

```
rm -v /etc/sysconfig/network-devices/ifconfig.eth0/*
```

```
install -v -d /etc/sysconfig/network-devices/ifconfig.eth0 &&
cat > /etc/sysconfig/network-devices/ifconfig.eth0/pppoe << "EOF"
ONBOOT="yes"
SERVICE="pppoe"
EOF
```

Contents

Installed Programs:	adsl-connect, adsl-setup, adsl-start, adsl-status, adsl-stop, pppoe, pppoe-relay, pppoe-server and pppoe-sniff
Installed Libraries:	None
Installed Directories:	/etc/ppp/plugins and /usr/share/doc/rp-pppoe-3.5

Short Descriptions

adsl-connect	is a shell script which manages an ADSL connection using the user-space PPPoE client.
adsl-setup	is a script for configuring the client. Configuration is then stored in <code>/etc/ppp/pppoe.conf</code> .
adsl-start	starts the client using the options specified in <code>/etc/ppp/pppoe.conf</code> .
adsl-status	displays the status of the ADSL connection.
adsl-stop	stops the client.
pppoe	is the client program. Generally it should not be started on its own.
pppoe-relay	starts the server relay agent.
pppoe-server	starts the server component.
pppoe-sniff	is a small network sniffer designed to assist in setting <code>PPPOE_EXTRA</code> 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-7.14.0

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://www.execve.net/curl/curl-7.14.0.tar.bz2>
- Download (FTP):
- Download MD5 sum: 46ce665e47d37fce1a0bad935cce58a9
- Download size: 1.9 MB
- Estimated disk space required: 23.8 MB
- Estimated build time: 0.34 SBU (additional 0.86 SBU to run the test suite)

CURL Dependencies

Optional

pkg-config-0.19, OpenSSL-0.9.7g, OpenLDAP-2.2.24, MIT krb5-1.4.1 or Heimdal-0.7, krb4, Libidn, SPNEGO and c-ares

Optional (for Running the Test Suite)

Stunnel-4.11 (for running HTTPS and FTPS tests) and Valgrind (not used if building the shared library)

Installation of CURL

Install cURL by running the following commands:

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

If you wish to run the testsuite, use the following commands to fix a bug in the test script and then run the tests:

```
sed -i -e 's/^require "valgrind.pm"/# &/' tests/runtests.pl &&
make check
```

Now, as the root user:

```
make install &&
find docs -name "Makefile*" \
```

```

-o -name "*.1" \
-o -name "*.3" | xargs rm &&
install -v -d -m755 /usr/share/doc/curl-7.14.0 &&
cp -v -R docs/* /usr/share/doc/curl-7.14.0

```

Command Explanations

`--with-gssapi`: This parameter adds Kerberos 5 support to `libcurl`.

Contents

Installed Programs: curl and curl-config
Installed Library: libcurl.[so,a]
Installed Directories: /usr/include/curl, /usr/share/curl and /usr/share/doc/curl-7.14.0

Short Descriptions

curl is a client that can get documents from or send documents to any of the following protocols: HTTP, HTTPS (needs OpenSSL-0.9.7g), FTP, GOPHER, DICT, TELNET, LDAP (needs OpenLDAP-2.2.24 at run time) or FILE.

curl-config prints information about the last compile, like libraries linked to and prefix setting.

`libcurl.[so,a]` provides the API functions required by **curl** and other programs.

WvStreams-4.0.1

Introduction to WvStreams

WvStreams is a library suite containing platform-independent C++ networking and utilities libraries for rapid application development.

Package Information

- Download (HTTP): <http://open.nit.ca/download/wvstreams-4.0.1.tar.gz>
- Download (FTP):
- Download MD5 sum: 89cdc4f979d1f6d745e173bc7485f325
- Download size: 1.0 MB
- Estimated disk space required: 57 MB (additional 43 MB to install documentation)
- Estimated build time: 0.77 SBU (additional 0.45 SBU to build documentation)

Additional Downloads

- Required Patch for Tcl: <http://www.linuxfromscratch.org/blfs/downloads/6.1/wvstreams-4.0.1-tcl84-1.patch>

WvStreams Dependencies

Required

OpenSSL-0.9.7g

Optional

pkg-config-0.19, FAM-2.7.0, Berkeley DB-4.3.28, Linux-PAM-0.80, Tcl-8.4.11, Qt-3.3.4, Speex-1.0.5, libvorbis-1.1.1, Doxygen-1.4.3, FFTW-2.x, SWIG, QDBM, OpenSLP, XPLC, Valgrind and Electric Fence

Installation of WvStreams

If you have Tcl and SWIG installed and wish to utilize them, apply the following patch and run the **autoreconf** program:

```
patch -Np1 -i ../wvstreams-4.0.1-tcl84-1.patch &&
autoreconf -f
```

Install WvStreams by running the following commands:

```
./configure --prefix=/usr \
  --sysconfdir=/etc --localstatedir=/var &&
make
```

If Doxygen is installed and you wish to build the API documentation, issue the following command:

```
make doxygen
```

Now, as the **root** user:

```
make install
```

If you built the API documentation, install it using the following commands:

```
install -v -d -m755 /usr/share/doc/wvstreams-4.0.1/doxy-html &&
install -v -m644 Docs/doxy-html/* \
  /usr/share/doc/wvstreams-4.0.1/doxy-html
```

Command Explanations

`--sysconfdir=/etc`: This parameter places configuration files in `/etc` instead of `/usr/etc`.

`--localstatedir=/var`: This parameter places **uniconfd** run-time files in `/var/lib` instead of `/usr/var/lib`.

Configuring WvStreams

Config Files

`/etc/uniconf.conf`

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

Installed Programs:	uni and uniconfd
Installed Libraries:	libuniconf.[so,a], libwvbase.[so,a], libwvfft.[so,a], libwvoggspeex.[so,a], libwvoggvorbis.[so,a], libwvqt.[so,a], libwvstreams.[so,a], libwvtelephony.[so,a], libwvutils.[so,a] and libxplc-cxx.a
Installed Directories:	<code>/usr/include/wvstreams</code> , <code>/usr/share/doc/wvstreams-4.0.1</code> and <code>/var/lib/uniconf</code>

Short Descriptions

uni	is a program to interface with the UniConf configuration system.
uniconfd	is a daemon program for the UniConf configuration system.
<code>libuniconf.[so,a]</code>	contains functions that define a hierarchical registry abstraction in the UniConf configuration system.
<code>libwvbase.[so,a]</code>	contains the Base64 encoder and decoder implementations functions.
<code>libwvfft.[so,a]</code>	enables WvStreams programs to easily handle Fast-Fourier transforms, instead of forcing the programmer to use the much harder to use <code>libfftw</code> interface.

<code>libwvoggSpeex.[so,a]</code>	enables quick and painless creation of audio streams using the Speex Voice over IP CODEC.
<code>libwvoggVorbis.[so,a]</code>	enables quick and painless creation of audio streams using the OggVorbis CODEC.
<code>libwvqt.[so,a]</code>	enables WvStreams to act as the I/O and configuration back end for Qt and KDE.
<code>libwvstreams.[so,a]</code>	provides functions for basic streaming I/O support.
<code>libtelephony.[so,a]</code>	contains telephony function routines such as echo cancellation, dc offset removal, automatic gain control, etc.
<code>libwvutils.[so,a]</code>	contains functions required by the WvStreams libraries and utility programs.
<code>libxplc-cxx.a</code>	contains helper functions for the C++ WvStreams bindings.

GNet-2.0.7

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-2.0.7.tar.gz>
- Download (FTP):
- Download MD5 sum: 3a7a40411775688fe4c42141ab007048
- Download size: 595 KB
- Estimated disk space required: 7.6 MB
- Estimated build time: 0.2 SBU

GNet Dependencies

Required

GLib-1.2.10 or GLib-2.6.4

Installation of GNet

Install GNet by running the following commands:

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

This package does not come with a test suite.

Now, as the root user:

```
make install
```

Contents

Installed Programs:	None
Installed Library:	libgnet-2.0.[so,a]
Installed Directories:	/usr/include/gnet-2.0, /usr/lib/gnet-2.0 and /usr/share/doc/libgnet2.0-dev or /usr/share/gtk-doc/html/gnet

Short Descriptions

`libgnet-2.0.[so,a]` is a simple network library written in C. It is object-oriented and built upon GLib. It is intended to be easy to use and port.

Libsoup-2.2.3

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/2.2/libsoup-2.2.3.tar.bz2>
- Download (FTP): <ftp://ftp.gnome.org/pub/gnome/sources/libsoup/2.2/libsoup-2.2.3.tar.bz2>
- Download MD5 sum: 2591f32e036a5869f7e2bd0d95e6f14b
- Download size: 358 KB
- Estimated disk space required: 9.1 MB
- Estimated build time: 0.30 SBU

Libsoup Dependencies

Required

GLib-2.6.4 and libxml2-2.6.20

Optional

GTK-Doc-1.3 and GnuTLS (which needs libgpg-error then libgcrypt)

Installation of Libsoup

Install libsoup by running the following commands:

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

Now, as the root user:

```
make install
```

Contents

Installed Programs:	None
Installed Library:	libsoup-2.2.[so,a]
Installed Directories:	/usr/include/libsoup-2.2 and /usr/share/gtk-doc/html/libsoup

Short Descriptions

libsoup-2.2.[so,a] provides functions for asynchronous HTTP connections.

Libpcap-0.9.3

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-0.9.3.tar.gz>
- Download (FTP):
- Download MD5 sum: 0ad921c881fdd3d278046afcd352a151
- Download size: 424 KB
- Estimated disk space required: 3.2 MB
- Estimated build time: less than 0.1 SBU

Libpcap Dependencies

Optional

DAG

Installation of Libpcap

Install libpcap by running the following commands:

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

This package does not come with a test suite.

Now, as the root user:

```
make install &&
install -v -m755 -d /usr/share/doc/libpcap-0.9.3 &&
install -v -m644 doc/*{html,txt} /usr/share/doc/libpcap-0.9.3
```

Contents

Installed Programs:	None
Installed Library:	libpcap.a
Installed Directory:	/usr/share/doc/libpcap-0.9.3

Short Descriptions

libpcap.a is a library used for user-level packet capture.

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). In this chapter you will find installation instructions for three console web browsers:

Links-2.1pre17

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-2.1pre17.tar.bz2>
- Download (FTP): <ftp://atrey.karlin.mff.cuni.cz/pub/local/clock/links/links-2.1pre17.tar.bz2>
- Download MD5 sum: 94315d9ba68bbb543d93b3b3b4f07582
- Download size: 3.7 MB
- Estimated disk space required: 24.0 MB
- Estimated build time: 0.21 SBU

Links Dependencies

Optional

GPM-1.20.1, OpenSSL-0.9.7g, libpng-1.2.8, libjpeg-6b, libtiff-3.7.3, SDL-1.2.8, SVGAlib, DirectFB and X (XFree86-4.5.0 or X.org-6.8.2)

Installation of Links

Install Links by running the following commands:

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

This package does not come with a test suite.

Now, as the root user:

```
make install
```

Command Explanations

`--enable-graphics`: Add this switch if you want to use Links in graphics mode. You will either need to install the X Window System or enable frame buffer support in your kernel and install GPM-1.20.1.

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

Installed Program:	links
Installed Libraries:	None
Installed Directories:	None

Short Descriptions

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/lynx2.8.5/lynx2.8.5.tar.bz2>
- Download MD5 sum: d1e5134e5d175f913c16cb6768bc30eb
- Download size: 2.2 MB
- Estimated disk space required: 25 MB
- Estimated build time: 0.48 SBU

Lynx Dependencies

Optional

OpenSSL-0.9.7g or GnuTLS (which needs libgpg-error then libgcrypt), MTA, Zip-2.31, UnZip-5.52, slang-1.4.9, ncompress and sharutils

Installation of Lynx

Install Lynx by running the following commands:

```
./configure --prefix=/usr --libdir=/etc \
  --with-zlib --with-bzlib &&
make
```

Now, as the root user:

```
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 &&
chgrp -v -R root /usr/share/doc/lynx-2.8.5/lynx_doc
```

Command Explanations

`--libdir=/etc`: For some reason, the **configure** and **make** routine for Lynx uses `libdir` as the prefix for the configuration file. This is set to `/etc` so that the system wide configuration file is `/etc/lynx.cfg`.

`--with-zlib`: This enables support for linking `libz` into Lynx.

`--with-bzlib`: This enables support for linking `libbz2` into Lynx.

`docdir=... helpdir=...`: These variables are set 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.

`chgrp -v -R root /usr/share/doc/lynx-2.8.5/lynx_doc`: This command corrects the improper group ownership of installed documentation files caused if Lynx is built by any user other than `root`.

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

Installed Program:	<code>lynx</code>
Installed Libraries:	None
Installed Directory:	<code>/usr/share/doc/lynx</code>

Short Descriptions

lynx is a general purpose, text-based, distributed information browser for the World Wide Web.

W3m-0.5.1

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://prdownloads.sourceforge.net/w3m/w3m-0.5.1.tar.gz>
- Download (FTP):
- Download MD5 sum: 0678b72e07e69c41709d71ef0fe5da13
- Download size: 1.9 MB
- Estimated disk space required: 18.4 MB
- Estimated build time: 0.28 SBU

W3m Dependencies

Required

GC

Optional

pkg-config-0.19, GPM-1.20.1, OpenSSL-0.9.7g, Imlib-1.9.15 or Imlib2-1.2.1, GDK Pixel Buffer-0.22.0, Comfpace-1.4, nkf, a Mail User Agent and an External Browser

Installation of W3m

Install w3m by running the following commands:

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

This package does not come with a test suite.

Now, as the root user:

```
make install &&
install -v -D -m 644 doc/keymap.default /etc/w3m/keymap &&
install -v -D -m 644 doc/menu.default /etc/w3m/menu &&
install -v -d -m 755 /usr/share/doc/w3m-0.5.1/html &&
install -v -m 644 doc/{HISTORY,README*,keymap.*,menu.*} \
    /usr/share/doc/w3m-0.5.1 &&
install -v -m 644 doc/*.html \
    /usr/share/doc/w3m-0.5.1/html
```

Configuring W3m

Config Files

/etc/w3m/* and ~/.w3m/*

Contents

Installed Programs: w3m and w3mman
Installed Libraries: None
Installed Directories: /usr/lib/w3m, /usr/share/w3m and usr/share/doc/w3m-0.5.1

Short Descriptions

w3m is a text based web browser and pager.

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. Tcprappers and portmap are support programs for daemons that you may have running on your machine.

CVS-1.11.20

Introduction to CVS

CVS is the Concurrent Versions 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 Running a CVS Server.

Package Information

- Download (HTTP): <https://ccvs.cvshome.org/files/documents/19/861/cvs-1.11.20.tar.bz2>
- Download (FTP):
- Download MD5 sum: 9e215c0ee3bb7dfb76515d7cd81a3742
- Download size: 2.4 MB
- Estimated disk space required: 22 MB
- Estimated build time: 0.3 SBU (additional 19.1 SBU to run the test suite)

Additional Downloads

- Recommended patch: <http://www.linuxfromscratch.org/blfs/downloads/6.1/cvs-1.11.20-zlib-1.patch>

CVS Dependencies

Optional

GDBM-1.8.3, Tcsh-6.14.00, krb4, MIT krb5-1.4.1 or Heimdal-0.7 (for the GSSAPI libraries), AFPL Ghostscript-8.51 or ESP Ghostscript-7.07.1, and an MTA

Installation of CVS

By default CVS is statically linked against the Zlib library included in its source tree. This makes it exposed to possible security vulnerabilities in that library. If you want to modify CVS to use the newest system shared Zlib library, apply the following patch:

```
patch -Np1 -i ../cvs-1.11.20-zlib-1.patch
```

Install CVS by running the following commands:

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

To test the results, issue: **make check**.

Now, as the root user:

```
make install &&  
install -v -m755 -d /usr/share/doc/cvs-1.11.20 &&  
install -v -m644 doc/cvs{,client}.ps /usr/share/doc/cvs-1.11.20
```

Configuring CVS

Config Files

`~/.cvsrc`, `~/.cvswrappers`, and `~/.cvspass`.

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.

`~/.cvspass` can hold passwords to complete logins to servers.

Contents

Installed Programs:	<code>cvs</code> , <code>cvsbug</code> , and <code>rcs2log</code>
Installed Libraries:	None
Installed Directories:	<code>/usr/share/cvs</code> and <code>/usr/share/doc/cvs-1.11.20</code>

Short Descriptions

cvs	is the main program file for the concurrent versions system.
cvsbug	is used to send problem reports about CVS to a central support site.
rcs2log	is a symlink to the contributed RCS to Change Log generator.

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 MD5 sum: df0909a586ddac2b7a0d62795eea4206
- Download size: 1.04 MB
- Estimated disk space required: 10.2 MB
- Estimated build time: 0.26 SBU

Additional Downloads

- Required Patch: http://www.linuxfromscratch.org/blfs/downloads/6.1/inetutils-1.4.2-kernel_headers-1.patch
- Required Patch: http://www.linuxfromscratch.org/blfs/downloads/6.1/inetutils-1.4.2-daemon_fixes-1.patch

Inetutils Dependencies

Optional

Linux-PAM-0.80, tcpwrappers-7.6, krb4, and Heimdal-0.7 or MIT krb5-1.4.1

Installation of Inetutils

Install Inetutils by running the following commands:

```
patch -Np1 -i ../inetutils-1.4.2-kernel_headers-1.patch &&
patch -Np1 -i ../inetutils-1.4.2-daemon_fixes-1.patch &&
./configure --prefix=/usr --libexecdir=/usr/sbin \
  --sysconfdir=/etc --localstatedir=/var \
  --mandir=/usr/share/man --infodir=/usr/share/info \
  --disable-logger --disable-syslogd &&
make
```

This package does not come with a test suite.

Now, as the `root` user:

```
make install &&
mv -v /usr/bin/ping /bin
```

Command Explanations

`--disable-logger`: This switch prevents Inetutils installing a **logger** program, which is installed in the LFS book.

`--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 an outdated **whois** client. Add this option if you plan on installing Whois-4.7.5.

`--with-pam`: This switch makes Inetutils link against Linux-PAM libraries. 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 alternatives exist. You can choose this switch to enable only the servers you need, avoiding the installation of unneeded servers.

Contents

A list of the installed programs not included here, along with their short descriptions can be found at [../lfs/view/stable/chapter06/inetutils.html#contents-inetutils](http://lfs/view/stable/chapter06/inetutils.html#contents-inetutils).

Installed Programs: ftpd, inetd, rexecd, rlogind, rshd, talkd, telnetd, tftpd, uucpd and whois
Installed Libraries: None
Installed Directories: None

Short Descriptions

ftpd is a DARPA Internet File Transfer Protocol Server.

inetd is an Internet super-server. Note that the xinetd-2.3.13 package provides a much better server that does the same thing.

rexecd is a remote execution server.

rlogind is a remote login server.

rshd is a remote shell server.

talkd is a remote user communication server.

telnetd is a DARPA TELNET protocol server.

tftpd is an Internet Trivial File Transfer Protocol server.

uucpd is a server for supporting UUCP connections over networks.

whois is a client for the whois directory service. Note that the Whois-4.7.5 package provides a much better client.

NcFTP-3.1.9

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-3.1.9-src.tar.bz2>
- Download (FTP): <ftp://ftp.ncftp.com/ncftp/ncftp-3.1.9-src.tar.bz2>
- Download MD5 sum: 66cf8dacec848eb11a70632fe9f21807
- Download size: 401 KB
- Estimated disk space required: 9.9 MB
- Estimated build time: 0.3 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
```

Now, as the `root` user:

```
make -C libncftp soinstall
```

Again, as an unprivileged user:

```
make
```

Again, as the `root` user:

```
make install
```

To install NcFTP using the second method (with the `libncftp` functionality linked in statically) run the following commands:

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

Now, as the `root` user:

```
make install
```

Command Explanations

make -C ... && make -C ...: 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

Installed Programs:	<code>ncftp</code> , <code>ncftpbatch</code> , <code>ncftpbookmarks</code> , <code>ncftpget</code> , <code>ncftpls</code> , <code>ncftpput</code> , and <code>ncftpspooler</code>
Installed Library:	<code>libncftp.so</code>
Installed Directories:	None

Short Descriptions

ncftp	is a browser program for File Transfer Protocol.
ncftpbatch	is an individual batch FTP job processor.
ncftpbookmarks	is the NcFTP Bookmark Editor (NCurses-based).
ncftpget	is an internet file transfer program for scripts used to retrieve files.
ncftpls	is an internet file transfer program for scripts used to list files.
ncftpput	is an internet file transfer program for scripts used to transfer files.
ncftpspooler	is a global batch FTP job processor daemon.

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 MD5 sum: 5fd2ec0680ba7e66df142637e17a5ac9
- Download size: 1.6 MB
- Estimated disk space required: 30 MB
- Estimated build time: 0.52 SBU

NCPFS Dependencies

Optional

Linux-PAM-0.80 and PHP-5.0.4

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 **nepmount** 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.

Boot Script

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-bootscripts-6.1` package.

```
make install-service-ipx
```

Next install the `/etc/sysconfig/network-devices/ifconfig.eth0/ipx` configuration file with the following commands:

```
install -v -d /etc/sysconfig/network-devices/ifconfig.eth0 &&
cat > /etc/sysconfig/network-devices/ifconfig.eth0/ipx << "EOF"
ONBOOT="yes"
SERVICE="ipx"
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, nwbprrmt, nwbpsett, nwbpvaluest, nwdirt, nwdpvaluest, nwfsctrlt, nwfsinfot, nwfstimet, nwgrantt, nwpurget, nwrevoket, nwrightst, nwtrusteet, nwtrustee2t, nwuserlistt, and nwvolinfo

IPX Interface Utilities: ipx_cmdt, ipx_configuret, ipx_interfacet, ipx_internal_net, and ipx_route

Other Utilities: ncpmap and nwauth

Installed Libraries: None

Installed Directories: None

Net-tools-1.60

Introduction to Net-tools

The Net-tools package is a collection of programs for controlling the network subsystem of the Linux kernel.

Package Information

- Download (HTTP): <http://www.tazenda.demon.co.uk/phil/net-tools/net-tools-1.60.tar.bz2>
- Download (FTP):
<ftp://ftp.ibiblio.org/pub/Linux/distributions/rootlinux/rootlinux-1.3/source/base/net-tools/net-tools-1.60.tar.gz>
- Download MD5 sum (HTTP): 888774accab40217dde927e21979c165
- Download MD5 sum (FTP): e1e83a4d4cdd72d35bcf90d76a16206f
- Download size: 194 KB
- Estimated disk space required: 4.3 MB
- Estimated build time: 0.10 SBU

Additional Downloads

- Required Patch (if compiled using GCC-3.4.x):
<http://www.linuxfromscratch.org/blfs/downloads/6.1/net-tools-1.60-gcc34-3.patch>
- Required Patch: http://www.linuxfromscratch.org/blfs/downloads/6.1/net-tools-1.60-kernel_headers-2.patch
- Required Patch: http://www.linuxfromscratch.org/blfs/downloads/6.1/net-tools-1.60-mii_ioctl-1.patch

Installation of Net-tools



Note

The Net-tools package installs a **hostname** program which will overwrite the existing program installed by Coreutils during a base LFS installation. If, for whatever reason, you need to reinstall the Coreutils package after installing Net-tools, you should use the `coreutils-5.2.1-suppress_hostname_uptime_kill_su-1.patch` patch if you wish to preserve the Net-tools **hostname** program.

The instructions below automate the configuration process by piping **yes** to the **make config** command. If you wish to run the interactive configuration process (by changing the instruction to just **make config**), but you are not sure how to answer all the questions, then just accept the defaults. This will be just fine in the majority of cases. What you're asked here is a bunch of questions about which network protocols you've enabled in your kernel. The default answers will enable the tools from this package to work with the most common protocols: TCP, PPP, and several others. You still need to actually enable these protocols in the kernel—what you do here is merely tell the package to include support for those protocols in its programs, but it's up to the kernel to make the protocols available.

Install Net-tools by running the following commands:

```
patch -Np1 -i ../net-tools-1.60-gcc34-3.patch &&
patch -Np1 -i ../net-tools-1.60-kernel_headers-2.patch &&
patch -Np1 -i ../net-tools-1.60-mii_ioctl-1.patch &&
```

```
yes "" | make config &&
sed -i -e 's|HAVE_IP_TOOLS 0|HAVE_IP_TOOLS 1|g' \
-e 's|HAVE_MII 0|HAVE_MII 1|g' config.h &&
sed -i -e 's|# HAVE_IP_TOOLS=0|HAVE_IP_TOOLS=1|g' \
-e 's|# HAVE_MII=0|HAVE_MII=1|g' config.make &&
make
```

This package does not come with a test suite.

Now, as the root user:

```
make update
```

Command Explanations

yes "" | make config: Piping **yes** to **make config** skips the interactive configuration and accepts the defaults.

sed -i -e ...: These two **seds** change the configuration files to force building the **ipmaddr**, **iptunnel** and **mii-tool** programs.

Contents

Installed Programs:	arp, dnsdomainname, domainname, hostname, ifconfig, ipmaddr, iptunnel, mii-tool, nameif, netstat, nisdomainname, plipconfig, rarp, route, slattach, and ypdomainname
Installed Libraries:	None
Installed Directories:	None

Short Descriptions

arp	is used to manipulate the kernel's ARP cache, usually to add or delete an entry, or to dump the entire cache.
dnsdomainname	reports the system's DNS domain name.
domainname	reports or sets the system's NIS/YP domain name.
hostname	reports or sets the name of the current host system.
ifconfig	is the main utility for configuring network interfaces.
ipmaddr	adds, deletes and shows an interface's multicast addresses.
iptunnel	adds, changes, deletes and shows an interface's tunnels.
mii-tool	checks or sets the status of a network interface's Media Independent Interface (MII) unit.
nameif	names network interfaces based on MAC addresses.
netstat	is used to report network connections, routing tables, and interface statistics.
nisdomainname	does the same as domainname .
plipconfig	is used to fine tune the PLIP device parameters, to improve its performance.

rarp	is used to manipulate the kernel's RARP table.
route	is used to manipulate the IP routing table.
slattach	attaches a network interface to a serial line. This allows you to use normal terminal lines for point-to-point links to other computers.
ypdomainname	does the same as domainname .

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 MD5 sum: 0f8fabe87cf54f409b57c6283f0c0c3d
- Download size: 2.4 MB
- Estimated disk space required: 27 MB
- Estimated build time: 0.53 SBU

NTP Dependencies

Optional

OpenSSL-0.9.7g

Installation of NTP

Install NTP by running the following commands:

```
./configure --prefix=/usr --bindir=/usr/sbin \
  --sysconfdir=/etc &&
make
```

To test the results, issue: **make check**.

Now, as the root user:

```
make install &&
install -v -m755 -d /usr/share/doc/ntp-4.2.0 &&
cp -v -R html /usr/share/doc/ntp-4.2.0/
```

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 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 the `/etc/rc.d/init.d/ntp` init script included in the `blfs-bootscripts-6.1` package.

```
make install-ntp
```

If you prefer to run **ntpd** periodically, add the following command to root's crontab:

```
ntpd -q
```

Execute the following command if you would like to set the hardware clock to the current system time at shutdown and reboot:

```
ln -v -sf ../init.d/setclock /etc/rc.d/rc0.d/K46setclock &&
ln -v -sf ../init.d/setclock /etc/rc.d/rc6.d/K46setclock
```

The other way around is already set up by LFS.

Contents

Installed Programs:	<code>ntp-keygen</code> , <code>ntp-wait</code> , <code>ntpd</code> , <code>ntpdate</code> , <code>ntpdcc</code> , <code>ntpq</code> , <code>ntpdate</code> , <code>ntpdate</code> , <code>ntpdate</code> , <code>ntpdate</code> , <code>ntpdate</code> , and <code>tickadj</code>
Installed Libraries:	None
Installed Directory:	<code>/usr/share/doc/ntp-4.2.0</code>

Short Descriptions

ntp-keygen	generates cryptographic data files used by the NTPv4 authentication and identification schemes.
ntp-wait	is useful at boot time, to delay the boot sequence until ntpd has set the time.
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	is a client program that sets the date and time based on the response from an NTP server. This command is deprecated.
ntpdctl	is used to query the NTP daemon about its current state and to request changes in that state.
ntpq	is an utility program used to monitor ntpd operations and determine performance.
ntptime	reads and displays time-related kernel variables.
ntptrace	traces a chain of NTP servers back to the primary source.
tickadj	reads, and optionally modifies, several timekeeping-related variables in older kernels that do not have support for precision timekeeping.

OpenSSH-4.1p1 Client

The **ssh** client is a secure replacement for **telnet**. If you want to install it, the instructions can be found in Chapter 21 – OpenSSH-4.1p1. 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!).

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 MD5 sum: 781e16ed4487c4caa082c6fef09ead4f
- Download size: 18 KB
- Estimated disk space required: 268 KB
- Estimated build time: 0.01 SBU

Additional Downloads

- Required Patch:
http://www.linuxfromscratch.org/blfs/downloads/6.1/portmap-5beta-compilation_fixes-3.patch
- Required Patch:
http://www.linuxfromscratch.org/blfs/downloads/6.1/portmap-5beta-glibc_errno_fix-1.patch

Portmap Dependencies

Required

tcpwrappers-7.6

Installation of Portmap

Install portmap with the following commands:

```
patch -Np1 -i ../portmap-5beta-compilation_fixes-3.patch &&
patch -Np1 -i ../portmap-5beta-glibc_errno_fix-1.patch &&
make
```

Now, as the root user:

```
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 bootscrip also.

Configuring Portmap

Boot Script

Install the `/etc/rc.d/init.d/portmap` init script included in the `blfs-bootscripts-6.1` package.

```
make install-portmap
```

Contents

Installed Programs: pmap_dump, pmap_set, and portmap

Installed Libraries: None

Installed Directories: None

Short Descriptions

pmap_dump saves the port mapping table to an ASCII file.

pmap_set restores the port mapping table from an ASCII file.

portmap is an RPC port mapper.

Rsync-2.6.5 Client

rsync is a utility for fast incremental file transfers. If you want to install it, the instructions can be found in Chapter 24 – rsync-2.6.5. 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!).

Samba-3.0.14a Client

The Samba client utilities are used to transfer files to and from, mount SMB shares located on or use printers attached to Windows and other SMB servers. If you want to install these utilities, the instructions can be found in Chapter 21 – Samba-3.0.14a. After performing the basic installation, configure the utilities using the configuration section titled “Scenario 1: Minimal Standalone Client-Only Installation”.

Note that if you only want to use these client utilities, you do *not* need to run the server daemons and so do not need the startup script and links. In accordance with good practice, only run the server daemons if you actually need them. You'll find an explanation of the services provided by the server daemons in the Samba-3.0.14a instructions.

Subversion-1.1.4

Introduction to Subversion

Subversion is a version control system that is designed to be a compelling replacement for CVS in the open source community. It extends and enhances CVS' feature set, while maintaining a similar interface for those already familiar with CVS. These instructions install the client and server software used to manipulate a Subversion repository. Creation of a repository is covered at Running a Subversion Server.

Package Information

- Download (HTTP): <http://subversion.tigris.org/tarballs/subversion-1.1.4.tar.bz2>
- Download (FTP):
- Download MD5 sum: 6e557ae65b6b8d7577cc7704ede85a23
- Download size: 6.7 MB
- Estimated disk space required: 182 MB (additional 577 MB to run all test suites)
- Estimated build time: 1.24 SBU (add 0.90 SBU for SWIG bindings and 6.45 SBU to run test suites)

Subversion Dependencies

Required

libxml2-2.6.20 (only if using the bundled version of neon)

Optional

Python-2.4.1 (required to run the full test suite), Apache-2.0.54, OpenSSH-4.1p1 (runtime only), neon-0.24.7, JDK-1.5.0 (to build the JAVA bindings), JUnit (for running the JAVA bindings test suite and requires UnZip-5.52), Dante (alternate JAVA compiler), Jikes (another alternate JAVA compiler) and inetd or xinetd-2.3.13 (server only)

Optional for the Bundled Version of Neon

pkg-config-0.19, OpenSSL-0.9.7g, Heimdal-0.7 or MIT krb5-1.4.1

Optional for the Bundled Version of Apache Portable Runtime

expat-1.95.8 and GDBM-1.8.3

Optional to Build the SWIG Bindings

SWIG and Python-2.4.1

Installation of Subversion

Install Subversion by running the following commands:

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

**Note**

If you have Apache installed, pass the `--with-apr=/usr` and `--with-apr-util=/usr` switches to the **configure** script. Otherwise, Subversion will overwrite APR and APR-utils from the Apache installation with its own files. You may also need to pass `--with-apxs=/usr/sbin/apxs` as **apxs** might not be in an unprivileged user's `PATH` and won't be properly discovered.

If you passed the `--enable-javahl` parameter to **configure** and wish to build the JAVA Subversion bindings, issue the following command:

```
make javahl
```

If you passed the `--with-swig` and `--enable-swig-bindings` parameters to **configure** and wish to build the SWIG Perl and Python Subversion bindings, issue the following commands:

```
make swig-pl &&  
make swig-py
```

To test the results, issue: **make check**.

Now, as the `root` user:

```
make install &&  
install -v -d -m755 /usr/share/doc/subversion-1.1.4 &&  
cp -v -R doc/* /usr/share/doc/subversion-1.1.4
```

If you built the JAVA Subversion bindings, issue the following command as the `root` user to install them:

```
make install-javahl
```

If you built the SWIG Perl and Python Subversion bindings, issue the following commands as the `root` user to install them:

```
make install-swig-pl &&  
make install-swig-py &&  
echo /usr/lib/svn-python \  
> /usr/lib/python2.4/site-packages/subversion.pth
```

Command Explanations

`--with-ssl`: This switch enables OpenSSL support in neon (only required if you use the bundled version of neon).

Configuring Subversion

Config Files

`~/.subversion/config` and `/etc/subversion/config`

Configuration Information

`/etc/subversion/config` is the Subversion system-wide configuration file. This file is used to specify defaults for different **svn** commands.

`~/.subversion/config` is the user's personal configuration file. It is used to override the system-wide defaults set in `/etc/subversion/config`.

Contents

Installed Programs:	<code>svn</code> , <code>svnadmin</code> , <code>svndumpfilter</code> , <code>svnlook</code> , <code>svnserve</code> , <code>svnversion</code> , and optionally, <code>neon-config</code>
Installed Libraries:	<code>libsvn*.[so,a]</code> and optionally, <code>libneon.[so,a]</code> and the <code>mod_dav_svn.so</code> , and <code>mod_authz_svn.so</code> Apache HTTP DSO modules
Installed Directories:	<code>/etc/subversion</code> , <code>/usr/include/neon</code> (optional), <code>/usr/include/subversion-1</code> , <code>/usr/lib/perl5/site_perl/5.8.6/i686-linux/auto/SVN</code> (optional), <code>/usr/lib/perl5/site_perl/5.8.6/i686-linux/SVN</code> (optional), <code>/usr/lib/svn-javahl</code> (optional), <code>/usr/lib/svn-python</code> (optional), <code>/usr/share/doc/neon-0.24.7</code> (optional), and <code>/usr/share/doc/subversion-1.1.4</code>

Short Descriptions

svn	is a command-line client program used to access Subversion repositories.
svnadmin	is a tool for creating, tweaking or repairing a Subversion repository.
svndumpfilter	is a program for filtering Subversion repository dumpfile format streams.
svnlook	is a tool for inspecting a Subversion repository.
svnserve	is a custom standalone server program, able to run as a daemon process or invoked by SSH.
svnversion	is used to report the version number and state of a working Subversion repository copy.
neon-config	is a script which provides information about an installed copy of the neon library.
<code>libsvn*.[so,a]</code>	are the support libraries used by the Subversion programs.
<code>libneon.[so,a]</code>	is used as a high-level interface to common HTTP and WebDAV methods.
<code>mod_authz_svn.so</code>	is a plug-in module for the Apache HTTP server, used to authenticate users to a Subversion repository over the Internet or an intranet.
<code>mod_dav_svn.so</code>	is a plug-in module for the Apache HTTP server, used to make a Subversion repository available to others over the Internet or an intranet.

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 MD5 sum: e6fa25f71226d090f34de3f6b122fb5a
- Download size: 97 KB
- Estimated disk space required: 1.09 MB
- Estimated build time: 0.03 SBU

Additional Downloads

- Required Patch (Fixes some build issues and adds building of a shared library):
http://www.linuxfromscratch.org/blfs/downloads/6.1/tcp_wrappers-7.6-shared_lib_plus_plus-1.patch

Installation of Tcpwrappers

Install tcpwrappers with the following commands:

```
patch -Np1 -i ../tcp_wrappers-7.6-shared_lib_plus_plus-1.patch &&
sed -i -e "s,^extern char \*malloc();,/* & */," scaffold.c &&
make REAL_DAEMON_DIR=/usr/sbin STYLE=-DPROCESS_OPTIONS linux
```

Now, as the root user:

```
make install
```

Command Explanations

`sed -i -e ... scaffold.c`: This command removes an obsolete C declaration which causes the build to fail if using GCC-3.4.x.

Configuring Tcpwrappers

Config Files

`/etc/hosts.allow` and `/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.

As the root user, 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

Installed Programs: tcpd, tcpdchk, tcpdmatch, try-from, and safe_finger
Installed Library: libwrap.[so,a]
Installed Directories: None

Short Descriptions

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 is a tool to examine a **tcpd** wrapper configuration and report problems with it.

tcpdmatch is used to predict how the TCP wrapper would handle a specific request for a service.

try-from can be called via a remote shell command to find out if the host name and address are properly recognized.

safe_finger is a wrapper for the **finger** utility, to provide automatic reverse name lookups.

`libwrap.[so,a]` contains the API functions required by the tcpwrappers programs as well as other programs to become “tcpwrappers-aware”.

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 MD5 sum: e6051f1e1487ec0ebfdbda72bedc70ad
- Download size: 1.3 MB
- Estimated disk space required: 7.7 MB
- Estimated build time: 0.11 SBU

Wget Dependencies

Optional

OpenSSL-0.9.7g and Dante

Installation of Wget

Install Wget by running the following commands:

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

This package does not come with a test suite.

Now, as the root user:

```
make install
```

Command Explanations

`--sysconfdir=/etc`: This relocates the configuration file from `/usr/etc` to `/etc`.

Configuring Wget

Config Files

`/etc/wgetrc` and `~/.wgetrc`

There are no required changes in these files.

Contents

Installed Program: wget

Installed Libraries: None

Installed Directories: None

Short Descriptions

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.

Chapter 19. Basic Networking Utilities

This chapter contains some tools that come in handy when the network needs 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 MD5 sum: 964d599ef696efccdeebe7721cd4828d
- Download size: 74 KB
- Estimated disk space required: 540 KB
- Estimated build time: 0.01 SBU

Installation of Traceroute

Install Traceroute by running the following commands:

```
sed -i -e 's/-o bin/-o root/' Makefile.in &&
./configure --prefix=/usr &&
make
```

Now, as the `root` user:

```
make install &&
make install-man
```

Command Explanations

sed 's/-o bin/-o root/' Makefile.in: Adjusts the `Makefile.in` so that the program is installed with user `root` owning the files instead of user `bin` (which doesn't exist on a default LFS system).

make install: Installs `traceroute` with SUID 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 -v 0755 /usr/sbin/traceroute
```

The risk is that if a security problem such as a buffer overflow was ever found in the Traceroute code, a regular user on your system could gain `root` access if the program is SUID `root`. Of course, removing the SUID permission also makes it impossible for users other than `root` to utilize `traceroute`, so decide what's right for

your individual situation.

The goal of BLFS is to be completely FHS compliant, so if you do leave the **traceroute** binary SUID `root`, then you should move `traceroute` to `/usr/bin` with the following command:

```
mv -v /usr/sbin/traceroute /usr/bin
```

This ensures that the binary is in the path for non-root users.

Contents

Installed Program: traceroute

Installed Libraries: None

Installed Directories: None

Short Descriptions

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 hops (gateways) along the way.

Nmap-3.81

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-3.81.tar.bz2>
- Download (FTP): <ftp://ftp.fu-berlin.de/unix/linux/mirrors/gentoo/distfiles/nmap-3.81.tar.bz2>
- Download MD5 sum: 0713306dda85aee2c95ef31b4b7d2838
- Download size: 1.5 MB
- Estimated disk space required: 14.8 MB
- Estimated build time: 0.4 SBU

Nmap Dependencies

Optional

OpenSSL-0.9.7g, PCRE-6.1, GTK+-1.2.10 (for building the graphical front-end) and libpcap-0.9.3

Installation of Nmap

Install Nmap by running the following commands:

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

This package does not come with a test-suite:

Now, as the `root` user:

```
make install
```

Contents

Installed Programs: nmap and optionally, nmapfe
Installed Libraries: None
Installed Directories: /usr/share/applications and /usr/share/nmap

Short Descriptions

nmap is a utility for network exploration and security auditing. It supports ping scanning, port scanning and TCP/IP fingerprinting.

nmapfe is the graphical front end to **nmap**.

Whois-4.7.5

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://ftp.debian.org/debian/pool/main/w/whois/whois_4.7.5.tar.gz
- Download (FTP): ftp://ftp.debian.org/debian/pool/main/w/whois/whois_4.7.5.tar.gz
- Download MD5 sum: c6657a888a20bd5d5915de6ba18599c8
- Download size: 55 KB
- Estimated disk space required: 600 KB
- Estimated build time: less than 0.1 SBU

Installation of Whois

Install Whois by running the following commands:

```
make
```

This package does not come with a test suite.

Now, as the `root` user:

```
make prefix=/usr install
```

Contents

Installed Programs:	whois
Installed Libraries:	None
Installed Directories:	None

Short Descriptions

whois is a client-side application which queries the whois directory service for information pertaining to a particular domain name.

BIND Utilities-9.3.1

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-9.3.1. The BIND package includes the client side programs **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/bind9/9.3.1/bind-9.3.1.tar.gz>
- Download (FTP): <ftp://ftp.isc.org/isc/bind9/9.3.1/bind-9.3.1.tar.gz>
- Download MD5 sum: 9ff3204eea27184ea0722f37e43fc95d
- Download size: 4.6 MB
- Estimated disk space required: 52.2 MB
- Estimated build time: 0.6 SBU

BIND Utilities Dependencies

Optional

OpenSSL-0.9.7g

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 lib/bind9 &&
make -C lib/isccfg &&
make -C lib/lwres &&
make -C bin/dig
```

Now, as the root user:

```
make -C bin/dig install
```

Command Explanations

make -C lib/...: These commands build the libraries that are needed for the client programs.

make -C bin/dig: This command builds the client programs.

Contents

Installed Programs: dig, host, and nslookup

Installed Libraries: None

Installed Directories: None

Short Descriptions

See the program descriptions in the BIND-9.3.1 section.

Ethereal-0.10.12

Introduction to Ethereal

The Ethereal package contains a network protocol analyzer, also known as a “sniffer”. This is useful for analyzing data captured “off the wire” from a live network connection, or data read from a capture file. Ethereal provides both GUI and TTY-mode programs for examining captured network packets from over 500 protocols, as well as the capability to read capture files from many other popular network analyzers.

Package Information

- Download (HTTP): <http://www.ethereal.com/distribution/ethereal-0.10.12.tar.bz2>
- Download (FTP): <ftp://ftp.ethereal.com/pub/ethereal/all-versions/ethereal-0.10.12.tar.bz2>
- Download MD5 sum: 372b60e6eca14b7e1cf3e789207027f7
- Download size: 7.7 MB
- Estimated disk space required: 255 MB
- Estimated build time: 4.6 SBU

Ethereal dependencies

Required

GLib-1.2.10 or GLib-2.6.4 (to build the TTY-mode front-end only)

Recommended

libpcap-0.9.3 (required to capture data)

Optional

pkg-config-0.19, GTK+-1.2.10 or GTK+-2.6.7 (to build the GUI front-end), OpenSSL-0.9.7g, Heimdal-0.7 or MIT krb5-1.4.1, Python-2.4.1, PCRE-6.1, Net-SNMP and adns

Optional (to build additional documentation)

Doxygen-1.4.3, libxml-1.8.17, libxslt-1.1.14, FOP-0.20.5

Kernel Configuration

The kernel must have the Packet protocol enabled for Ethereal to capture live packets from the network. Enable the Packet protocol by choosing “Y” in the “Device Drivers” – “Networking support” – “Networking options” – “Packet socket” configuration parameter. Alternatively, build the `af_packet` module by choosing “M” in this parameter.

Installation of Ethereal

Install Ethereal by running the following commands:

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

This package does not come with a test suite.

Now, as the root user:

```
make install &&
install -v -m644 doc/README.* /usr/share/ethereal &&
install -v -m644 -D ethereal.desktop \
    /usr/share/applications/ethereal.desktop &&
install -v -m644 -D image/elogo3d48x48.png \
    /usr/share/pixmaps/ethereal.png &&
install -v -m755 -d /usr/share/pixmaps/ethereal/toolbar &&
install -v -m644 image/*.{png,ico,xpm} /usr/share/pixmaps/ethereal &&
install -v -m644 image/toolbar/* /usr/share/pixmaps/ethereal/toolbar
```

Command Explanations

`--enable-threads`: This parameter enables the use of threads in **ethereal**.

`--with-ssl`: This parameter enables the use of the OpenSSL `libcrypto` library.

Configuring Ethereal

Config Files

`/etc/ethereal.conf` and `~/.ethereal/preferences`

Configuration Information

Though the default configuration parameters are very sane, reference the configuration section of the Ethereal User's Guide for configuration information. Most of Ethereal's configuration can be accomplished using the menu options of the **ethereal** GUI interface.



Note

If you want to look at packets, make sure you don't filter them out with `iptables-1.3.3`. If you want to exclude certain classes of packets, it is more efficient to do it with `iptables` than `Ethereal`.

Contents

Installed Programs: capinfos, dftest, editcap, ethereal, idl2eth, mergecap, randpkt, tethereal and text2pcap

Installed Libraries: libethereal.so, libwiretap.so and numerous dissector plugin modules

Installed Directories: `/usr/lib/ethereal`, `/usr/share/ethereal` and `/usr/share/pixmaps/ethereal`

Short Descriptions

capinfos reads a saved capture file and returns any or all of several statistics about that file. It is able to detect and read any capture supported by the Ethereal package.

dfptest	is a display-filter-compiler test program.
editcap	edits and/or translates the format of capture files. It knows how to read libpcap capture files, including those of tcpdump , Ethereal and other tools that write captures in that format.
ethereal	is a GUI network protocol analyzer. It lets you interactively browse packet data from a live network or from a previously saved capture file.
idl2eth	takes a user specified CORBA IDL file and generates “C” source code that can be used to create an Ethereal plugin.
mergcap	combines multiple saved capture files into a single output file.
randpkt	creates random-packet capture files.
tethereal	is a TTY-mode network protocol analyzer. It lets you capture packet data from a live network or read packets from a previously saved capture file.
text2pcap	reads in an ASCII hex dump and writes the data described into a libpcap-style capture file.
<code>libethereal.so</code>	contains functions used by the Ethereal programs to perform filtering and packet capturing.
<code>libwiretap.so</code>	is a library being developed as a future replacement for <code>libpcap</code> , the current standard Unix library for packet capturing. For more information, see the README file in the source <code>wiretap</code> directory.

Chapter 20. Mail/News Clients

Mail Clients help you retrieve (Fetchmail), sort (Procmail), read and compose responses (Nail, Mutt, Pine, Kmail, Balsa, Evolution, Mozilla) to email.

News clients also help you 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-11.24

Introduction to Nail

The Nail package contains **nail**, a command-line Mail User Agent derived from Berkeley Mail which is intended to provide the functionality of the POSIX **mailx** command with additional support for MIME messages, IMAP (including caching), POP3, SMTP, S/MIME, message threading/sorting, scoring, and filtering. Nail is especially useful for writing scripts and batch processing.

Package Information

- Download (HTTP): <http://prdownloads.sourceforge.net/nail/nail-11.24.tar.bz2>
- Download (FTP):
- Download MD5 sum: e127cdbba1220a45f6f1f463ac4b4fd1
- Download size: 266 KB
- Estimated disk space required: 3.0 MB
- Estimated build time: less than 0.1 SBU

Nail Dependencies

Optional

OpenSSL-0.9.7g or Mozilla NSS (from Mozilla-1.7.8 or Firefox-1.0.6 or Thunderbird-1.0.6), Heimdal-0.7 or MIT krb5-1.4.1 (for IMAP GSSAPI authentication) and MTA

Installation of Nail

Install Nail by running the following commands.

```
make SENDMAIL=/usr/sbin/sendmail
```

This package does not come with a test suite.

Now, as the `root` user:

```
make PREFIX=/usr install UCINSTALL=/usr/bin/install &&  
ln -v -sf nail /usr/bin/mail &&  
ln -v -sf nail /usr/bin/mailx
```

Command Explanations

make SENDMAIL=/usr/sbin/sendmail: This changes the default MTA path of `/usr/lib/sendmail`.

make PREFIX=/usr install UCINSTALL=/usr/bin/install: This changes the default installation path of `/usr/local` and the default **install** command path of `/usr/ucb`.

Configuring Nail

Config Files

`/etc/nail.rc`, `~/.mailrc` and `~/.nailrc`

Contents

Installed Programs: mail, mailx and nail
Installed Libraries: None
Installed Directories: None

Short Descriptions

nail is a command-line mail user agent compatible with the **mail** command found on commercial Unix versions.

mail is a symbolic link to **nail**.

mailx is a symbolic link to **nail**.

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 MD5 sum: 1678ea99b973eb77eda4ecf6acae53f1
- Download size: 226 KB
- Estimated disk space required: 1.7 MB
- Estimated build time: 0.08 SBU

Installation of Procmail

Install Procmail by running the following commands as the `root` user:

```
make LOCKINGTEST=/tmp install &&
make install-suid
```

Command Explanations

make LOCKINGTEST=/tmp install: This prevents **make** from asking you where to test file-locking patterns.

make install-suid: Modifies permissions of the installed files.

Configuring Procmail

Config Files

`/etc/procmailrc` and `~/.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

Installed Programs: formail, lockfile, mailstat and procmail

Installed Libraries: None

Installed Directories: None

Short Descriptions

- formail** is a filter that can be used to format mail into mailbox format.
- lockfile** is a utility that can lock a file for single use interactively or in a script.
- mailstat** prints a summary report of mail that has been filtered by **procmail** since the last time **mailstat** was ran.
- procmail** is an autonomous mail processor. It performs all the functions of an MDA (Mail Delivery Agent).

Fetchmail-6.2.5.2

Introduction to Fetchmail

The Fetchmail package contains 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://download.berlios.de/fetchmail/fetchmail-6.2.5.2.tar.gz>
- Download (FTP): <ftp://ftp2.be.freesbie.org/packages/openbsd/distfiles/fetchmail-6.2.5.2.tar.gz>
- Download MD5 sum: 6eefef076bf3517a870f27a6133ff8c4
- Download size: 1.2 MB
- Estimated disk space required: 6.1 MB
- Estimated build time: 0.1 SBU

Fetchmail Dependencies

Required

OpenSSL-0.9.7g and a local MDA (Procmail-3.22)

Optional

Python-2.4.1 and Tk-8.4.11

Installation of Fetchmail

Install Fetchmail by running the following commands:

```
./configure --prefix=/usr --with-ssl --enable-fallback=procmail &&  
make
```

This package does not come with a test suite.

Now, as the `root` user:

```
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

```
cat > ~/.fetchmailrc << "EOF"
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";
EOF

chmod -v 0600 ~/.fetchmailrc
```

This 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. There are countless other config options once you get used to it.

Contents

Installed Program: fetchmail and fetchmailconf
Installed Libraries: None
Installed Directories: None

Short Descriptions

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` file making it much easier to configure. However, you will require Python, and it must have the Tkinker 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 to, 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 MD5 sum: 710bd56d3c4c4bcd1403bc4e053f7476
- Download size: 2.6 MB
- Estimated disk space required: 16.9 MB
- Estimated build time: 0.35 SBU

Mutt Dependencies

Optional

GnuPG-1.4.1, ispell-3.2.06.epa7, MIT krb5-1.4.1 or Heimdal-0.7, Cyrus SASL-2.1.21, OpenSSL-0.9.7g, slang-1.4.9 and GDB

Installation of Mutt

Mutt requires a group named `mail`. You can add this group, if it does not exist, with this command:

```
groupadd -g 34 mail
```

If you did not install a MTA, such as Postfix-2.2.5 or Sendmail-8.13.4, you need to modify the ownership of `/var/mail` with this command:

```
chgrp -v mail /var/mail
```

Install Mutt by running the following commands:

```
./configure --prefix=/usr --sysconfdir=/etc \
  --enable-pop --enable-imap &&
make
```

This package does not come with a test suite.

Now, as the `root` user:

```
make install
```

Command Explanations

`--enable-pop`: This switch enables POP3 support.

`--enable-imap`: This switch enables IMAP support.

Configuring Mutt

Config Files

`/etc/Mutttrc, ~/.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

Installed Programs: flea, mutt, mutt_dotlock, muttbug, pgpring, and pgpwrap
Installed Libraries: None
Installed Directories: /usr/doc/mutt

Short Descriptions

flea is a bug submitter for Mutt.
mutt is a Mail User Agent (MUA) which enables you to read, write and delete your email.
mutt_dotlock implements the mail pool file lock.
muttbug is a script that executes **flea**.

Pine-4.63

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/pine4.63.tar.bz2>
- Download (FTP): <ftp://ftp.fu-berlin.de/unix/linux/mirrors/gentoo/distfiles/pine4.63.tar.bz2>
- Download MD5 sum: e881f439f38039b310d22554ab08feb4
- Download size: 3.0 MB
- Estimated disk space required: 57 MB
- Estimated build time: 0.5 SBU

Additional Downloads

- Recommended Patch: <http://www.linuxfromscratch.org/blfs/downloads/6.1/pine-4.63-fhs-1.patch>

Pine Dependencies

Required

OpenSSL-0.9.7g

Optional

OpenLDAP-2.2.24 and MIT krb5-1.4.1

Installation of Pine

Install Pine by running the following commands:

```
patch -Np1 -i ../pine-4.63-fhs-3.patch &&
./build DEBUG=-O MAILSPOOL=/var/mail \
  SSLDIR=/usr SSLCERTS=/etc/ssl/certs slx
```

This package does not come with a test suite.

Now, as the root user:

```
cp -v doc/*.1 /usr/share/man/man1 &&
cd bin &&
install -v -m755 pine imapd ipop2d ipop3d mailutil mtest pico \
  pilot rpdump rpload /usr/bin
```

Command Explanations

patch -Np1 -i ../pine-4.63-fhs-x.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 ... /usr/bin`: This installs the Pine programs.

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

Installed Programs:	<code>imapd</code> , <code>ipop2d</code> , <code>ipop3d</code> , <code>mtest</code> , <code>pico</code> , <code>pilot</code> , <code>pine</code> , <code>rpdump</code> , and <code>rpload</code>
Installed Libraries:	None
Installed Directories:	None

Short Descriptions

imapd	is the IMAP server daemon.
ipop2d	is an IMAP to POP2 conversion server.
ipop3d	is an IMAP to POP3 conversion server.
metest	is a minimal IMAP mail user agent, used for debugging.
pico	is a stand-alone editor, similar to the Pine internal message composer.
pilot	is a file and directory navigator and browser.
pine	is the Pine mail user agent.
rpdump	is used to copy data from remote Pine configuration files or address books into a local file.
rpload	is the Pine remote data utility, used to convert local Pine configuration files or address books into remote configurations or address books.

Slrn-0.9.8.1

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://prdownloads.sourceforge.net/slrn/slrn-0.9.8.1.tar.bz2>
- Download (FTP): <ftp://ftp.fh-heilbronn.de/pub/mirrors/slrn/slrn-0.9.8.1.tar.bz2>
- Download MD5 sum: 9b613007df537444a5f8a4a2994fadb7
- Download size: 1011 KB
- Estimated disk space required: 9.3 MB
- Estimated build time: 0.19 SBU

Slrn Dependencies

Required

slang-1.4.9 and a MTA (See Chapter 22, Mail Server Software)

Optional

OpenSSL-0.9.7g, GnuTLS, UUDeview, INN and libcanlock

Installation of Slrn

Install slrn by running the following commands:

```
./configure --prefix=/usr --sysconfdir=/etc \
  --with-slrnpull --enable-spool &&
make
```

This package does not come with a test suite.

Now, as the root user:

```
make install
```

Command Explanations

--with-slrnpull --enable-spool: These switches enable building the **slrnpull** executable.

--with-ssl: This switch adds OpenSSL support to slrn.

--with-uudeview: This switch adds UUDeview support to slrn.

Configuring Slrn

Config Files

`/etc/slrn.rc, ~/.slrnrc`

Configuration Information

The first time **slrn** is run, the `~/.jnewsrc` 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 it is just put it into the environment of the configuration step. For now, the LFS news server is used in this example, but you should use whatever server you prefer.

Create the `~/.jnewsrc` file with the following command:

```
NNTPSERVER=news.linuxfromscratch.org \  
slrn -f ~/.jnewsrc --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

Installed Programs: `slrn` and `slrnpull`
Installed Libraries: None
Installed Directories: `/usr/share/slrn` and `usr/share/doc/slrn`

Short Descriptions

slrn is the slang-based news reader.
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 is a GTK2 based newsreader program.

knode is a Qt based newsreader program from kdepim-3.4.1.

kmail is a Qt based mail client from kdepim-3.4.1.

Balsa-2.2.6 is a GTK2 based mail client.

Mozilla-1.7.8 includes both a mail client and newsreader in its installation.

Thunderbird-1.0.6 is a mail/news client based on the Mozilla code base.

Evolution-2.2.2 includes a GTK2 based mail client.

Part VI. Servers

Chapter 21. Major Servers

Major servers are the programs that provide content or services to users or other programs.

Apache-2.0.54

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-2.0.54.tar.bz2>
- Download (FTP): <ftp://ftp.tux.org/pub/net/apache/dist/httpd/httpd-2.0.54.tar.bz2>
- Download MD5 sum: 4ae8a38c6b5db9046616ce10a0d551a2
- Download size: 5.4 MB
- Estimated disk space required: 91.6 MB
- Estimated build time: 1.7 SBU

Additional Downloads

- Required patch: <http://www.linuxfromscratch.org/blfs/downloads/6.1/httpd-2.0.54-config-1.patch>

Apache Dependencies

Optional

Berkeley DB-4.3.28 or GDBM-1.8.3, OpenSSL-0.9.7g, OpenLDAP-2.2.24, expat-1.95.8 and Doxygen-1.4.3

Installation of Apache

For security reasons, running the server as an unprivileged user and group is strongly encouraged. Create the following group and user using the following commands (as root):

```
groupadd -g 25 apache &&
useradd -c "Apache Server" -d /dev/null -g apache \
-s /bin/false -u 25 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-2.0.54-config-1.patch
```

Build and install Apache by running the following commands:

```
./configure --enable-layout=FHS --enable-mods-shared=all &&
make
```

This package does not come with a test suite.

Now, as the `root` user:

```
make install &&
chown root:root /usr/sbin/{apxs,apachectl,dbmmanage,envvars-std,envvars} \
  /usr/include/apache/* /usr/lib/apache/httpd.exp \
  /usr/share/man/man1/{dbmmanage,htdigest,htpasswd}.1 \
  /usr/share/man/man8/{ab,apachectl,apxs,httpd}.8 \
  /usr/share/man/man8/{logresolve,rotatelog,suexec}.8 &&
chown -R apache:apache /srv/www
```

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`: The modules should 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.

`chown root:root ...`: This command changes the ownership of some installed files, the result of building the package as a user other than `root`.

`chown -R apache:apache /srv/www`: By default, the installation process installs files (documentation, error messages, default icons, etc.) with the ownership of the user that extracted the files from the tar file. If you want to change the ownership to another user, you should do so at this point. The only requirement is that the document directories need to be accessible by the `httpd` process with (r-x) permissions and files need to be readable (r--) by the `apache` user.

Configuring Apache

Config Files

`/etc/apache/*`

Configuration Information

The main configuration file is named `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.

There's a problem with the ISAPI DSO module caused from compiling with GCC-3.4.3. Comment out the module from the configuration file with the following command:

```
sed -i -e "s/^LoadModule isapi_module/# &/" \
  /etc/apache/httpd.conf
```

Boot Script

If you want the Apache server to start automatically when the system is booted, install the `/etc/rc.d/init.d/apache` init script included in the `blfs-bootscripts-6.1` package.

```
make install-apache
```

Contents

Installed Programs: ab, apachectl, apr-config, apu-config, apxs, checkgid, dbmmanage, htdbm, htdigest, htpasswd, httpd, instdso.sh, logresolve, and rotatelog

Installed Libraries: libapr-0.[so,a], libaprutil-0.[so,a], and `/usr/lib/apache/*.so`

Installed Directories: `/etc/apache`, `/srv/www`, `/usr/include/apache`, `/usr/lib/apache`, and `/var/log/apache`

Short Descriptions

ab is a tool for benchmarking your Apache HTTP server.

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 is a tool for building and installing extension modules for the Apache HTTP server.

dbmanage is used to create and update the DBM format files used to store usernames and passwords for basic authentication of HTTP users.

htdigest is used to create and update the flat-files used to store usernames, realms and passwords for digest authentication of HTTP users.

htpasswd is used to create and update the flat-files used to store usernames and passwords for basic authentication of HTTP users.

httpd is the Apache HTTP server program.

instdso.sh is a script which installs Apache DSO modules.

logresolve is a post-processing program to resolve IP-addresses in Apache's access log files.

rotatelog is a simple program for use in conjunction with Apache's piped log file feature.

BIND-9.3.1

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-9.3.1.

Package Information

- Download (HTTP): <http://gd.tuwien.ac.at/infosys/servers/isc/bind9/9.3.1/bind-9.3.1.tar.gz>
- Download (FTP): <ftp://ftp.isc.org/isc/bind9/9.3.1/bind-9.3.1.tar.gz>
- Download MD5 sum: 9ff3204eea27184ea0722f37e43fc95d
- Download size: 4.6 MB
- Estimated disk space required: 71.3 MB
- Estimated build time: 1.8 SBU (additional 11 minutes, processor independent, to run the complete test suite)

BIND Dependencies

Optional

OpenSSL-0.9.7g

Optional (to Run the Test Suite)

Net-tools-1.60 (for **ifconfig**) and Net-DNS

Optional (to [Re]Build Documentation)

OpenJade-1.3.2, JadeTeX-3.13 and DocBook DSSSL Stylesheets-1.79

Installation of BIND

Install BIND by running the following commands:

```
sed -i -e "s/dsssl-stylesheets/&-1.79/g" configure &&
./configure --prefix=/usr --sysconfdir=/etc \
  --enable-threads --with-libtool &&
make
```

Issue the following commands to run the complete suite of tests. First, as `root`, set up some test interfaces:

```
bin/tests/system/ifconfig.sh up
```

Now run the test suite as an unprivileged user:

```
make check 2>&1 | tee check.log
```

Again as `root`, clean up the test interfaces:

```
bin/tests/system/ifconfig.sh down
```

Issue the following command to check that all 145 tests ran successfully:

```
grep "R:PASS" check.log | wc -l
```

Finally, install the package as the root user:

```
make install &&
chmod 755 /usr/lib/{lib{bind9,isc{,cc,cfg},lwres,dns}.so.*.*} &&
cd doc &&
install -v -d -m755 /usr/share/doc/bind-9.3.1/{arm,draft,misc,rfc} &&
install -v -m644 arm/*.html \
    /usr/share/doc/bind-9.3.1/arm &&
install -v -m644 draft/*.txt \
    /usr/share/doc/bind-9.3.1/draft &&
install -v -m644 rfc/* \
    /usr/share/doc/bind-9.3.1/rfc &&
install -v -m644 \
    misc/{dnssec,ipv6,migrat*,options,rfc-compliance,roadmap,sdb} \
    /usr/share/doc/bind-9.3.1/misc
```

Command Explanations

sed -i -e ... configure: This command forces **configure** to look for the DSSSL stylesheets in the standard BLFS location.

--sysconfdir=/etc: This parameter forces BIND to look for configuration files in `/etc` instead of `/usr/etc`.

--enable-threads: This parameter enables multi-threading capability.

--with-libtool: This parameter forces the building of dynamic libraries and links the installed binaries to these libraries.

chmod 755 /usr/lib/{lib{bind9,isc{,cc,cfg},lwres,dns}.so.*.*}: Libtool does not set the permissions for these libraries correctly so they are fixed here.

cd doc; install ...: These commands install the additional package documentation. Optionally, omit any or all of these commands.

Configuring BIND

Config files

`named.conf`, `root.hints`, `127.0.0.0`, `rndc.conf` and `resolv.conf`

Configuration Information

BIND will be configured 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.

Create the unprivileged user and group `named`:

```
groupadd -g 20 named &&
useradd -m -c "BIND Owner" -g named -s /bin/false -u 20 named
```

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
```

Then, generate a key for use in the `named.conf` and `rndc.conf` files using the **`rndc-confgen`** command:

```
rndc-confgen -b 512 | grep -m 1 "secret" | cut -d '"' -f 2
```

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 "[Insert secret from rndc-confgen's output here]";
};
zone "." {
    type hint;
    file "root.hints";
};
zone "0.0.127.in-addr.arpa" {
    type master;
    file "pz/127.0.0";
};

// Bind 9 now logs by default through syslog (except debug).
// These are the default logging rules.

logging {
    category default { default_syslog; default_debug; };
    category unmatched { null; };

    channel default_syslog {
        syslog daemon; // send to syslog's daemon
                       // facility
        severity info; // only send priority info
                       // and higher
    };
};
```

```

channel default_debug {
    file "named.run";
                                // write to named.run in
                                // the working directory
                                // Note: stderr is used instead
                                // of "named.run"
                                // if the server is started
                                // with the '-f' option.
                                // log at the server's
                                // current debug level
    severity dynamic;
};

channel default_stderr {
    stderr;
    severity info;
                                // writes to stderr
                                // only send priority info
                                // and higher
};

channel null {
    null;
                                // toss anything sent to
                                // this channel
};
};
EOF

```

Create the `rndc.conf` file with the following commands:

```

cat > /etc/rndc.conf << "EOF"
key rndc_key {
algorithm "hmac-md5";
    secret
    "[Insert secret from rndc-confgen's output here]";
};
options {
    default-server localhost;
    default-key    rndc_key;
};
EOF

```

The `rndc.conf` file contains information for controlling **named** operations with the **rndc** utility.

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 ensure there are 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       192.228.79.201
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. A current copy of `root.hints` can be obtained from `ftp://rs.internic.net/domain/named.root`. Consult the BIND 9 Administrator Reference Manual for details.

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
```

Boot Script

To start the DNS server at boot, install the `/etc/rc.d/init.d/bind` init script included in the `blfs-bootscripts-6.1` 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 www.linuxfromscratch.org &&
dig www.linuxfromscratch.org
```

You can see almost instantaneous results with the named caching lookups. Consult the BIND Administrator Reference Manual located at `doc/arm/Bv9ARM.html` in the package source tree, for further configuration options.

Contents

Installed Programs:	<code>dig</code> , <code>dnssec-keygen</code> , <code>dnssec-signzone</code> , <code>host</code> , <code>isc-config.sh</code> , <code>lwresd</code> , <code>named</code> , <code>named-checkconf</code> , <code>named-checkzone</code> , <code>nslookup</code> , <code>nsupdate</code> , <code>rndc</code> , and <code>rndc-confgen</code>
Installed Libraries:	<code>libbind9.[so,a]</code> , <code>libdns.[so,a]</code> , <code>libisc.[so,a]</code> , <code>libisccc.[so,a]</code> , <code>libiscfg.[so,a]</code> , and <code>liblwres.[so,a]</code>
Installed Directories:	<code>/home/named</code> , <code>/usr/include/bind9</code> , <code>/usr/include/dns</code> , <code>/usr/include/dst</code> , <code>/usr/include/isc</code> , <code>/usr/include/isccc</code> , <code>/usr/include/iscfg</code> , <code>/usr/include/lwres</code> , and <code>/usr/share/doc/bind-9.3.1</code>

Short Descriptions

dig	interrogates DNS servers.
dnssec-keygen	is a key generator for secure DNS.
dnssec-signzone	generates signed versions of zone files.
host	is a utility for DNS lookups.
lwresd	is a caching-only name server for local process use.

named	is the name server daemon.
named-checkconf	checks the syntax of <code>named.conf</code> files.
named-checkzone	checks zone file validity.
nslookup	is a program used to query Internet domain nameservers.
nsupdate	is used to submit DNS update requests.
rndc	controls the operation of BIND.
rndc-confgen	generates <code>rndc.conf</code> files.

NFS Utilities-1.0.7

Introduction to NFS Utilities

The NFS Utilities package contains the userspace server and client tools necessary to use the kernel's nfs abilities. NFS is a protocol that allows sharing file systems over the network.

Package information

- Download (HTTP): <http://ftp.kernel.org/pub/linux/utils/nfs/nfs-utils-1.0.7.tar.gz>
- Download (FTP): <ftp://ftp.kernel.org/pub/linux/utils/nfs/nfs-utils-1.0.7.tar.gz>
- Download MD5 sum: 8f863120261cd572ad320a9152581e11
- Download size: 396 KB
- Estimated disk space required: 5.8 MB
- Estimated build time: 0.2 SBU

NFS Utilities Dependencies

Required

portmap-5beta

Optional

libevent and libnsfidmap for nfsv4 support, and MIT krb5-1.4.1 or Heimdal-0.7 for gss (RPC Security) support.

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 Utilities

Before you compile the program, you need to be sure the nobody user and nogroup group are available. You can add these by running the following commands as the root user:

```
groupadd -g 99 nogroup &&
useradd -c "Unprivileged Nobody" -d /dev/null -g nogroup \
-s /bin/false -u 99 nobody
```



Note

The classic uid and gid values are 65534 which is also -2 when interpreted as a signed 16-bit number. These values impact other files on some filesystems that do not have support for sparse

files. The `nobody` and `nogroup` values are relatively arbitrary. The impact on a server is nil if the exports file is configured correctly. If it is misconfigured, the `ls -l` or `ps` listing will show a uid or gid number of 65534 instead of a name. The client uses `nobody` only as the user running `rpc.statd`.

Install NFS Utilities by running the following commands:

```
./configure --prefix=/usr --sysconfdir=/etc \
  --disable-nfsv4 --disable-gss &&
make
```

Now, as the root user:

```
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.

Command Explanations

`--disable-nfsv4`: Disables support for NFS Version 4.

`--disable-gss`: Disables support for RPCSEC GSS (RPC Security).

Configuring NFS Utilities

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 192.168.0.0/255.255.255.0(rw,anonuid=99,anongid=99)
```

Boot Script

Install the `/etc/rc.d/init.d/nfs-server` init script included in the `blfs-bootscripts-6.1` package to start the server at boot.

```
make install-nfs-server
```

Now create the `/etc/sysconfig/nfs-server` configuration file:

```
cat > /etc/sysconfig/nfs-server << "EOF"
PORT="2049"
PROCESSES="8"
QUOTAS="no"
```

```
KILLDELAY="10"
EOF
```

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` and `/usr` partitions, add the following to the `/etc/fstab`:

```
<server-name>:/home /home nfs rw,_netdev,rsize=8192,wsiz=8192 0 0
<server-name>:/usr /usr nfs ro,_netdev,rsize=8192 0 0
```

Boot Script

Install the `/etc/rc.d/init.d/nfs-client` init script included in the `blfs-bootscripts-6.1` package to start the client services at boot.

```
make install-nfs-client
```

To automatically mount `nfs` filesystems, clients will also need to install the `netfs` bootscript as described in [Configuring for Network Filesystems](#).

Contents

Installed Programs: `exportfs`, `nfsstat`, `nhfsgraph`, `nhfsnums`, `nhfsrun`, `nhfsstone`, `rpc.lockd`, `rpc.mountd`, `rpc.nfsd`, `rpc.rquotad`, `rpc.statd`, and `showmount`

Installed Libraries: None

Installed Directories: `/var/lib/nfs`

Short Descriptions

exportfs maintains a list of NFS exported file systems.

nfsstat prints NFS statistics.

nhfsgraph runs **nhfsstone** over multiple loads.

nhfsnums converts raw numbers from **nhfsstone** output into plot format.

nhfsrun executes **nhfsstone** with a range of different loads.

nhfsstone is used on a NFS client to generate an artificial load with a particular mix of NFS operations.

rpc.lockd starts the NFS lock manager (NLM) on kernels that don't start it automatically. However, since most kernels do start it automatically it is usually not required.

rpc.mountd implements the NFS mount protocol on an NFS server.

rpc.nfsd implements the user level part of the NFS service on the server.

rpc.rquotad is an rpc server which returns quotas for a user of a local file system which is mounted by a

remote machine over the NFS.

rpc.statd

is used by the NFS file locking service, **rpc.lockd**, to implement lock recovery when the NFS server machine crashes and reboots. Runs on the NFS server only.

showmount

displays mount information for an NFS server.

OpenSSH-4.1p1

Introduction to OpenSSH

The OpenSSH package contains `ssh` clients and the `sshd` daemon. This is useful for encrypting authentication and subsequent traffic over a network.

Package Information

- Download (HTTP): <http://sunsite.ualberta.ca/pub/OpenBSD/OpenSSH/portable/openssh-4.1p1.tar.gz>
- Download (FTP): <ftp://ftp.openbsd.org/pub/OpenBSD/OpenSSH/portable/openssh-4.1p1.tar.gz>
- Download MD5 sum: 959c663e709c981f07a3315bfd64f3d0
- Download size: 894 KB
- Estimated disk space required: 15 MB
- Estimated build time: 0.4 SBU

OpenSSH Dependencies

Required

OpenSSL-0.9.7g

Optional

Linux-PAM-0.80, tcpwrappers-7.6, X (XFree86-4.5.0 or X.org-6.8.2), MIT krb5-1.4.1 or Heimdal-0.7, JDK-1.5.0, Net-tools-1.60, Sysstat-6.0.0, OpenSC and libedit

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:

```
install -v -d -m700 /var/lib/sshd &&
chown root:sys /var/lib/sshd &&
groupadd -g 50 sshd &&
useradd -c 'sshd PrivSep' -d /var/lib/sshd -g sshd \
-s /bin/false -u 50 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 the 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 \
--with-privsep-path=/var/lib/sshd
```

If you use Heimdal as your Kerberos5 implementation and you linked the Heimdal libraries into the build using the `--with-kerberos5` parameter, you'll need to modify the `Makefile` or the build will fail. Use the following command:

```
sed -i -e "s/lkrb5 -ldes/lkrb5/" Makefile
```

Continue the build:

```
make
```

If you linked `tcp_wrappers` into the build using the `--with-tcp-wrappers` parameter, ensure you add `127.0.0.1` to the `sshd` line in `/etc/hosts.allow` if you have a restrictive `/etc/hosts.deny` file, or the testsuite will fail. To run the testsuite, issue: **make -k tests**.

Now, as the `root` user:

```
make install
```

Command Explanations

`--sysconfdir=/etc/ssh`: This prevents the configuration files from being installed in `/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`: This parameter changes the installation path of some programs to `/usr/sbin` instead of `/usr/libexec`.

Configuring OpenSSH

Config Files

`~/.ssh/*`, `/etc/ssh/ssh_config`, and `/etc/ssh/sshd_config`

There are no required changes to any of these files. However, you may wish to view the `/etc/ssh/` files and make any changes appropriate for the security of your system. One recommended change is that you disable `root` login via `ssh`. Execute the following command as the `root` user to disable `root` login via `ssh`:

```
echo "PermitRootLogin no" >> /etc/ssh/sshd_config
```

Additional configuration information can be found in the man pages for `sshd`, `ssh` and `ssh-agent`.

Boot Script

To start the SSH server at system boot, install the `/etc/rc.d/init.d/sshd` init script included in the `blfs-bootscripts-6.1` package.

```
make install-sshd
```

Contents

Installed Programs: scp, sftp, sftp-server, slogin, ssh, sshd, ssh-add, ssh-agent, ssh-keygen, ssh-keyscan, and ssh-keysign

Installed Libraries: None

Installed Directories: /etc/ssh and /var/lib/ssh

Short Descriptions

scp is a file copy program that acts like **rcp** except it uses an encrypted protocol.

sftp is an FTP-like program that works over SSH1 and SSH2 protocols.

sftp-server is an SFTP server subsystem.

slogin is a symlink to **ssh**.

ssh is an **rlogin/rsh**-like client program except it uses an encrypted protocol.

sshd is a daemon that listens for **ssh** login requests.

ssh-add is a tool which adds keys to the **ssh-agent**.

ssh-agent is an authentication agent that can store private keys.

ssh-keygen is a key generation tool.

ssh-keyscan is a utility for gathering public host keys from a number of hosts.

ssh-keysign is used by **ssh** to access the local host keys and generate the digital signature required during hostbased authentication with SSH protocol version 2.

ProFTPD-1.2.10

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-1.2.10.tar.bz2>
- Download (FTP): <ftp://ftp.proftpd.org/distrib/source/proftpd-1.2.10.tar.bz2>
- Download MD5 sum: 5feb4a7348e12faefc25e34fd92efdd6
- Download size: 901 KB
- Estimated disk space required: 7.3 MB
- Estimated build time: 0.27 SBU

ProFTPD Dependencies

Optional

Linux-PAM-0.80

Installation of ProFTPD

For security reasons, you should install ProFTPD using an unprivileged user and group. As the `root` user:

```
groupadd -g 46 proftpd &&
useradd -c proftpd -d /home/ftp -g proftpd \
        -s /usr/lib/proftpd/proftpdshell -u 46 proftpd &&
install -v -d -m775 -o proftpd -g proftpd /usr/lib/proftpd &&
ln -v -s /bin/false /usr/lib/proftpd/proftpdshell &&
echo /usr/lib/proftpd/proftpdshell >> /etc/shells
```

Install ProFTPD as an unprivileged user by running the following commands:

```
install_user=proftpd install_group=proftpd \
        ./configure --prefix=/usr --sysconfdir=/etc \
        --localstatedir=/var/run &&
make
```

Now, as the `root` user:

```
make install
```

Command Explanations

install -v -d -m775 -o proftpd -g proftpd /usr/lib/proftpd: Create the home directory for ProFTPD.

ln -v -s /bin/false /usr/lib/proftpd/proftpdshell: Set the default shell as a link to an invalid shell.

echo /usr/lib/proftpd/proftpdshell >> /etc/shells: Fake a valid shell for compatibility purposes.

**Note**

The above three commands can be omitted if the following directive is placed in the configuration file:

```
RequireValidShell off
```

By default, proftpd will require that users logging in have valid shells. The RequireValidShell directive turns off this requirement. This is only recommended if you are setting up your FTP server exclusively for anonymous downloads.

`install_user=proftpd install_group=proftpd`: Specify the user and group identity for ProFTPD.

`--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

Config Files

`/etc/proftpd.conf`

Configuration Information

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, files should be overwritable.
<Directory /*>
  AllowOverwrite                      on
</Directory>

# A basic anonymous configuration, no upload directories.
<Anonymous ~proftpd>
  User                                proftpd
  Group                               proftpd
  # Clients should be able to login with "anonymous" as well as "proftpd"
  UserAlias                            anonymous proftpd

  # Limit the maximum number of anonymous logins
  MaxClients                          10

  # 'welcome.msg' should be 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

```

Boot Script

Install the `/etc/rc.d/init.d/proftpd` init script included in the `blfs-bootscripts-6.1` package.

```
make install-proftpd
```

Contents

Installed Programs: `ftpcount`, `ftpdctl`, `ftptop`, `ftpwho`, `ftpshut`, `proftpd`

Installed Libraries: `None`

Installed Directory: `/var/run/proftpd`

Short Descriptions

proftpd is the FTP daemon.

ftpcount shows the current number of connections.

ftpshut shuts down all proftpd servers at a given time.

ftptop displays running status on connections.

ftpwho shows current process information for each session.

Samba-3.0.14a

Introduction to Samba

The Samba package provides file and print services to SMB/CIFS clients and Windows networking to Linux clients. Samba can also be configured as a Windows NT 4.0 Domain Controller replacement (with caveats working with NT PDC's and BDC's), a file/print server acting as a member of a Windows NT 4.0 or Active Directory domain and a NetBIOS (rfc1001/1002) nameserver (which amongst other things provides LAN browsing support).

Package Information

- Download (HTTP): <http://us1.samba.org/samba/ftp/samba-3.0.14a.tar.gz>
- Download (FTP): <ftp://ftp.samba.org/pub/samba/samba-3.0.14a.tar.gz>
- Download MD5 sum: ebee37e66a8b5f6fd328967dc09088e8
- Download size: 15.6 MB
- Estimated disk space required: 147 MB
- Estimated build time: 2.21 SBU

Samba Dependencies

Optional

popt-1.7-5, Linux-PAM-0.80, OpenLDAP-2.2.24, CUPS-1.1.23, Heimdal-0.7 or MIT krb5-1.4.1, libxml2-2.6.20, MySQL-4.1.12 or PostgreSQL-8.0.3, Python-2.4.1, xinetd-2.3.13 and Valgrind

Installation of Samba

Install Samba by running the following commands:

```
cd source &&
./configure \
  --prefix=/usr \
  --sysconfdir=/etc \
  --localstatedir=/var \
  --with-piddir=/var/run \
  --with-fhs \
  --with-smbmount &&
make
```

Now, as the root user:

```
install -v -m755 -d /var/cache/samba &&
make install &&
mv -v /usr/lib/samba/lib smbclient.so /usr/lib &&
ln -v -sf ../lib smbclient.so /usr/lib/samba &&
chmod -v 644 /usr/include/lib smbclient.h &&
install -v -m755 nsswitch/libnss_win{s,bind}.so /lib &&
ln -v -sf libnss_winbind.so /lib/libnss_winbind.so.2 &&
ln -v -sf libnss_wins.so /lib/libnss_wins.so.2 &&
if [ -f nsswitch/pam_winbind.so ]; then
```

```
install -v -m755 nsswitch/pam_winbind.so /lib/security
fi &&
install -v -m644 ../examples/smb.conf.default /etc/samba &&
install -v -m644 ../docs/*.pdf /usr/share/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.

Command Explanations

`--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.

`--with-pam`: Use this parameter to link Linux-PAM into the build. This also builds the `pam_winbind.so` PAM module. You can find instructions on how to configure and use the module by running **man winbindd**.

install -v -d /var/cache/samba: This directory is needed for proper operation of the **smbd** and **nmbd** daemons.

mv -v /usr/lib/samba/lib smbclient.so ...; ln -v -sf ../libsmbclient.so ...: The `libsmbclient.so` library is needed by other packages. This command moves it to a location where other packages can find it.

install -v -m755 nsswitch/libnss_win{s,bind}.so /lib: The nss libraries are not installed by default. If you intend to use `winbindd` for domain auth, and/or WINS name resolution, you need these libraries.

ln -v -sf libnss_winbind.so /lib/libnss_winbind.so.2 and **ln -v -sf libnss_wins.so /lib/libnss_wins.so.2**: These symlinks are required by `glibc` to use the NSS libraries.

install -v -m644 ../examples/smb.conf.default /etc/samba: This copies a default `smb.conf` file into `/etc/samba`. This sample configuration will not work until you copy it to `/etc/samba/smb.conf` and make the appropriate changes for your installation. See the configuration section for minimum values which must be set.

Configuring Samba

Config Files

`/etc/samba/smb.conf`

Mounting Shares by Unprivileged Users

If it is desired for unprivileged users to directly mount (and unmount) SMB shares, the **smbmnt** and **smbumount** commands must be setuid `root`. Note that users can only mount SMB shares on a mount point owned by that user (requires write access also). If desired, change these programs to setuid `root` by issuing the

following command as the `root` user:

```
chmod -v 4755 /usr/bin/smb{mnt,umount}
```

Printing to SMB Clients

If you use CUPS for print services, and you wish to print to a printer attached to an SMB client, you need to create an SMB backend device. To create the device, issue the following command as the `root` user:

```
ln -v -sf /usr/bin/smbpool /usr/lib/cups/backend/smb
```

Configuration Information

Due to the complexity and the many various uses for Samba, complete configuration for all the package's capabilities is well beyond the scope of the BLFS book. This section provides instructions to configure the `/etc/samba/smb.conf` file for two common scenarios. The complete contents of `/etc/samba/smb.conf` will depend on the purpose of Samba installation.



Note

You may find it easier to copy the configuration parameters shown below into an empty `/etc/samba/smb.conf` file instead of copying and editing the default file as mentioned in the “Command Explanations” section. How you create/edit the `/etc/samba/smb.conf` file will be left up to you. Do ensure the file is only writable by the `root` user (mode 644).

Scenario 1: Minimal Standalone Client-Only Installation

Choose this variant if you only want to transfer files using **smbclient**, mount Windows shares and print to Windows printers, and don't want to share your files and printers to Windows machines.

A `/etc/samba/smb.conf` file with the following three parameters is sufficient:

```
[global]
  workgroup = MYGROUP
  dos charset = cp850
  unix charset = ISO-8859-1
```

The values in this example specify that the computer belongs to a Windows workgroup named “**MYGROUP**”, uses the “**cp850**” character set on the wire when talking to MS-DOS and MS Windows 9x, and that the filenames are stored in the “**ISO-8859-1**” encoding on the disk. Adjust these values appropriately for your installation. The “**unix charset**” value must be the same as the output of **locale charmap** when executed with the `LANG` variable set to your preferred locale, otherwise the **ls** command may not display correct filenames of downloaded files.

There is no need to run any Samba servers in this scenario, thus you don't need to install the provided bootscripts.

Scenario 2: Standalone File/Print Server

Choose this variant if you want to share your files and printers to Windows machines in your workgroup in addition to the capabilities described in Scenario 1.

In this case, the `/etc/samba/smb.conf.default` file may be a good template to start from. Also add “dos charset” and “unix charset” parameters to the “[global]” section as described in Scenario 1 in order to prevent filename corruption.

The following configuration file creates a separate share for each user's home directory and also makes all printers available to Windows machines:

```
[global]
    workgroup = MYGROUP
    dos charset = cp850
    unix charset = ISO-8859-1

[homes]
    comment = Home Directories
    browseable = no
    writable = yes

[printers]
    comment = All Printers
    path = /var/spool/samba
    browseable = no
    guest ok = no
    printable = yes
```

Other parameters you may wish to customize in the “[global]” section include:

```
server string =
security =
hosts allow =
load printers =
log file =
max log size =
socket options =
local master =
```

Reference the comments in the `/etc/samba/smb.conf.default` file for information regarding these parameters.

Since the **smbd** and **nmbd** daemons are needed in this case, install the samba bootscrip. Be sure to run **smbpasswd** (with the `-a` option to add users) to enable and set passwords for all accounts that need Samba access, or use the SWAT web interface (see below) to do the same. Using the default Samba passdb backend, any user you attempt to add will also be required to exist in the `/etc/passwd` file.

Advanced Requirements

More complex scenarios involving domain control or membership are possible if the right flags are passed to the `./configure` script when the package is built. Such setups are advanced topics and cannot be adequately covered in BLFS. Many complete books have been written on these topics alone. It should be noted, however, that a Samba BDC cannot be used as a fallback for a Windows PDC, and conversely, a Windows BDC cannot be used as a fallback for a Samba PDC. Also in some domain membership scenarios, the **winbindd** daemon and the corresponding bootscrip are needed.

There is quite a bit of documentation available which covers many of these advanced configurations. Point your

web browser to the links below to view some of the documentation included with the Samba package:

- Using Samba, 2nd Edition; a popular book published by O'Reilly
file:///usr/share/samba/swat/using_samba/toc.html
- The Official Samba HOWTO and Reference Guide
file:///usr/share/samba/swat/help/Samba-HOWTO-Collection/index.html
- Samba-3 by Example file:///usr/share/samba/swat/help/Samba-Guide/index.html
- The Samba-3 man Pages file:///usr/share/samba/swat/help/samba.7.html

Configuring SWAT

The built in SWAT (Samba Web Administration Tool) utility can be used for basic configuration of the Samba installation, but because it may be inconvenient, undesirable or perhaps even impossible to gain access to the console, BLFS recommends setting up access to SWAT using Stunnel. Without Stunnel, the `root` password is transmitted in clear text over the wire, and is considered an unacceptable security risk. After considering the security implications of using SWAT without Stunnel, and you still wish to implement SWAT without it, instructions are provided at this end of this section.

Setting up SWAT using Stunnel

First install, or ensure you have already installed, the Stunnel-4.11 package.

Next you must add entries to `/etc/services` and modify the `inetd/xinetd` configuration.

Add `swat` and `swat_tunnel` entries to `/etc/services` with the following commands issued as the `root` user:

```
echo "swat          901/tcp" >> /etc/services &&
echo "swat_tunnel  902/tcp" >> /etc/services
```

If `inetd` is used, the following command will add the `swat_tunnel` entry to `/etc/inetd.conf` (as user `root`):

```
echo "swat_tunnel stream tcp nowait.400 root /usr/sbin/swat swat" \
>> /etc/inetd.conf
```

Issue a `killall -HUP inetd` to reread the changed `inetd.conf` file.

If you use `xinetd`, the following command will create the Samba file as `/etc/xinetd.d/swat_tunnel` (you may need to modify or remove the “`only_from`” line to include the desired host[s]):

```
cat >> /etc/xinetd.d/swat_tunnel << "EOF"
# Begin /etc/xinetd.d/swat_tunnel

service swat_tunnel
{
    port                = 902
    socket_type         = stream
    wait                = no
    only_from           = 127.0.0.1
    user                = root
    server              = /usr/sbin/swat
    log_on_failure      += USERID
}
```

```
# End /etc/xinetd.d/swat_tunnel
EOF
```

Issue a **killall -HUP xinetd** to read the new `/etc/xinetd.d/swat_tunnel` file.

Next, you must add an entry for the `swat` service to the `/etc/stunnel/stunnel.conf` file (as user `root`):

```
cat >> /etc/stunnel/stunnel.conf << "EOF"
[swat]
accept  = 901
connect = 902
EOF
```

Restart the **stunnel** daemon using the following command as the `root` user:

```
/etc/rc.d/init.d/stunnel restart
```

SWAT can be launched by pointing your web browser to `https://[CA_DN_field]:901`. Substitute the hostname listed in the DN field of the CA certificate used with Stunnel for `[CA_DN_field]`.

Setting up SWAT without Stunnel



Warning

BLFS does not recommend using these procedures because of the security risk involved. However, in a home network environment and disclosure of the `root` password is an acceptable risk, the following instructions are provided for your convenience.

Add a `swat` entry to `/etc/services` with the following command issued as the `root` user:

```
echo "swat          901/tcp" >> /etc/services
```

If **inetd** is used, the following command issued as the `root` user will add a `swat` entry to the `/etc/inetd.conf` file:

```
echo "swat stream tcp nowait.400 root /usr/sbin/swat swat" \
>> /etc/inetd.conf
```

Issue a **killall -HUP inetd** to reread the changed `inetd.conf` file.

If **xinetd** is used, the following command issued as the `root` user will create an `/etc/xinetd.d/swat` file:

```
cat >> /etc/xinetd.d/swat << "EOF"
# Begin /etc/xinetd.d/swat

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
}
# End /etc/xinetd.d/swat
EOF

```

Issue a **killall -HUP xinetd** to read the new `/etc/xinetd.d/swat` file.

SWAT can be launched by pointing your web browser to `http://localhost:901`.



Note

If you linked Linux-PAM into the Samba build, you'll need to create an `/etc/pam.d/samba` file.

Boot Script

For your convenience, boot scripts have been provided for Samba. There are two included in the `blfs-bootscripts-6.1` package. The first, `samba`, will start the **smbd** and **nmbd** daemons needed to provide SMB/CIFS services. The second script, `winbind`, starts the **winbindd** daemon, used for providing Windows domain services to Linux clients.

The default Samba installation uses the `nobody` user for guest access to the server. This can be overridden by setting the `guest account = parameter` in the `/etc/samba/smb.conf` file. If you utilize the `guest account = parameter`, ensure this user exists in the `/etc/passwd` file. To use the default user, issue the following commands as the `root` user:

```

groupadd -g 99 nogroup &&
useradd -c "Unprivileged Nobody" -d /dev/null -g nogroup \
-s /bin/false -u 99 nobody

```

Install the `samba` script with the following command issued as the `root` user:

```
make install-samba
```

If you also need the `winbind` script:

```
make install-winbind
```

Contents

Installed Programs: `findsmb`, `mount.smbfs`, `net`, `nmbd`, `nmblookup`, `ntlm_auth`, `pdbedit`, `profiles`, `rpcclient`, `smbcacls`, `smbclient`, `smbcontrol`, `smbcquotas`, `smbd`, `smbmnt`, `smbmount`, `smbpasswd`, `smbspool`, `smbstatus`, `smbtar`, `smbtree`, `smbumount`, `swat`, `tdbbackup`, `tdbdump`, `tdbtool`, `testparm`, `testprns`, `wbinfo`, and `winbindd`

Installed Libraries: `libnss_winbind.so`, `libnss_wins.so`, `libsmbclient.so`, the `pam_winbind.so` PAM

library and assorted character set, filesystem and support modules.

Installed Directories: `/etc/samba`, `/usr/lib/samba`, `/usr/share/samba`, `/var/cache/samba`, and `/var/lib/samba`

Short Descriptions

findsmb	lists information about machines that respond to SMB name queries on a subnet.
mount.smbfs	is a symlink to smbmount which provides <code>/bin/mount</code> with a way to mount remote Windows (or Samba) fileshares.
net	is a tool for administration of Samba and remote CIFS servers, similar to the net utility for DOS/Windows.
nmbd	is the Samba NetBIOS name server.
nmblookup	is used to query NetBIOS names and map them to IP addresses.
ntlm_auth	is a tool to allow external access to Winbind's NTLM authentication function.
pdbedit	is a tool used to manage the SAM database.
profiles	is a utility that reports and changes SIDs in Windows registry files. It currently only supports Windows NT.
rpcclient	is used to execute MS-RPC client side functions.
smbcacls	is used to manipulate Windows NT access control lists.
smbclient	is a SMB/CIFS access utility, similar to FTP.
smbcontrol	is used to control running smbd , nmbd and winbindd daemons.
smbcquotas	is used to manipulate Windows NT quotas on SMB file shares.
smbd	is the main Samba daemon which provides SMB/CIFS services to clients.
smbmnt	is a helper application used by the smbmount program to do the actual mounting of SMB shares. It can be installed <code>setuid root</code> if you want unprivileged users to be able to mount their SMB shares.
smbmount	is usually invoked as mount.smbfs by the mount command when using the <code>-t smbfs</code> option, mounts a Linux SMB filesystem.
smbpasswd	changes a user's Samba password.
smbspool	sends a print job to an SMB printer.
smbstatus	reports current Samba connections.
smbtar	is a shell script used for backing up SMB/CIFS shares directly to Linux tape drives or a file.
smbtree	is a text-based SMB network browser.
smbumount	is used by unprivileged users to unmount SMB filesystems, provided that it is <code>setuid root</code> .
swat	is the Samba Web Administration Tool.

tdbackup	is a tool for backing up or validating the integrity of Samba <code>.tdb</code> files.
tdbdump	is a tool used to print the contents of a Samba <code>.tdb</code> file.
tdbtool	is a tool which allows simple database manipulation from the command line.
testparm	checks an <code>smb.conf</code> file for proper syntax.
testprns	tests printer names.
wbinfo	queries a running winbindd daemon.
winbindd	resolves names from Windows NT servers.

vsFTPD-2.0.3

Introduction to vsFTPD

The vsFTPD package contains a very secure and very small FTP daemon. This is useful for serving files over a network.

Package Information

- Download (HTTP):
- Download (FTP): <ftp://vsftpd.beasts.org/users/cevans/vsftpd-2.0.3.tar.gz>
- Download MD5 sum: 74936cbd8e8251deb1cd99c5fb18b6f8
- Download size: 150 KB
- Estimated disk space required: 1.4 MB
- Estimated build time: less than 0.1 SBU

vsFTPD Dependencies

Optional

Linux-PAM-0.80, OpenSSL-0.9.7g, and tcpwrappers-7.6

Installation of vsFTPD

For security reasons, running vsFTPD as an unprivileged user and group is encouraged. Also, a user should be created to map anonymous users. As the `root` user, create the needed directories, users, and groups with the following commands:

```
install -v -d -m 0755 /var/ftp/empty &&
install -v -d -m 0755 /home/ftp &&
groupadd -g 47 vsftpd &&
useradd -d /dev/null -c "vsFTPD User" -g vsftpd -s /bin/false \
    -u 47 vsftpd &&
groupadd -g 45 ftp &&
useradd -c anonymous_user -d /home/ftp -g ftp -s /bin/false -u 45 ftp
```

Build vsFTPD as an unprivileged user using the following command:

```
make
```

Once again, become the `root` user and install vsFTPD with the following commands:

```
install -v -m 755 vsftpd /usr/sbin/vsftpd &&
install -v -m 644 vsftpd.8 /usr/share/man/man8 &&
install -v -m 644 vsftpd.conf.5 /usr/share/man/man5 &&
install -v -m 644 vsftpd.conf /etc
```

Command Explanations

`install -v -d ...`: This creates the directory that anonymous users will use (`/home/ftp`) and the directory the

daemon will chroot into (/var/ftp/empty).



Note

/home/ftp should not be owned by the user vsftpd, or the user ftp.

`echo "#define VSF_BUILD_TCPWRAPPERS" >>builddefs.h`: Use this prior to **make** to add support for tcpwrappers.

`echo "#define VSF_BUILD_SSL" >>builddefs.h`: Use this prior to **make** to add support for SSL.

`install -v -m ...`: The Makefile uses non-standard installation paths. These commands install the files in /usr and /etc.

Configuring vsFTPD

Config Files

/etc/vsftpd.conf

Configuration Information

vsFTPD comes with a basic anonymous-only configuration file that was copied to /etc above. While still as root, this file should be modified because it is now recommended to run **vsftpd** in standalone mode as opposed to **inetd/xinetd** mode. Also, you should specify the privilege separation user created above. Finally, you should specify the **chroot** directory. **man vsftpd.conf** will give you all the details.

```
cat >> /etc/vsftpd.conf << "EOF"
background=YES
listen=YES
nopriv_user=vsftpd
secure_chroot_dir=/var/ftp/empty
EOF
```

Boot Script

Install the /etc/rc.d/init.d/vsftpd init script included in the blfs-bootscripts-6.1 package.

```
make install-vsftpd
```

Contents

Installed Program: vsftpd
Installed Libraries: None
Installed Directories: /var/ftp, /var/ftp/empty, /home/ftp

Short Descriptions

vsftpd is the FTP daemon.

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):
- Download MD5 sum: 4295b5fe12350f09b5892b363348ac8b
- Download size: 291 KB
- Estimated disk space required: 4.12 MB
- Estimated build time: 0.11 SBU

xinetd Dependencies

Optional

tcpwrappers-7.6

Installation of xinetd

Install xinetd by running the following commands:

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

Now, as the root user:

```
make install
```

Configuring xinetd

Config Files

/etc/xinetd.conf

Configuration Information

Ensure the path to all daemons is `/usr/sbin`, rather than the default path of `/usr/etc`, and install the xinetd configuration files by running the following commands as the root user:

```
cat > /etc/xinetd.conf << "EOF"  
# Begin /etc/xinetd  
# Configuration file for xinetd  
#  
  
defaults  
{
```

```

    instances      = 60
    log_type       = SYSLOG daemon
    log_on_success = HOST PID USERID
    log_on_failure = HOST USERID
    cps           = 25 30
}

# All service files are stored in the /etc/xinetd.d directory
#
includedir /etc/xinetd.d
# End /etc/xinetd
EOF

```

All of the following files have the statement, "disable = yes". To activate any of the services, this statement will need to be changed to "disable = no".



Note

The following files are listed to demonstrate classic xinetd applications. In many cases, these applications are not needed. In some cases, the applications are considered security risks. For example, **telnet**, **rlogin**, **rexec**, and **rsh** transmit unencrypted usernames and passwords over the network and can be easily replaced with a more secure alternative: **ssh**.

```

install -v -d -m755 /etc/xinetd.d &&
cat > /etc/xinetd.d/login << "EOF" &&
# Begin /etc/xinetd.d/login

service login
{
    disable      = yes
    socket_type  = stream
    protocol     = tcp
    wait         = no
    user         = root
    server       = /usr/sbin/in.rlogind
    log_type     = SYSLOG local4 info
}

# End /etc/xinetd.d/login
EOF
cat > /etc/xinetd.d/shell << "EOF" &&
# Begin /etc/xinetd.d/shell

service shell
{
    disable      = yes
    socket_type  = stream
    wait         = no
    user         = root
    instances    = UNLIMITED
    flags        = IDONLY
    log_on_success += USERID
}

```

```

    server          = /usr/sbin/in.rshd
}

# End /etc/xinetd.d/shell
EOF
cat > /etc/xinetd.d/exec << "EOF" &&
# Begin /etc/xinetd.d/exec

service exec
{
    disable         = yes
    socket_type     = stream
    wait           = no
    user           = root
    server         = /usr/sbin/in.rexecd
}

# End /etc/xinetd.d/exec
EOF
cat > /etc/xinetd.d/comsat << "EOF" &&
# Begin /etc/xinetd.d/comsat

service comsat
{
    disable         = yes
    socket_type     = dgram
    wait           = yes
    user           = nobody
    group          = tty
    server         = /usr/sbin/in.comsat
}

# End /etc/xinetd.d/comsat
EOF
cat > /etc/xinetd.d/talk << "EOF" &&
# Begin /etc/xinetd.d/talk

service talk
{
    disable         = yes
    socket_type     = dgram
    wait           = yes
    user           = root
    server         = /usr/sbin/in.talkd
}

# End /etc/xinetd.d/talk
EOF
cat > /etc/xinetd.d/ntalk << "EOF" &&
# Begin /etc/xinetd.d/ntalk

service ntalk
{

```

```

    disable      = yes
    socket_type  = dgram
    wait         = yes
    user         = root
    server       = /usr/sbin/in.ntalkd
}

# End /etc/xinetd.d/ntalk
EOF
cat > /etc/xinetd.d/telnet << "EOF" &&
# Begin /etc/xinetd.d/telnet

service telnet
{
    disable      = yes
    socket_type  = stream
    wait         = no
    user         = root
    server       = /usr/sbin/in.telnetd
    bind         = 127.0.0.1
    log_on_failure += USERID
}

service telnet
{
    disable      = yes
    socket_type  = stream
    wait         = no
    user         = root
#   server       = /usr/sbin/in.telnetd
    bind         = 192.231.139.175
    redirect     = 128.138.202.20 23
    log_on_failure += USERID
}

# End /etc/xinetd.d/telnet
EOF
cat > /etc/xinetd.d/ftp << "EOF" &&
# Begin /etc/xinetd.d/ftp

service ftp
{
    disable      = yes
    socket_type  = stream
    wait         = no
    user         = root
    server       = /usr/sbin/in.ftpd
    server_args  = -l
    instances    = 4
    log_on_success += DURATION USERID
    log_on_failure += USERID
    access_times = 2:00-8:59 12:00-23:59
    nice         = 10
}

```

```

}

# End /etc/xinetd.d/ftp
EOF
cat > /etc/xinetd.d/tftp << "EOF" &&
# Begin /etc/xinetd.d/tftp

service tftp
{
    disable            = yes
    socket_type        = dgram
    wait               = yes
    user               = root
    server             = /usr/sbin/in.tftpd
    server_args        = -s /tftpboot
}

# End /etc/xinetd.d/tftp
EOF
cat > /etc/xinetd.d/finger << "EOF" &&
# Begin /etc/xinetd.d/finger

service finger
{
    disable            = yes
    socket_type        = stream
    wait               = no
    user               = nobody
    server             = /usr/sbin/in.fingerd
}

# End /etc/xinetd.d/finger
EOF
cat > /etc/xinetd.d/systat << "EOF" &&
# Begin /etc/xinetd.d/systat

service systat
{
    disable            = yes
    socket_type        = stream
    wait               = no
    user               = nobody
    server             = /usr/bin/ps
    server_args        = -auwwx
    only_from          = 128.138.209.0
    log_on_success     = HOST
}

# End /etc/xinetd.d/systat
EOF
cat > /etc/xinetd.d/netstat << "EOF" &&
# Begin /etc/xinetd.d/netstat

```

```

service netstat
{
    disable            = yes
    socket_type       = stream
    wait              = no
    user              = nobody
    server            = /usr/ucb/netstat
    server_args       = -f inet
    only_from         = 128.138.209.0
    log_on_success    = HOST
}

# End /etc/xinetd.d/netstat
EOF
cat > /etc/xinetd.d/echo << "EOF" &&
# Begin /etc/xinetd.d/echo

service echo
{
    disable          = yes
    type             = INTERNAL
    id              = echo-stream
    socket_type      = stream
    protocol         = tcp
    user            = root
    wait            = no
}

service echo
{
    disable          = yes
    type             = INTERNAL
    id              = echo-dgram
    socket_type      = dgram
    protocol         = udp
    user            = root
    wait            = yes
}

# End /etc/xinetd.d/echo
EOF
cat > /etc/xinetd.d/chargen << "EOF" &&
# Begin /etc/xinetd.d/chargen

service chargen
{
    disable          = yes
    type             = INTERNAL
    id              = chargen-stream
    socket_type      = stream
    protocol         = tcp
    user            = root
    wait            = no
}

```

```

}

service chargen
{
    disable          = yes
    type             = INTERNAL
    id               = chargen-dgram
    socket_type      = dgram
    protocol         = udp
    user             = root
    wait             = yes
}

# End /etc/xinetd.d/chargen
EOF
cat > /etc/xinetd.d/daytime << "EOF" &&
# Begin /etc/xinetd.d/daytime

service daytime
{
    disable          = yes
    type             = INTERNAL
    id               = daytime-stream
    socket_type      = stream
    protocol         = tcp
    user             = root
    wait             = no
}

service daytime
{
    disable          = yes
    type             = INTERNAL
    id               = daytime-dgram
    socket_type      = dgram
    protocol         = udp
    user             = root
    wait             = yes
}

# End /etc/xinetd.d/daytime
EOF
cat > /etc/xinetd.d/time << "EOF" &&
# Begin /etc/xinetd.d/time

service time
{
    disable          = yes
    type             = INTERNAL
    id               = time-stream
    socket_type      = stream
    protocol         = tcp
    user             = root
}

```

```

    wait          = no
}

service time
{
    disable       = yes
    type          = INTERNAL
    id            = time-dgram
    socket_type   = dgram
    protocol      = udp
    user          = root
    wait         = yes
}

# End /etc/xinetd.d/time
EOF
cat > /etc/xinetd.d/rstatd << "EOF" &&
# Begin /etc/xinetd.d/rstatd

service rstatd
{
    disable       = yes
    type          = RPC
    flags         = INTERCEPT
    rpc_version   = 2-4
    socket_type   = dgram
    protocol      = udp
    server        = /usr/sbin/rpc.rstatd
    wait         = yes
    user          = root
}

# End /etc/xinetd.d/rstatd
EOF
cat > /etc/xinetd.d/rquotad << "EOF" &&
# Begin /etc/xinetd.d/rquotad

service rquotad
{
    disable       = yes
    type          = RPC
    rpc_version   = 1
    socket_type   = dgram
    protocol      = udp
    wait         = yes
    user          = root
    server        = /usr/sbin/rpc.rstatd
}

# End /etc/xinetd.d/rquotad
EOF
cat > /etc/xinetd.d/rusersd << "EOF" &&

```

```

# Begin /etc/xinetd.d/rusersd

service rusersd
{
    disable      = yes
    type         = RPC
    rpc_version  = 1-2
    socket_type  = dgram
    protocol     = udp
    wait         = yes
    user         = root
    server       = /usr/sbin/rpc.rusersd
}

# End /etc/xinetd.d/rusersd
EOF
cat > /etc/xinetd.d/sprayd << "EOF" &&
# Begin /etc/xinetd.d/sprayd

service sprayd
{
    disable      = yes
    type         = RPC
    rpc_version  = 1
    socket_type  = dgram
    protocol     = udp
    wait         = yes
    user         = root
    server       = /usr/sbin/rpc.sprayd
}

# End /etc/xinetd.d/sprayd
EOF
cat > /etc/xinetd.d/walld << "EOF" &&
# Begin /etc/xinetd.d/walld

service walld
{
    disable      = yes
    type         = RPC
    rpc_version  = 1
    socket_type  = dgram
    protocol     = udp
    wait         = yes
    user         = nobody
    group        = tty
    server       = /usr/sbin/rpc.rwalld
}

# End /etc/xinetd.d/walld
EOF
cat > /etc/xinetd.d/irc << "EOF"
# Begin /etc/xinetd.d/irc

```

```

service irc
{
    disable      = yes
    socket_type  = stream
    wait         = no
    user        = root
    flags       = SENSOR
    type        = INTERNAL
    bind        = 192.168.1.30
    deny_time   = 60
}

# End /etc/xinetd.d/irc
EOF

```

The format of the `/etc/xinetd.conf` is documented in the `xinetd.conf.5` man page. Further information can be found at <http://www.xinetd.org>.

Boot Script

As the root user, install the `/etc/rc.d/init.d/xinetd` init script included in the `blfs-bootscripts-6.1` package.

```
make install-xinetd
```

As the root user, use the 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 because most of the servers **xinetd** is trying to control are not installed yet.

Contents

Installed Programs: itox, xconv.pl, and xinetd

Installed Libraries: None

Installed Directories: `/etc/xinetd.d/`

Short Descriptions

itox is a utility used for converting `inetd.conf` files to `xinetd.conf` format.

xconv.pl is a Perl script used for converting `inetd.conf` files to `xinetd.conf` format, similar to **itox**.

xinetd is the Internet services daemon.

Chapter 22. 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).

Exim-4.52

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://www.exim.org/ftp/exim4/exim-4.52.tar.bz2>
- Download (FTP): <ftp://ftp.exim.org/pub/exim/exim4/exim-4.52.tar.bz2>
- Download MD5 sum: 89601650f3b854d469451f30b369622b
- Download size: 1.5 MB
- Estimated disk space required: 12.4 MB
- Estimated build time: 0.2 SBU

Additional Downloads

- Required patch for Berkeley DB:
<http://www.linuxfromscratch.org/blfs/downloads/6.1/exim-4.52-db43-1.patch>

Exim Dependencies

Required

Berkeley DB-4.3.28 or GDBM-1.8.3 or TDB

Optional

X (XFree86-4.5.0 or X.org-6.8.2), OpenLDAP-2.2.24, OpenSSL-0.9.7g or GnuTLS, Cyrus SASL-2.1.21, MySQL-4.1.12, PostgreSQL-8.0.3, tcpwrappers-7.6 and Linux-PAM-0.80

Installation of Exim

Before building Exim, as the `root` user you should create the group and user `exim` which will run the `exim` daemon:

```
groupadd -g 31 exim &&
useradd -d /dev/null -c "Exim Daemon" -g exim -s /bin/false -u 31 exim
```

If you have Berkeley DB installed, apply the following patch:

```
patch -Np1 -i ../exim-4.52-db43-1.patch
```

Install Exim with the following commands:

```
sed -e 's,^BIN_DIR.*$,BIN_DIRECTORY=/usr/sbin,' \
    -e 's,^CONF.*$,CONFIGURE_FILE=/etc/exim.conf,' \
    -e 's,^EXIM_USER.*$,EXIM_USER=exim,' \
    -e 's,^EXIM_MONITOR,#EXIM_MONITOR,' src/EDITME > Local/Makefile &&
make
```

Now, as the root user:

```
make install &&
install -v -m644 doc/exim.8 /usr/share/man/man8 &&
install -v -d -m755 /usr/share/doc/exim-4.52 &&
install -v -m644 doc/* /usr/share/doc/exim-4.52 &&
ln -sv exim /usr/sbin/sendmail
```

Command Explanations

sed -e ... > Local/Makefile: Most of Exim's configuration options are compiled in using the directives in `Local/Makefile` which is created from the `src/EDITME` file. This command specifies the minimum set of options. Descriptions for the options are listed below.

BIN_DIRECTORY=/usr/sbin: This installs all of Exim's binaries and scripts in `/usr/sbin`.

CONFIGURE_FILE=/etc/exim.conf: This installs Exim's main configuration file in `/etc`.

EXIM_USER=exim: This tells Exim that after the daemon no longer needs `root` privileges, the process hands off the daemon to the `exim` user.

#EXIM_MONITOR: This defers building the Exim monitor program, as it requires X Window System support, by commenting out the `EXIM_MONITOR` line in the Makefile. If you wish to build the monitor program, omit this `sed` command and issue the following command before building the package (modify `Local/eximon.conf`, if necessary): **cp exim_monitor/EDITME Local/eximon.conf**.

ln -sv exim /usr/sbin/sendmail: Creates a link to `sendmail` for applications which need it. Exim will accept most Sendmail command-line options.

Adding Additional Functionality

To utilize some or all of the dependency packages, you'll need to modify `Local/Makefile` to include the appropriate directives and parameters to link additional libraries before you build Exim. `Local/Makefile` is heavily commented with instructions on how to do this. Listed below is additional information to help you link these dependency packages.

To use a backend database other than Berkeley DB, see the instructions at http://www.exim.org/exim-html-4.40/doc/html/spec_4.html#SECT4.3.

For SSL functionality, see the instructions at http://www.exim.org/exim-html-4.40/doc/html/spec_4.html#SECT4.6 and http://www.exim.org/exim-html-4.40/doc/html/spec_37.html#CHAP37.

For tcpwrappers functionality, see the instructions at http://www.exim.org/exim-html-4.40/doc/html/spec_4.html#SECT4.7.

For information about adding authentication mechanisms to the build, see the instructions at http://www.exim.org/exim-html-4.40/doc/html/spec_34.html#SECT34.4 For specific information about using Cyrus-SASL, see section 10 of the `doc/NewStuff` file located in the source tree.

For information about linking Linux-PAM, see the instructions at http://www.exim.org/exim-html-4.40/doc/html/spec_11.html#IX935.

For information about linking database engine libraries used for Exim name lookups, see the instructions at http://www.exim.org/exim-html-4.40/doc/html/spec_9.html#CHAP9.

If you wish to add Readline support to Exim when invoked in “test expansion” (-bv) mode, see the information in section 8 of the `doc/NewStuff` file located in the source tree.

You may wish to modify the default configuration and send log files to syslog instead of the default `/var/spool/exim/log` directory. See the information at http://www.exim.org/exim-html-4.40/doc/html/spec_45.html#CHAP45.

Configuring Exim

Config Files

`/etc/exim.conf` and `/etc/aliases`

Configuration Information

A default (nothing but comments) `/etc/aliases` file is installed during the package installation if this file did not exist on your system. Create the necessary aliases and start the Exim daemon using the following commands:

```
cat >> /etc/aliases << "EOF"
postmaster: root
MAILER-DAEMON: root
EOF
exim -v -bi &&
/usr/sbin/exim -bd -q15m
```



Note

To protect an existing `/etc/aliases` file, the command above appends these aliases to it. This file should be checked and duplicate aliases removed, if present.

The `/usr/sbin/exim -bd -q15m` command starts the Exim daemon with a 15 minute interval in processing the mail queue. Adjust this parameter to suit your desires.

Boot Script

To automate the running of **exim** at startup, install the `/etc/rc.d/init.d/exim` init script included in the `blfs-bootscripts-6.1` package.

```
make install-exim
```

The bootscript also starts the Exim daemon and dispatches a queue runner process every 15 minutes. Modify the

`-q[time interval]` parameter in `/etc/rc.d/init.d/exim`, if necessary for your installation.

Contents

Installed Programs:	exicyclog, exigrep, exim, exim-4.43-2, exim_checkaccess, exim_dbmbuild, exim_dumpdb, exim_fixdb, exim_lock, exim_tidydb, eximstats, exinext, exipick, exiqgrep, exiqsumm, exiwhat, and optionally, eximon, and eximon.bin
Installed Libraries:	None
Installed Directories:	<code>/usr/share/doc/exim-4.52</code> and <code>/var/spool/exim</code>

Short Descriptions

exicyclog	cycles Exim log files.
exigrep	searches Exim log files.
exim	is a symlink to the exim-4.43-2 MTA daemon.
exim-4.43-2	is the Exim mail transport agent daemon.
exim_checkaccess	states whether a given recipient address from a given host is acceptable or not.
exim_dbmbuild	creates and rebuilds Exim databases.
exim_dumpdb	writes the contents of Exim databases to the standard output.
exim_fixdb	modifies data in Exim databases.
exim_lock	locks a mailbox file.
exim_tidydb	removes old records from Exim databases.
eximstats	generates mail statistics from Exim log files.
exinext	queries remote host retry times.
exipick	selects messages based on various criteria.
exiqgrep	is a utility for selective queue listing.
exiqsumm	produces a summary of the messages in the mail queue.
exiwhat	queries running Exim processes.
eximon	is a start-up shell script for eximon.bin used to set the required environment variables before running the program.
eximon.bin	is a monitor program which displays current information in an X window, and also contains a menu interface to Exim's command line administration options.

Postfix-2.2.5

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://www.mirrorspace.org/postfix/official/postfix-2.2.5.tar.gz>
- Download (FTP): <ftp://ftp.porcupine.org/mirrors/postfix-release/official/postfix-2.2.5.tar.gz>
- Download MD5 sum: f164b701c3e97b950d4cc64aff4de3c0
- Download size: 2.3 MB
- Estimated disk space required: 81 MB
- Estimated build time: 0.3 SBU

Postfix Dependencies

Required

Berkeley DB-4.3.28

Optional

PCRE-6.1, MySQL-4.1.12, PostgreSQL-8.0.3, OpenLDAP-2.2.24, OpenSSL-0.9.7g, Cyrus SASL-2.1.21 and cdb or TinyCDB

Installation of Postfix

Configuring the Build

The Postfix source tree does not contain a `configure` script, rather the makefile in the top-level directory contains a `makefiles` target that regenerates all the other makefiles in the build tree. If you wish to use additional software such as a database back-end for virtual users, or TLS/SSL authentication, you will need to regenerate the makefiles using one or more of the appropriate `CCARGS` and `AUXLIBS` settings listed below.

Here is an example that combines the TLS and Cyrus-SASL arguments:

```
make makefiles \
CCARGS='-DUSE_TLS -DUSE_SASL_AUTH -DDEF_DAEMON_DIR="/usr/lib/postfix/" \
-DDEF_MANPAGE_DIR="/usr/share/man/" -I/usr/include/openssl \
-I/usr/include/sasl' \
AUXLIBS='-L/usr/lib -lssl -lcrypto -lsasl2'
```

TLS Authentication

To use TLS authentication with postfix you will need to pass the following values to the `make makefiles` command:

```
CCARGS='-DUSE_TLS -I/usr/include/openssl'
```

```
AUXLIBS='-L/usr/lib -lssl -lcrypto'
```

To use TLS you will also need Cyrus SASL-2.1.21.

Cyrus-SASL

To use Cyrus-SASL with Postfix, use the following arguments:

```
CCARGS='-DUSE_SASL_AUTH -I/usr/include/sasl'
AUXLIBS='-L/usr/lib -lsasl2'
```

OpenLDAP

To use OpenLDAP with Postfix, use the following arguments:

```
CCARGS='-I/usr/include -DHAS_LDAP'
AUXLIBS='-L/usr/lib -lldap -llber'
```

MySQL

To use MySQL with Postfix, use the following arguments:

```
CCARGS='-DHAS_MYSQL -I/usr/include/mysql'
AUXLIBS='-L/usr/lib -lmysqlclient -lz -lm'
```

PostgreSQL

To use PostgreSQL with Postfix, use the following arguments:

```
CCARGS='-DHAS_PGSQL -I/usr/include/postgresql'
AUXLIBS='-L/usr/lib -lpq -lz -lm'
```

TinyCDB

To use TinyCDB with Postfix, use the following arguments:

```
CCARGS='-DHAS_CDB'
AUXLIBS='[/path/to/CDB]/libcdb.a'
```

Installing Postfix

Before you compile the program, you need to create users and groups that will be expected to be in place during the installation. Add the users and groups with the following commands issued by the root user:

```
groupadd -g 32 postfix &&
groupadd -g 33 postdrop &&
groupadd -g 99 nogroup &&
useradd -c "Postfix Daemon User" -d /dev/null -g postfix \
-s /bin/false -u 32 postfix &&
useradd -c "Unprivileged Nobody" -d /dev/null -g nogroup \
-s /bin/false -u 99 nobody &&
chown -v postfix:postfix /var/mail
```

Install Postfix by running the following commands:

```
make makefiles CCARGS='-DDEF_DAEMON_DIR="/usr/lib/postfix" \
-DDEF_MANPAGE_DIR="/usr/share/man" [additional args]' \
[AUXLIBS='additional args'] &&
make
```

This package does not come with a test suite.

Now, as the root user:

```
sh postfix-install -non-interactive
```

The final installation step is to install the program's documentation with the following commands (again, as the root user):

```
install -v -d /usr/share/doc/postfix &&
cp -v -rf html/* /usr/share/doc/postfix
```

Command Explanations

make makefiles: This command rebuilds the makefiles throughout the source tree to use the options contained in the CCARGS and AUXLIBS variables.

sh postfix-install -non-interactive : This keeps the install script from asking any questions, thereby accepting default destination directories in all but the two cases mentioned in the 'make makefiles' command.

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
```



Note

To protect an existing `/etc/aliases` file, the above command appends these aliases to it if it exists. This file should be checked and duplicate aliases removed, if present.

The `/etc/aliases` file that was just created or appended, 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.

```
sed -i "s/LOGIN/[user]/" /etc/aliases &&
sed -i "s/#myhostname = host.domain.tld/myhostname = \
    [localhost.localdomain]/" /etc/postfix/main.cf &&
/usr/bin/newaliases &&
/usr/sbin/postfix start
```

Boot Script

To automate the running of Postfix at startup, install the `/etc/rc.d/init.d/postfix` init script included in the `blfs-bootscripts-6.1` package.

```
make install-postfix
```

Contents

Installed Programs: bounce, cleanup, error, flush, lmtp, local, mailq, master, newaliases, nqmgr, oqmgr, pickup, pipe, postalias, postcat, postconf, postdrop, postfix, postkick, postlock, postlog, postmap, postqueue, postsuper, proxymap, qmgr, qmqpd, sendmail, showq, smtp, smtpd, spawn, trivial-rewrite, verify, and virtual

Installed Libraries: None

Installed Directories: `/etc/postfix` and `/usr/share/doc/postfix`

Short Descriptions

bounce A daemon that maintains per-message log files with non-delivery status information.

cleanup A daemon that processes inbound mail, inserts it into the incoming mail queue, and informs the queue manager of its arrival.

error A daemon that processes non-delivery requests from the queue manager.

flush A daemon that maintains a record of deferred mail by destination.

lmtp A daemon that processes message delivery requests from the queue manager.

local A daemon that processes delivery requests from the queue manager to deliver mail to local recipients.

mailq A symlink to `sendmail`.

master The resident process that runs Postfix daemons on demand.

newaliases A symlink to `sendmail`.

nqmgr	A daemon that awaits the arrival of incoming mail and arranges for its delivery.
oqmgr	The old style queue manager. This will be removed soon.
pickup	A daemon that waits for hints that new mail has been dropped into the maildrop directory, and feeds it into the cleanup daemon.
pipe	A daemon that processes requests from the queue manager to deliver messages to external commands.
postalias	Creates or queries one or more Postfix alias databases, or updates an existing one.
postcat	Prints the contents of the named files in human readable format.
postconf	Displays or changes the value of Postfix configuration parameters.
postdrop	Creates a file in the maildrop directory and copies it's standard input to the file.
postfix	Controls the operation of the Postfix mail system.
postkick	Sends requests to the specified service over a local transport channel.
postlock	Locks a mail folder for exclusive use, and executes commands passed to it.
postlog	A Postfix-compatible logging interface for use in, for example, shell scripts.
postmap	Creates or queries one or more Postfix lookup tables, or updates an existing one.
postqueue	The Postfix user interface for queue management.
postsuper	The Postfix user interface for superuser queue management.
proxymap	Provides read-only table lookup services to other Postfix processes.
qmgr	A daemon that awaits the arrival of incoming mail and arranges for its delivery.
qmqpd	A daemon that receives one message per connection, and pipes it through the cleanup daemon, and places it into the incoming queue.
sendmail	The Postfix to Sendmail compatibility interface.
showq	A daemon that reports the Postfix mail queue status.
smtp	Looks up a list of mail exchanger addresses for the destination host, sorts the list by preference, and connects to each listed address until it finds a server that responds.
smtpd	Accepts network connection requests and performs zero or more SMTP transactions per connection.
spawn	Listens on a port as specified in the Postfix <code>master.cf</code> file and spawns an external command whenever a connection is established.
trivial-rewrite	A daemon that rewrites addresses to standard form.
verify	Maintains a record of what recipient addresses are known to be deliverable or undeliverable.
virtual	Delivers mail to virtual user's mail directories.

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 MD5 sum: e00853280c9e899711f0b0239d3d8f86
- Download size: 2.2 MB
- Estimated disk space required: 9.0 MB
- Estimated build time: 0.13 SBU

Qpopper Dependencies

Required

MTA

Optional

OpenSSL-0.9.7g, GDBM-1.8.3, Linux-PAM-0.80, and MIT krb5-1.4.1 or Heimdal-0.7

Installation of Qpopper

Install Qpopper with the following commands:

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

Now, as the root user:

```
make install
```

Configuring Qpopper

Configuration Information

Update the Syslog configuration file and force the **syslogd** daemon to reread the new file so that Qpopper events are logged:

```
echo "local0.notice;local0.debug /var/log/POP.log" >> \
/etc/syslog.conf &&
killall -HUP syslogd
```

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
```

Issue a **killall -HUP inetd** to reread the changed `inetd.conf` file.

If you use **xinetd**, the following command will create the Qpopper file as `/etc/xinetd.d/pop3`:

```
cat >> /etc/xinetd.d/pop3 << "EOF"
# Begin /etc/xinetd.d/pop3

service pop3
{
    port                = 110
    socket_type         = stream
    protocol            = tcp
    wait               = no
    user                = root
    server              = /usr/sbin/popper
}

# End /etc/xinetd.d/pop3
EOF
```

Issue a **killall -HUP xinetd** to reread the changed `xinetd.conf` file.

Contents

Installed Program: popper
Installed Libraries: None
Installed Directories: None

Short Descriptions

popper is the POP3 server daemon.

Sendmail-8.13.4

Introduction to Sendmail

The Sendmail package contains a Mail Transport Agent (MTA).

Package Information

- Download (HTTP): <http://www.sendmail.org/ftp/sendmail.8.13.4.tar.gz>
- Download (FTP): <ftp://ftp.sendmail.org/pub/sendmail/sendmail.8.13.4.tar.gz>
- Download MD5 sum: 61e336750b48b01abaa69b4d7c9473b5
- Download size: 1.9 MB
- Estimated disk space required: 19.3 MB
- Estimated build time: 0.43 SBU

Sendmail Dependencies

Required

Berkeley DB-4.3.28 and Procmail-3.22

Optional

OpenSSL-0.9.7g, OpenLDAP-2.2.24, tcpwrappers-7.6, Cyrus SASL-2.1.21, nph, and AFPL Ghostscript-8.51 or ESP Ghostscript-7.07.1 (for creating PDF documentation)

Installation of Sendmail

Before building Sendmail, create the users, groups and directories that Sendmail requires with the following commands issued as the `root` user:

```
groupadd -g 26 smmsp &&
groupadd -g 34 mail &&
useradd -c "Sendmail Daemon" -g smmsp -G mail \
        -d /dev/null -s /bin/false -u 26 smmsp &&
chmod -v 1777 /var/mail &&
install -v -m700 -d /var/spool/mqueue
```

Note: See the source tree `sendmail/README` file for information on linking optional packages into the build. Use the example below, which adds support for `tcpwrappers`, `SASL`, `StartTLS` (`OpenSSL`) and `OpenLDAP`, as a starting point. Of course, modify it to suit your particular needs.

```
cat >> devtools/site/site.config.m4 << "EOF"
APPENDDEF(`confENVDEF',`-DSTARTTLS -DTCPWRAPPERS -DSASL -DLDAPMAP')
APPENDDEF(`confLIBS',`-lssl -lcrypto -lwrap -lsasl2 -lldap -llber')
APPENDDEF(`confINCDIRS',`-I/usr/include/sasl')
EOF
```

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
sh Build install-cf
sh Build install
sh Build sendmail.cf

```

Now, as the root user:

```

install -v -d -m755 /etc/mail &&
sh Build install-cf &&
cd ../../ &&
sh Build install &&
cp -v -R cf/* /etc/mail &&
cp -v cf/cf/{submit,sendmail}.mc /etc/mail &&
for manpage in sendmail editmap mailstats makemap praliases smrsh
do
    install -v -m444 $manpage/$manpage.8 /usr/share/man/man8
done &&
install -v -m444 sendmail/aliases.5 /usr/share/man/man5 &&
install -v -m444 sendmail/mailq.1 /usr/share/man/man1 &&
install -v -m444 sendmail/newaliases.1 /usr/share/man/man1 &&
install -v -m444 vacation/vacation.1 /usr/share/man/man1

```

Install the Sendmail Installation and Operations Guide with the following commands:

```

cd doc/op &&
sed -i -e 's/groff/GROFF_NO_SGR=1 groff/' Makefile &&
make op.txt op.pdf

```

Now, as the root user:

```

install -v -d -m755 /usr/share/doc/sendmail-8.13.4 &&
install -v -m644 op.ps op.txt op.pdf \
    /usr/share/doc/sendmail-8.13.4 &&
cd ../../

```

Note: remove `op.pdf` from the **make** and **install** commands if you don't have Ghostscript installed.

Command Explanations

cat > devtools/Site/site.config.m4 << "EOF": This creates a configuration file changing some of the default settings.

sh Build; sh Build sendmail.cf; sh Build install-cf; sh Build install: Sendmail uses an m4 based build script to create the various Makefile's. These commands build and install the package.

for manpage in...;do...;done; install ...: The man pages are installed already formatted and **man** displays them

somewhat garbled. These commands replace the formatted pages with pages **man** can display properly.

Configuring Sendmail

Config Files

```
/etc/mail/*
```

Configuration Information

Create the `/etc/mail/local-host-names` and `/etc/mail/aliases` files using the following commands as the `root` user:

```
echo $(hostname) > /etc/mail/local-host-names
cat > /etc/mail/aliases << "EOF"
postmaster: root
MAILER-DAEMON: root

EOF
newaliases -v
```

Sendmail's primary configuration file, `/etc/mail/sendmail.cf`, is complex and not meant to be directly edited. The recommended method to make changes is to modify `/etc/mail/sendmail.mc`, and various `m4` files, then run the **m4** macro processor from within `/etc/mail` as follows:

```
m4 m4/cf.m4 sendmail.mc > sendmail.cf
```

A full explanation of the files to modify, and the available parameters can be found in `/etc/mail/README`.

Boot Script

To automate the running of Sendmail at startup, install the `/etc/rc.d/init.d/sendmail` init script included in the `blfs-bootscripts-6.1` 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 may want to set it higher.

Contents

Installed Programs:	editmap, hoststat, mailstats, mailq, makemap, newaliases, praliases, purgestat, sendmail, smrsh, and vacation
Installed Libraries:	None
Installed Directories:	<code>/etc/mail</code> , <code>/usr/share/doc/sendmail-8.13.4</code> , <code>/var/spool/mqueue</code> , and

`/var/spool/clientmqueue`

Short Descriptions

editmap	queries and edits Sendmail map files.
hoststat	prints Sendmail's persistent host status.
mailstats	displays Sendmail statistics.
mailq	prints a summary of outbound mail messages waiting for delivery.
makemap	creates Sendmail map files.
newaliases	rebuilds <code>/etc/mail/aliases.db</code> from the contents of <code>/etc/mail/aliases</code> .
praliases	displays current Sendmail aliases.
purgestat	causes Sendmail to clear (purge) all its host-status information.
sendmail	is the Sendmail mail transport agent.
smrsh	is a restricted shell for Sendmail.
vacation	is an email auto responder.

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-4.3.28

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):
- Download (FTP): <ftp://sleepycat1.inetu.net/releases/db-4.3.28.tar.gz>
- Download MD5 sum: e27759537db6054b31d8cb3e99ba6fbb
- Download size: 5.8 MB
- Estimated disk space required: 74 MB (additional 140 MB to run parallel standard testsuite)
- Estimated build time: 1.0 SBU (additional 80 SBU to run parallel standard testsuite)

Berkeley DB Dependencies

Optional

Tcl-8.4.11 and JDK-1.5.0

Testing Berkeley DB

It is recommended you skip ahead to Installation. The test-suite takes more than 80 SBU and has a few bugs causing reports of 'Regression Tests Failed'. You must have Tcl to test Berkeley DB.

Build for the Berkeley DB test by running the following commands:

```
cd build_unix &&
../dist/configure --prefix=/usr \
  --enable-test --enable-tcl --with-tcl=/usr/lib &&
make LIBSO_LIBS="-lpthread" LIBXSO_LIBS="-lpthread" &&
chmod 644 ../test/sijointest.tcl &&
sed -i 's:puts "[s,S].*::' \
  ../test/sijointest.tcl
```

To test the results, start **tclsh**:

```
tclsh
```

From the tclsh prompt (%), run:

```
source ../test/test.tcl
```

```
run_parallel 4 run_std
exit
```

Clean up with the following command:

```
make realclean &&
cd ..
```

Installation of Berkeley DB

Install Berkeley DB by running the following commands:

```
cd build_unix &&
../dist/configure --prefix=/usr \
  --enable-compat185 \
  --enable-cxx &&
make LIBSO_LIBS="-lpthread" LIBXSO_LIBS="-lpthread"
```

Now, as the root user:

```
make docdir=/usr/share/doc/db-4.3.28 install &&
chown root:root /usr/bin/db_* \
  /usr/lib/libdb* /usr/include/db* &&
chown -R root:root /usr/share/doc/db-4.3.28
```

Command Explanations

cd build_unix && ../dist/configure --prefix=/usr...: This replaces the normal `./configure` command, as Berkeley DB comes with various build directories for different platforms.

--enable-compat185: This switch enables building DB 1.85 compatibility API.

--enable-cxx: This switch enables building C++ API libraries.

--enable-test: Enables building the test suite (requires the two Tcl switches below).

--enable-tcl --with-tcl=/usr/lib: Enables Tcl support in DB and creates the `libdb_tcl` libraries.

--enable-java: Enables Java support in DB and creates the `libdb_java` libraries.

--enable-rpc: Enables building the Berkeley DB RPC server.

make LIBSO_LIBS="-lpthread" LIBXSO_LIBS="-lpthread": `configure` does not correctly handle NPTL. These variables force it to properly link against NPTL.

make docdir=/usr/share/doc/db-4.3.28 install: This installs the documentation in the correct place.

sed -i 's:puts "[s,S].*::' ../test/sijointest.tcl: This prevents logging two notes that are not recognized by `run_std`.

Contents

Installed Programs: db_archive, db_checkpoint, db_deadlock, db_dump, db_load, db_printlog,

Installed Libraries: db_recover, db_stat, db_upgrade, db_verify and berkeley_db_svc if enabled
libdb.[so,a], libdb_cxx.[so,a], libdb_java.[so,a] and libdb_tcl.[so,a]
Installed Directory: /usr/share/doc/db-4.3.28

Short Descriptions

berkeley_db_svc is the Berkeley DB RPC server.

db_archive prints the pathnames of log files that are no longer in use.

db_checkpoint is a daemon process used to monitor and checkpoint database logs.

db_deadlock is used to abort lock requests when deadlocks are detected.

db_dump converts database files to a flat file format readable by **db_load**.

db_load is used to create database files from flat files created with **db_dump**.

db_printlog converts database log files to human readable text.

db_recover is used to restore a database to a consistent state after a failure.

db_stat displays database environment statistics.

db_upgrade is used to upgrade database files to a newer version of Berkeley DB.

db_verify is used to run consistency checks on database files.

MySQL-4.1.12

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-4.1/mysql-4.1.12.tar.gz>
- Download (FTP): <ftp://mirror.mcs.anl.gov/pub/mysql/Downloads/MySQL-4.1/mysql-4.1.12.tar.gz>
- Download MD5 sum: 56a6f5cacd97ae290e07bbe19f279af1
- Download size: 17 MB
- Estimated disk space required: 177 MB (additional 110 MB to run the testsuite)
- Estimated build time: 3.6 SBU (additional 12 SBU to run the testsuite)

MySQL Dependencies

Optional

OpenSSL-0.9.7g, tcpwrappers-7.6, libedit (as an alternative to readline), ORBit-0.5.17 (detected only if which-2.16 is installed), Doxygen-1.4.3 and TeX-3.0

Installation of MySQL

For security reasons, running the server as an unprivileged user and group is strongly encouraged:

```
groupadd -g 40 mysql &&
useradd -c "MySQL Server" -d /dev/null -g mysql -s /bin/false \
-u 40 mysql
```

Build and install MySQL by running the following commands:

```
CPPFLAGS="-D_GNU_SOURCE" ./configure --prefix=/usr --sysconfdir=/etc \
--libexecdir=/usr/sbin --localstatedir=/srv/mysql \
--enable-thread-safe-client --enable- assembler \
--enable-local-infile --with-named-thread-libs=-lpthread \
--with-unix-socket-path=/var/run/mysql/mysql.sock \
--without-debug --without-bench --without-readline &&
make testdir=/usr/lib/mysql/mysql-test
```

To test the results, issue: **make test**.

Now, as the root user:

```
make testdir=/usr/lib/mysql/mysql-test install &&
cd /usr/lib &&
ln -v -sf mysql/libmysqlclient{,_r}.so* .
```

Command Explanations

`--libexecdir=/usr/sbin`: This switch installs the **mysqld** daemon in an appropriate location.

`--localstatedir=/srv/mysql`: This switch forces MySQL to use `/srv/mysql` for database files and other variable data.

`--enable-thread-safe-client`: This switch compiles a thread-safe MySQL client library.

`--enable-asm`: This switch allows using assembler versions of some string functions.

`--enable-local-infile`: This switch enables the “LOAD DATA INFILE” SQL statement.

`CPPFLAGS="-D_GNU_SOURCE" --with-named-thread-libs=-lpthread`: This environment variable and configure switch enable building on NPTL systems.

`--with-unix-socket-path=/var/run/mysql`: This switch puts the unix-domain socket into `/var/run/mysql` directory instead of default `/tmp`.

`--without-bench`: This switch skips building the benchmark suite.

`--without-readline`: This switch forces the build to use the system copy of readline instead of the bundled copy.

make testdir=...: This installs the test suite in `/usr/lib/mysql/mysql-test`. BLFS is currently seeking a method to omit the installation of the test suite altogether.

ln -sf mysql/libmysqlclient{,_r}.so* .: This command makes the MySQL shared libraries available to other packages at run-time.

`--with-libwrap`: This switch adds tcpwrappers support to MySQL.

`--with-openssl`: This switch adds OpenSSL support to MySQL.

Configuring MySQL

Config Files

`/etc/my.cnf` and `~/.my.cnf`

Configuration Information

There are several default configuration files available in `/usr/share/mysql` which you can use. Create `/etc/my.cnf` using the following command as the root user:

```
install -v -m644 /usr/share/mysql/my-medium.cnf /etc/my.cnf
```

You can now install a database and change the ownership to the unprivileged user and group (perform as the root user):

```
mysql_install_db --user=mysql &&
chgrp -v mysql /srv/mysql{,/test,/mysql}
```

Further configuration requires that the MySQL server be running. Start the server using the following commands as the root user:

```
install -v -m755 -o mysql -g mysql -d /var/run/mysql &&
mysqld_safe --user=mysql 2>&1 >/dev/null &
```

A default installation does not setup a password for the administrator, so use the following command as the `root` user to set one. Replace `[new-password]` with your own.

```
mysqladmin -u root password [new-password]
```

Configuration of the server is now finished. Shut the server down using the following command as the `root` user:

```
mysqladmin -p shutdown
```

Boot Script

Install the `/etc/rc.d/init.d/mysql` init script included in the `blfs-bootscripts-6.1` package as the `root` user to start the MySQL server during system boot-up.

```
make install-mysql
```

Contents

- Installed Programs:** `comp_err`, `isamchk`, `isamlog`, `make_win_binary_distribution`, `make_win_src_distribution`, `msql2mysql`, `my_print_defaults`, `myisam_ftdump`, `myisamchk`, `myisamlog`, `myisampack`, `mysql`, `mysql_client_test`, `mysql_config`, `mysql_convert_table_format`, `mysql_create_system_tables`, `mysql_explain_log`, `mysql_find_rows`, `mysql_fix_extensions`, `mysql_fix_privilege_tables`, `mysql_install_db`, `mysql_secure_installation`, `mysql_setpermission`, `mysql_tableinfo`, `mysql_tzinfo_to_sql`, `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`, `perorr`, `replace`, `resolve_stack_dump`, and `resolveip`
- Installed Libraries:** `libdbug.a`, `libheap.a`, `libmerge.a`, `libmyisam.a`, `libmyisammrg.a`, `libmysqlclient.[so,a]`, `libmysqlclient_r.[so,a]`, `libmystrings.a`, `libmysys.a`, `libnisam.a`, and `libvio.a`
- Installed Directories:** `/srv/mysql`, `/usr/include/mysql`, `/usr/lib/mysql`, `/usr/share/mysql`, and `/var/run/mysql`

Short Descriptions

Descriptions of all the programs and libraries would be several pages long. Instead, consult the MySQL documentation for full details.

Certain MySQL support programs may require the Perl DBI modules to be installed to function properly.

PostgreSQL-8.0.3

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/source/v8.0.3/postgresql-8.0.3.tar.bz2>
- Download (FTP): <ftp://ftp.fr.postgresql.org/source/v8.0.3/postgresql-8.0.3.tar.bz2>
- Download MD5 sum: c0914a133ce6c1e0f1d8b93982d6e881
- Download size: 11.0 MB
- Estimated disk space required: 139 MB (additional 110 MB to run the testsuite)
- Estimated build time: 1.12 SBU

PostgreSQL Dependencies

Optional

Python-2.4.1, Tcl-8.4.11, OpenSSL-0.9.7g, Linux-PAM-0.80, DocBook SGML DTD-4.4, DocBook DSSSL Stylesheets-1.79, OpenJade-1.3.2, SGMLSpM, krb4, MIT krb5-1.4.1 or Heimdal-0.7, and Rendezvous

Installation of PostgreSQL

In order for **configure** to properly discover Docbook SGML DTD, you may need to remove OpenSP catalog definitions from the system SGML catalogs. Use the following command before building the package to accomplish this:

```
sed -i.orig \
  -e "/CATALOG \\/etc\/sgml\/OpenSP-1.5.1.cat/d" \
  /etc/sgml/catalog \
  /etc/sgml/sgml-docbook.cat
```

Install PostgreSQL with the following commands:

```
sed -i \
  -e "s|dsssl-stylesheets|& \\\n          sgml/docbook/&-1.79|" \
  configure &&
./configure --prefix=/usr --enable-thread-safety &&
make
```

To test the results, issue: **make check**.

Now, as the root user:

```
make install &&
chown -v root:root /usr/share/doc/postgresql/html
```



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 issued by the `root` user:

```
install -v -m755 -d /srv/pgsql/data &&
useradd -c "PostgreSQL Server" -g users -d /srv/pgsql/data \
        -u 41 postgres &&
chown -v postgres /srv/pgsql/data &&
su - postgres -c '/usr/bin/initdb -D /srv/pgsql/data'
```

As the `root` user, start the database server with the following command:

```
su - postgres -c '/usr/bin/postmaster -D /srv/pgsql/data > \
/srv/pgsql/data/logfile 2>&1 &'
```

Still as user `root`, 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

sed -i -e "s|dsssl-stylesheets|...": This command puts an extra line in the `configure` script so that the BLFS installed version of the DSSSL stylesheets can be discovered.

--enable-thread-safety: This switch makes the client libraries thread-safe by allowing concurrent threads in `libpq` and `ECPG` programs to safely control their private connection handles.

chown -R root:root /usr/share/doc/postgresql/html: This command corrects the improper ownership of some documentation files.

useradd ...: Add an unprivileged user to run the database server.

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` and `$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.

Boot Script

Install the `/etc/rc.d/init.d/postgresql` init script included in the `blfs-bootscripts-6.1` package.

```
make install-postgresql
```

Contents

Installed Programs:	clusterdb, createdb, createlang, createuser, dropdb, droplang, dropuser, ecpg, initdb, ipcclean, pg_config, pg_controldata, pg_ctl, pg_dump, pg_dumpall, pg_resetxlog, pg_restore, pltcl_delmod, pltcl_listmod, pltcl_loadmod, postgres, postmaster, psql, and vacuumdb
Installed Libraries:	libecpg.[so,a], libecpg_compat.[so,a], libpgport.a, libpgtypes.[so,a], libpq.[so,a], and various charset modules.
Installed Directories:	/srv/pgsql, /usr/include/libpq, /usr/include/postgresql, /usr/lib/postgresql, /usr/share/doc/postgresql, and /usr/share/postgresql

Short Descriptions

clusterdb	is a utility for recluster tables in a PostgreSQL database.
createdb	creates a new PostgreSQL database.
createlang	defines a new PostgreSQL procedural language.
createuser	defines a new PostgreSQL user account.
dropdb	removes a PostgreSQL database.
droplang	removes a PostgreSQL procedural language.
dropuser	removes a PostgreSQL user account.
ecpg	is the embedded SQL preprocessor.
initdb	creates a new database cluster.
ipcclean	removes shared memory and semaphores left over by an aborted database server.
pg_config	retrieves PostgreSQL version information.
pg_controldata	returns information initialized during initdb , such as the catalog version and server locale.
pg_ctl	controls stopping and starting the database server.
pg_dump	dumps database data and metadata into scripts which are used to recreate the database.

pg_dumpall	recursively calls pg_dump for each database in a cluster.
pg_resetxlog	clears the write-ahead log and optionally resets some fields in the <code>pg_control</code> file.
pg_restore	creates databases from dump files created by pg_dump .
pltcl_delmod	is a support script used to delete a module from a PL/Tcl table. The command requires the Pgtcl package to be installed also.
pltcl_listmod	is a support script used to list the modules in a PL/Tcl table. The command requires the Pgtcl package to be installed also.
pltcl_loadmod	is a support script used to load a module into a PL/Tcl table. The command requires the Pgtcl package to be installed also.
postgres	is a single user database server, generally used for debugging.
postmaster	is a multi-user database daemon.
psql	is a console based database shell.
vacuumdb	compacts databases and generates statistics for the query analyzer.

Chapter 24. 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.

DHCP-3.0.2

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-3.0-history/dhcp-3.0.2.tar.gz>
- Download (FTP): <ftp://ftp.isc.org/isc/dhcp/dhcp-3.0-history/dhcp-3.0.2.tar.gz>
- Download MD5 sum: 04800a111521e7442749b2ce883f962b
- Download size: 834 KB
- Estimated disk space required: 29.7 MB
- Estimated build time: 0.22 SBU

Additional Downloads

- Required Patch: http://www.linuxfromscratch.org/blfs/downloads/6.1/dhcp-3.0.2-gcc_3.4.3-2.patch

DHCP Dependencies

Required

Net-tools-1.60 (you may omit net-tools by using the following patch to utilize iproute2: <http://www.linuxfromscratch.org/blfs/downloads/6.1/dhcp-3.0.2-iproute2-3.patch>)

Kernel Configuration

You must have Packet Socket support (Device Drivers -> Networking Support -> Networking Options -> Packet Socket) compiled into the kernel.

Installation of DHCP

If you chose not to install net-tools, apply the iproute2 patch:

```
patch -Np1 -i ../dhcp-3.0.2-iproute2-3.patch
```

Install DHCP by running the following commands:

```
patch -Np1 -i ../dhcp-3.0.2-gcc_3.4.3-2.patch &&
```

```
./configure &&
make
```

Now, as the root user:

```
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 and */etc/dhcpd.conf*

Configuration Information

Information on configuring the DHCP client can be found in Chapter 14, DHCP Clients.

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 the */etc/rc.d/init.d/dhcp* init script included in the *blfs-bootscripts-6.1* 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 following 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 [192.168.5.255];
    option routers [192.168.5.1];
}
EOF
```

All addresses should be changed to meet your circumstance.

Contents

Installed Programs:	dhcpcd, dhcrelay, dhclient, dhclient-script, and omshell
Installed Libraries:	bdhcpctl.a, libomapi.a
Installed Directories:	/var/state/dhcp, /usr/include/omapip, and /usr/include/isi-dhcp

Short Descriptions

dhclient	is the implementation of the DHCP client.
dhcpcd	implements Dynamic Host Configuration Protocol (DHCP) and Internet Bootstrap Protocol (BOOTP) requests for network addresses.
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.
omshell	provides an interactive way to connect to, query, and possibly change, the ISC DHCP Server's state via OMAPI, the Object Management API.

Leafnode-1.10.8

Introduction to Leafnode

Leafnode is an NNTP server designed for small sites to provide a local USENET spool.

Package Information

- Download (HTTP): <http://prdownloads.sourceforge.net/leafnode/leafnode-1.10.8.rel.tar.bz2>
- Download (FTP):
<ftp://ftp.gwdg.de/pub/linux/mirrors/sunsite/system/news/transport/leafnode-1.10.8.rel.tar.bz2>
- Download MD5 sum: 1d8d27673780ba49fcb69883c2cabdec
- Download size: 385 KB
- Estimated disk space required: 6.3 MB
- Estimated build time: 0.10 SBU

Leafnode Dependencies

Required

PCRE-6.1 and tcpwrappers-7.6

Recommended

xinetd-2.3.13 and Fcron-2.9.7

Installation of Leafnode

Create the group and user news, if not present:

```
groupadd -g 36 news &&
useradd -c "Leafnode News Server" -d /var/spool/news -g news \
-u 36 news
```

Install Leafnode by running the following commands:

```
./configure --prefix=/usr \
--localstatedir=/var --sysconfdir=/etc/leafnode \
--with-lockfile=/var/lock/leafnode/fetchnews.lck &&
make
```

Now, as the root user:

```
make install
```

Command Explanations

`--localstatedir=/var`: Change the default spool directory of `/usr/var`.

`--sysconfdir=/etc/leafnode`: Leafnode reads its configuration data from a file called `config` which will be created in `/etc/leafnode` to avoid any potential conflict with other packages.

make update: Run this command if you are upgrading from a very old version of Leafnode.

Configuring Leafnode

Config Files

`/etc/leafnode/config`, `/etc/nntpserver`, `/etc/sysconfig/createfiles`
`/etc/inetd.conf` or `/etc/xinetd.conf` or `/etc/xinetd.d/nntp`

Configuration Information

The `/etc/leafnode/config` file must be edited to reflect the name of the upstream NNTP provider. Copy the example configuration file to `/etc/leafnode/config` and save the original for reference:

```
cp /etc/leafnode/config.example /etc/leafnode/config
```

Change the

```
server =
```

entry to reflect your news provider.

The `/etc/nntpserver` file must contain `127.0.0.1` to prevent news clients from reading news from the upstream feed. Create this file using the following command:

```
cat > /etc/nntpserver << "EOF"
127.0.0.1
EOF
```

The `/etc/rc.d/init.d/cleanfs` script, part of the LFS bootscrip package, will remove the `/var/lock/leafnode` directory during the system boot sequence. Install the following line in the `/etc/sysconfig/createfiles` file to re-create the directory:

```
/var/lock/leafnode  dir  2775  news  news
```

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
```

Issue a **killall -HUP inetd** to reread the changed `inetd.conf` file.

If you use **xinetd**, the following command will create the Leafnode file as `/etc/xinetd.d/nntp`:

```
cat >> /etc/xinetd.d/nntp << "EOF"
# Begin /etc/xinetd.d/nntp

    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
    }
# End /etc/xinetd.d/nntp
EOF

```

Issue a **killall -HUP xinetd** to reread the changed `xinetd.conf` file.

Add entries to the `root` or `news` user's crontab to run the **fetchnews** and **texpire** commands at the desired time intervals.

Contents

Installed Programs: applyfilter, checkgroups, fetchnews, leafnode, leafnode-version, newsq, and texpire
Installed Libraries: None
Installed Directories: /etc/leafnode, /var/lock/leafnode, and /var/spool/news

Short Descriptions

applyfilter filters newsgroup articles according to regular expressions.
checkgroups inserts newsgroup titles into the newsgroup database.
fetchnews sends posted articles to and retrieves new articles from an upstream news server.
leafnode is an NNTP server daemon.
leafnode-version prints the Leafnode version.
newsq shows articles waiting to be sent upstream.
texpire expires old articles and unread groups.

OpenLDAP-2.2.24

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-2.2.24.tgz>
- Download (FTP): <ftp://ftp.openldap.org/pub/OpenLDAP/openldap-release/openldap-2.2.24.tgz>
- Download MD5 sum: 383691dbabe05ee2b72a3e9db2042a82
- Download size: 2.6 MB
- Estimated disk space required: 76.7 MB
- Estimated build time: 6.58 SBU

OpenLDAP Dependencies

Required

Berkeley DB-4.3.28

Recommended

Cyrus SASL-2.1.21 and OpenSSL-0.9.7g

Optional

tcpwrappers-7.6, GDBM-1.8.3, GNU Pth, and Heimdal-0.7 or MIT krb5-1.4.1

Installation of OpenLDAP

Install OpenLDAP by running the following commands:

```
./configure --prefix=/usr --libexecdir=/usr/sbin \
  --sysconfdir=/etc --localstatedir=/srv/ldap \
  --enable-ldbm --disable-debug &&
make depend &&
make &&
make test
```

Now, as the root user:

```
make install &&
chmod 755 /usr/lib/libl*-2.2.so.7.0.17
```

Command Explanations

`--libexecdir=/usr/sbin`: Installs the server executables in `/usr/sbin` instead of `/usr/libexec`.

`--sysconfdir=/etc`: Sets the configuration file directory to avoid the default of `/usr/etc`.

`--localstatedir=/srv/ldap`: Sets the directory to use for the LDAP directory database, replication logs and run-time variable data.

`--enable-ldb`: Build **slapd** with the primary database back end using either Berkeley DB or GNU Database Manager.

`--disable-debug`: Disable debugging code.

make test: Validates the correct build of the package. If you've enabled `tcp_wrappers`, ensure you add `127.0.0.1` to the `slapd` line in the `/etc/hosts.allow` file if you have a restrictive `/etc/hosts.deny` file. If you logged the output of the **make test**, an easy test to see if all the tests succeeded is to issue **grep ">>>> Test succeeded" [logfile] | wc -l**. You should have 39 returned.

chmod 755 /usr/lib/libl*-2.2.so.7.0.17: This command adds the executable bit to the shared libraries.

Configuring OpenLDAP

Config Files

`/etc/openldap/*`

Configuration Information

Configuring the **slapd** and **slurpd** servers can be complex. Securing the LDAP directory, especially if you are storing non-public data such as password databases, can also be a challenging task. You'll need to modify the `/etc/openldap/slapd.conf` and `/etc/openldap/ldap.conf` files to set up OpenLDAP for your particular needs.

Resources to assist you with topics such as choosing a directory configuration, backend and database definitions, access control settings, running as a user other than `root` and setting a **chroot** environment include:

- The **slapd** man page
- The `slapd.conf` man page
- The OpenLDAP 2.2 Administrator's Guide
- Documents located at <http://www.openldap.org/pub/>

Utilizing GDBM

To utilize GDBM as the database backend, the “database” entry in `/etc/openldap/slapd.conf` must be changed from “bdb” to “ldb”. You can use both by creating an additional database section in `/etc/openldap/slapd.conf`.

Mozilla Address Directory

By default, LDAPv2 support is disabled in the `slapd.conf` file. Once the database is properly set up and Mozilla is configured to use the directory, you must add `allow bind_v2` to the `slapd.conf` file.

Boot Script

To automate the startup of the LDAP server at system bootup, install the `/etc/rc.d/init.d/openldap`

init script included in the blfs-bootscripts-6.1 package using the following command:

```
make install-openldap1
```

Note: The init script you just installed only starts the **slapd** daemon. If you wish to also start the **slurpd** daemon at system startup, install a modified version of the script using this command:

```
make install-openldap2
```



Note

The init script starts the daemons without any parameters. You'll need to modify the script to include the parameters needed for your specific configuration. See the **slapd** and **slurpd** man pages for parameter information.

Testing the Configuration

Start the LDAP server using the init script:

```
/etc/rc.d/init.d/openldap start
```

Verify access to the LDAP server with the following command:

```
ldapsearch -x -b '' -s base '(objectclass=*)' namingContexts
```

The expected 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
```

Contents

Installed Programs: ldapadd, ldapcompare, ldapdelete, ldapmodify, ldapmodrdn, ldappasswd, ldapsearch, ldapwhoami, slapadd, slapcat, slapd, slapdn, slapindex, slappasswd, slapttest, and slurpd

Installed Libraries: liblber.[so,a], libldap.[so,a], and libldap_r.[so,a]

Installed Directories: /etc/openldap, /srv/ldap, and /usr/share/openldap

Short Descriptions

ldapadd opens a connection to an LDAP server, binds and adds entries.

ldapcompare opens a connection to an LDAP server, binds and performs a compare using specified parameters.

ldapdelete opens a connection to an LDAP server, binds and deletes one or more entries.

ldapmodify opens a connection to an LDAP server, binds and modifies entries.

ldapmodrdn opens a connection to an LDAP server, binds and modifies the RDN of entries.

ldappasswd is a tool to set the password of an LDAP user.

ldapsearch opens a connection to an LDAP server, binds and performs a search using specified parameters.

ldapwhoami opens a connection to an LDAP server, binds and displays whoami information.

slapadd is used to add entries specified in LDAP Directory Interchange Format (LDIF) to an LDAP database.

slapcat is used to generate an LDAP LDIF output based upon the contents of a slapd database.

slapd is the stand-alone LDAP server.

slapdn checks a list of string-represented DN's based on schema syntax.

slapindex is used to regenerate slapd indices based upon the current contents of a database.

slappasswd is an OpenLDAP password utility.

slaptest checks the sanity of the `slapd.conf` file.

slurpd is the stand-alone LDAP replication server.

`liblber.[so,a]` is a set of lightweight Basic Encoding Rules routines. These routines are used by the LDAP library routines to encode and decode LDAP protocol elements using the (slightly simplified) Basic Encoding Rules defined by LDAP. They are not normally used directly by an LDAP application program except in the handling of controls and extended operations.

`libldap.[so,a]` supports the LDAP programs and provide functionality for other programs interacting with LDAP.

`libldap_r.[so,a]` contains the functions required by the LDAP programs to produce the results from LDAP requests.

rsync-2.6.5

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/old-versions/rsync-2.6.5.tar.gz>
- Download (FTP): <ftp://ftp.samba.org/pub/rsync/old-versions/rsync-2.6.5.tar.gz>
- Download MD5 sum: 3691cdf1540d0649ba679edce6bae8fc
- Download size: 643 KB
- Estimated disk space required: 12 MB
- Estimated build time: 0.2 SBU

rsync Dependencies

Optional

popt-1.7-5 and DocBook-utils-0.6.14

Installation of rsync

For security reasons, running the rsync server as an unprivileged user and group is encouraged. If you intend to run **rsync** as a daemon, create the `rsyncd` user and group with the following commands issued by the `root` user:

```
groupadd -g 48 rsyncd &&
useradd -c "rsyncd Daemon" -d /home/rsync -g rsyncd \
-s /bin/false -u 48 rsyncd
```

Install rsync by running the following commands:

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

If you have DocBook-Utills installed and wish to build HTML documentation, issue:

```
cd doc &&
docbook2html rsync.sgml &&
cd ..
```

To test the results, issue: **make check**.

Now, as the `root` user:

```
make install
```

If you built the HTML documentation, install it using the following commands as the `root` user:

```
install -v -m755 -d /usr/share/doc/rsync-2.6.5 &&
```

```
install -v -m644 doc/*.html /usr/share/doc/rsync-2.6.5
```

Configuring rsync

Config Files

```
/etc/rsyncd.conf
```

Configuration Information

For client access to remote files, you may need to install the OpenSSH-4.1p1 package to connect to the remote server.

This is a simple download-only configuration to set up running **rsync** as a server. See the `rsyncd.conf(5)` 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
```

You can find additional configuration information and general documentation about **rsync** at <http://rsync.samba.org/documentation.html>.

Boot Script

Note that you only want to start the rsync server if you want to provide an rsync archive on your local machine. You don't need this script to run the rsync client.

Install the `/etc/rc.d/init.d/rsyncd` init script included in the `blfs-bootscripts-6.1` package.

```
make install-rsyncd
```

Contents

Installed Program:	rsync
Installed Libraries:	None
Installed Directories:	Optionally, <code>/usr/share/doc/rsync-2.6.5</code>

Short Descriptions

rsync is a replacement for **rcp** (and **scp**) that has many more features. It uses the “rsync algorithm” which provides a very fast method of syncing remote files. 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 end of the link beforehand.

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-1.11.20 and OpenSSH-4.1p1

Setting up a CVS Server.

A CVS server will be set up 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 the CVS server consists of four steps:

1. Create a Repository.

Create a new CVS repository with the following commands:

```
mkdir /srv/cvsroot &&
chmod 1777 /srv/cvsroot &&
export CVSROOT=/srv/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:

```
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]:/srv/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 -u 98) &&
echo anonymous: > /srv/cvsroot/CVSROOT/passwd &&
echo anonymous > /srv/cvsroot/CVSROOT/readers
```

If you use `inetd`, the following command will add the CVS entry to `/etc/inetd.conf`:

```
echo "2401 stream tcp nowait root /usr/bin/cvs cvs -f \
--allow-root=/srv/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 create the CVS file as `/etc/xinetd.d/cvspserver`:

```
cat >> /etc/xinetd.d/cvspserver << "EOF"
# Begin /etc/xinetd.d/cvspserver

service cvspserver
{
    port          = 2401
    socket_type   = stream
    protocol      = tcp
    wait          = no
    user          = root
    passenv       = PATH
    server        = /usr/bin/cvs
    server_args   = -f --allow-root=/srv/cvsroot pserver
}

# End /etc/xinetd.d/cvspserver
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]:/srv/cvsroot co cvstest
```

**Note**

Replace `[servername]` with the IP address or hostname of the CVS server.

Command Explanations

mkdir /srv/cvsroot: Create the CVS repository directory.

chmod 1777 /srv/cvsroot: Set sticky bit permissions for CVSROOT.

export CVSROOT=/srv/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** flag 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 -u 98): Check for an existing anonymous user and create one if not found.

echo anonymous > /srv/cvsroot/CVSROOT/passwd: Add the anonymous user to the CVS passwd file, which is unused for anything else in this configuration.

echo anonymous > /srv/cvsroot/CVSROOT/readers: Add the anonymous user to the CVS readers file, a list of users who have read only access to the repository.

Contents

Installed Programs: None
Installed Libraries: None
Installed Directories: /srv/cvsroot

Running a Subversion Server

Running a Subversion Server

This section will describe how to set up, administer and secure a Subversion server.

Subversion Server Dependencies

Required

Subversion-1.1.4 and OpenSSH-4.1p1

Setting up a Subversion Server.

The following instructions will install a Subversion server, which will be set up to use OpenSSH as the secure remote access method, with `svnserve` available for anonymous access.

Configuration of the Subversion server consists of the following steps:

1. Setup Users, Groups, and Permissions

You'll need to be user `root` for the initial portion of configuration. Create the `svn` user and group with the following commands:

```
groupadd -g 56 svn &&
useradd -c "SVN Owner" -d /home/svn -m -g svn -s /bin/false -u 56 svn
```

If you plan to have multiple repositories, you should have a group dedicated to each repository for ease of administration. Create the `svntest` group for the test repository and add the `svn` user to that group with the following commands:

```
groupadd -g 57 svntest &&
usermod -G svntest svn
```

Additionally you should set `umask 002` while working with a repository so that all new files will be writable by owner and group. This is made mandatory by creating a wrapper script for `svn` and `svnserve`:

```
mv /usr/bin/svn /usr/bin/svn.orig &&
mv /usr/bin/svnserve /usr/bin/svnserve.orig &&
cat >> /usr/bin/svn << "EOF"
#!/bin/sh
umask 002
/usr/bin/svn.orig "$@"
EOF
cat >> /usr/bin/svnserve << "EOF"
#!/bin/sh
umask 002
/usr/bin/svnserve.orig "$@"
EOF
chmod 0755 /usr/bin/svn{,serve}
```

**Note**

If you use Apache for working with the repository over HTTP, even for anonymous access, you should wrap `/usr/sbin/httpd` in a similar script.

2. Create a Subversion repository.

With subversion-1.1.0 and greater, a new type of repository data-store is available, FSFS. There is a tradeoff for speed with the new backend, however, the repository can now be placed on a network mount, and any corruption does not require an admin to recover the repository. For more information and comparison between FSFS and BDB, see <http://svnbook.red-bean.com/svnbook-1.1/ch05.html#svn-ch-5-sect-1.2.A>. Optionally you can pass `bdb` in place of `fsfs` in the following command to create a BerkeleyDB data-store.

Create a new Subversion repository with the following commands:

```
install -d -m0755 /srv &&
install -d -m0755 -o svn -g svn /srv/svn/repositories &&
svnadmin create --fs-type fsfs /srv/svn/repositories/svntest
```

Now that the repository is created, we need to populate it with something useful. You'll need to have a predefined directory layout setup exactly as you want your repository to look. For example, here is a sample BLFS layout setup with a root of `svntest/`. You'll need to setup a directory tree similar to the following:

```
svntest/          # The name of the repository
  trunk/         # Contains the existing source tree
    BOOK/
    bootscripts/
    edguide/
    patches/
    scripts/
  branches/      # Needed for additional branches
  tags/          # Needed for tagging release points
```

Once you've created your directory layout as shown above, you are ready to do the initial import:

```
svn import -m "Initial import." \
  [/path/to/source/tree] \
  file:///srv/svn/repositories/svntest
```

Now go ahead and change owner and group information on the repository, and add an unprivileged user to the `svn` and `svntest` groups:

```
chown -R svn:svntest /srv/svn/repositories/svntest &&
chmod -R g+w /srv/svn/repositories/svntest &&
chmod g+s /srv/svn/repositories/svntest/db &&
usermod -G svn,svntest,[insert existing groups] [username]
```

`svntest` is the group assigned to the `svntest` repository. As mentioned earlier, this eases administration of multiple repositories when using OpenSSH for authentication. Going forward, you'll need to add your unprivileged user, and any additional users that you wish to have write access to the repository, to the `svn` and `svntest` groups.

In addition, you'll notice that the new repository's `db` directory is `set-groupID`. If the reasoning is not immediately obvious, when using any external authentication method (such as `ssh`), the sticky bit is set so that all new files will be owned by the user, but group of `svntest`. Anyone in the `svntest` group can create files, but still give the entire group write access to those files. This avoids locking out other users from the repository.

Now, go ahead and return to an unprivileged user account, and take a look at your new repository using `svnlook`:

```
svnlook tree /srv/svn/repositories/svntest/
```



Note

You may need to log out and back in again to refresh your group memberships. `'su [username]'` should work around this as well.

3. Configure the Server

As mentioned previously, these instructions will configure the server to use only `ssh` for write access to the repository and to provide anonymous access using `svnserve`. There are several other ways to provide access to the repository. These additional configurations are best explained at <http://svnbook.red-bean.com/>.

Access configuration needs to be done for each repository. Create the `svnserve.conf` file for the `svntest` repository using the following commands:

```
cp /srv/svn/repositories/svntest/conf/svnserve.conf \
  /srv/svn/repositories/svntest/conf/svnserve.conf.default &&
cat > /srv/svn/repositories/svntest/conf/svnserve.conf << "EOF"
[general]
anon-access = read
auth-access = write
EOF
```

There is not a lot to the configuration file at all. You'll notice that only the general section is required. Take a look at the `svnserve.conf.default` file for information on using `svnserve`'s built-in authentication method.

4. Starting the Server

There are a couple of ways to start `svnserve`. The most common way is to start it as an `inetd` or `xinetd` process. Alternately, you can use a bootscript to start the service at startup.



Note

If you do not wish to provide anonymous access to your svn repositories or use `svnserve`'s built-in authentication, you do not need to run `svnserve`.

If you use `inetd`, add a line to `/etc/inetd.conf` using the following commands:

```
cat >> /etc/inetd.conf << "EOF"
svn stream tcp nowait svn /usr/bin/svnserve svnserve -i
EOF
```

If you use **xinetd**, the following command will create the Subversion server file as `/etc/xinetd.d/svn`:

```
cat >> /etc/xinetd.d/svn << "EOF"
# Begin /etc/xinetd.d/svn

service svn
{
    port                = 3690
    socket_type         = stream
    protocol            = tcp
    wait                = no
    user                = svn
    server              = /usr/bin/svnserve
    server_args         = -i -r /srv/svn/repositories
}

# End /etc/xinetd.d/svn
EOF
```

Finally, if you wish to simply start the sever at startup, install the svn bootscript included in the `blfs-bootscripts-6.1` package.

```
make install-svn
```

Part VII. X + Window Managers

Chapter 25. X Window System Environment

This chapter contains a graphical user environment.

Xorg-6.8.2

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 XFree86-4.4.0RC2. 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. X.org'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):
- Download (FTP): <ftp://ftp.opengroup.org/pub/x.org/pub/X11R6.8.2/src-single/X11R6.8.2-src.tar.bz2>
- Download MD5 sum: 8131cd7ea1e4566e6e05c438a93fcfe1
- Download size: 43 MB
- Estimated disk space required: 839 MB
- Estimated build time: 10.34 SBU

Xorg Dependencies

Required

libpng-1.2.8 and Fontconfig-2.3.2

Optional

Linux-PAM-0.80

Download Instructions

As an alternative to downloading the entire source tree in a single file, there are several files that need to be fetched from the download location (directory `/pub/x.org/pub/X11R6.8.2/src/`):

- `X11R6.8.2-src1.tar.gz`
- `X11R6.8.2-src2.tar.gz`
- `X11R6.8.2-src3.tar.gz`
- `X11R6.8.2-src4.tar.gz`
- `X11R6.8.2-src5.tar.gz`
- `X11R6.8.2-src6.tar.gz`
- `X11R6.8.2-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 file for integrity, download the `md5sums` file. Then:

```
md5sum -c md5sums
```

The package (or all seven packages) should give an OK status.

Kernel Configuration

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 of the "Device Drivers" menu, 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 running the command `lspci`, a program from the PCI Utilities-2.1.11 package.

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).

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 and install the new kernel.

Installation of Xorg

Suppressing Xprint-related Modification to '/etc'

Xorg insists on putting its boot and profile scripts into the `/etc` directory even if specifically told not to

compile anything Xprint server or client related (see `host.def` below). The following command will suppress any such modifications:

```
sed -i '/^SUBDIRS =/s/ etc$//' programs/Xserver/Xprint/Imakefile
```

Setting Up a Shadow Directory

When building Xorg, you should create a shadow directory of symbolic links for the compiled code. To do that, first make `lndir`. Starting from the `xc` directory:

```
pushd config/util &&
make -f Makefile.ini lndir
```

Now, as the `root` user:

```
cp -v lndir /usr/bin/
```

And back as an unprivileged user:

```
popd
```

Now create the shadow tree:

```
mkdir ../xcbuild &&
cd ../xcbuild &&
lndir ../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. Therefore, you must specify that these libraries, as well as others, should be imported from the system.



Note

`config/cf/host.def` is a C file, not a shell script. Ensure 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 DefaultGcc2AMD64Opt -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 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

/* Disable building Xprint server and clients until we get them figured
 * out but build Xprint libraries to allow precompiled binaries such as
 * Acrobat Reader to run.
 */

#define XprtServer NO
#define BuildXprintClients NO

/* Uncomment the following define if you would prefer to install X into
 * /usr or change it to any other location that you prefer.
 * The GL related defines disable compatibility symlinks (the links are not needed
 * when X is installed in /usr).
 */
#define ProjectRoot /usr
#define LinkGLToUsrInclude NO
#define LinkGLToUsrLib NO

```

```

*/

/* Uncomment the following define if you would prefer to install the
 * fonts into /usr/share/fonts, a directory that is fontconfig's default
 * font search path.
#define FontDir /usr/share/fonts
*/

/* 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.def`.

Build Commands

Install Xorg by running the following commands:

```

sed -i -e "s@^#include <linux/config.h>@/* & */@" \
    `grep -lr linux/config.h *` &&
( make World 2>&1 | tee xorg-compile.log && exit $PIPESTATUS )

```

Again as the root user:

```

make install &&
make install.man &&
ln -v -sf ../X11R6/bin /usr/bin/X11 &&
ln -v -sf ../X11R6/lib/X11 /usr/lib/X11 &&
ln -v -sf ../X11R6/include/X11 /usr/include/X11

```

Command Explanations

`sed -i -e "s@^#include <linux/config.h>@...":` The Linux-Libc-Headers package installed in LFS installs a `/usr/include/linux/config.h` file which is not compatible with userspace applications. The recommended fix for applications including this file is to remove it (see linux-libc-headers FAQ). The `sed` uses `grep -lr` to replace all occurrences. If you desire, just remove (comment) the line in the appropriate video driver file if you customized `host.def`.

`(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 standard output. The `tee` command allows viewing of the output while logging the results to a file. The parentheses around the command runs 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 -v -sf ...`: These commands are present to enable other (broken) packages to build against Xorg, 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.”

Configuring Xorg

Edit `/etc/ld.so.conf` and add `/usr/X11R6/lib`. Run:

```
ldconfig
```

Ensure `/usr/X11R6/bin` and `/usr/X11R6/lib/pkgconfig` are added to your `PATH` and `PKG_CONFIG_PATH` environment variables, respectively. Instructions for doing this are described in the section [The Bash Shell Startup Files](#).

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 `xorg.conf` man page. 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 "Module". If you are going to install NVidia drivers, remove the "dri" line.
- Sections "InputDevice". You may want to change the keyboard autorepeat rate by adding `Option "Autorepeat" "250 30"`.
- Section "Monitor". Specify the `VertRefresh` and `HorizSync` values if the system does not automatically detect the monitor and its values.
- 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 24`. In the SubSection for your default depth, add a modes line such as: `Modes "1600x1200" "1280x1024" "1024x768"`. The first mode listed will normally be the starting resolution.

Test the system with:

```
X -config ~/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 a basic functional X Window System.

At this point, you should check out the section called “X Window System Components” for the necessary configuration to make X fully functional. Additionally, you can have a look at the section called “Additional X Window System Configuration” for information on fine tuning your X configuration.

For a list of the package contents and a description of the commands, see the sections in the XFree86 Contents and Descriptions.

XFree86-4.5.0

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/XFree86/4.5.0/source/>
- Download (FTP): <ftp://ftp.xfree86.org/pub/XFree86/4.5.0/source/>
- Download MD5 sum: <ftp://ftp.xfree86.org/pub/XFree86/4.5.0/source/SUMS.md5sum>
- Download size: 51 MB
- Estimated disk space required: 775 MB
- Estimated build time: 12 SBU

Additional Downloads

- Required patch: http://www.linuxfromscratch.org/blfs/downloads/6.1/XFree86-4.5.0-kernel_headers-1.patch

XFree86 Dependencies

Required

libpng-1.2.8

Optional

Linux-PAM-0.80; the following packages are included in the XFree86 package, however they are updated more often than the XFree86 package and are highly recommended: expat-1.95.8, FreeType-2.1.10, Fontconfig-2.3.2.



Note

If you choose not to install expat, FreeType2, and Fontconfig, 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:

- XFree86-4.5.0-src-1.tgz
- XFree86-4.5.0-src-2.tgz
- XFree86-4.5.0-src-3.tgz
- XFree86-4.5.0-src-4.tgz
- XFree86-4.5.0-src-5.tgz
- XFree86-4.5.0-src-6.tgz
- XFree86-4.5.0-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.x.tgz`, which contain programs to regenerate hardcopy documentation, and `utils-1.1.x.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.x.tgz`, `utils-1.1.x.tgz` and `XFree86-xtest-4.0.x.tar.bz2` files if you did not download them.

Kernel Configuration

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 running the command `lspci`, a program from the PCI Utilities-2.1.11 package.

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).

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 and install the new kernel.

Installation of XFree86

Setting Up a Shadow Directory

When building XFree86, you should create a shadow directory of symbolic links for the compiled code. To do that, first make `lndir`. Starting from the `xc` directory:

```
pushd config/util &&
make -f Makefile.ini lndir
```

Now, as the `root` user:

```
cp -v lndir /usr/bin/
```

And back as an unprivileged user:

```
popd
```

Now create the shadow tree:

```
mkdir ../xcbuild &&
cd ../xcbuild &&
ln -s ../xc
```

Creating 'host.def'

Although XFree86 will compile without a `host.def` file, the following file is recommended for customizing the installation. Start from the `xcbuild` 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 il28 nsc \
                        ati i810 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                -lncurses
#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:

```

patch -Np1 -i ../XFree86-4.5.0-kernel_headers-1.patch &&
sed -i -e "s@^#include <linux/config.h>@/* & */@" \
  `grep -lR linux/config.h *` &&
( make WORLDOPTS="" World 2>&1 | \
  tee xfree-compile.log && exit $PIPESTATUS )

```

Now, as the root user:

```
make install &&
make install.man &&
ln -v -sf ../X11R6/bin /usr/bin/X11 &&
ln -v -sf ../X11R6/lib/X11 /usr/lib/X11 &&
ln -v -sf ../X11R6/include/X11 /usr/include/X11
```

Command Explanations

sed -i -e "s@^#include <linux/config.h>@...: The Linux-Libc-Headers package installed in LFS installs a `/usr/include/linux/config.h` file which is not compatible with userspace applications. The recommended fix for applications including this file is to remove it (see linux-libc-headers FAQ). The **sed** uses **grep -lr** to replace all occurrences. If you desire, just remove (comment) the line in the appropriate video driver file if you customized `host.def`.

(**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 standard output. The **tee** command allows viewing of the output while logging the results to a file. The parentheses around the command runs 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 -v -sf ...: These commands are present to enable other (broken) packages to build against XFree86, 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.”

Configuring XFree86

As the root user: Edit `/etc/ld.so.conf` and add `/usr/X11R6/lib`, then run:

```
ldconfig
```

Ensure `/usr/X11R6/bin` and `/usr/X11R6/lib/pkgconfig` are added to your `PATH` and `PKG_CONFIG_PATH` environment variables, respectively. Instructions for doing this are described in the section The Bash Shell Startup Files.

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 "Module". If you are going to install NVidia drivers, remove the "dri" line.
- Sections "InputDevice". You may want to change the keyboard autorepeat rate by adding `Option "Autorepeat" "250 30"`.
- Section "Monitor". Specify the `VertRefresh` and `HorizSync` values if the system does not automatically detect the monitor and its values.
- 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 24`. In the `SubSection` for your default depth, add a `modes` line such as: `Modes "1600x1200" "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, examine `/var/log/XFree86.0.log` to see what went wrong.

As the `root` user: 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 a basic functional X Window System.

At this point, you should check out the section called “X Window System Components” for the necessary configuration to make X fully functional. Additionally, you can have a look at the section called “Additional X Window System Configuration” for information on fine tuning your X configuration.

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.



Note

The following lists are not comprehensive. The full list of programs is in `/usr/X11R6/bin`. For additional information about these programs, see the respective man page.

Installed Programs: XFree86, xf86config, xf86cfg, startx, xinit, twm, xterm, xwininfo, x11perf, xlsfonts, xvidthune, xload, xcalc, xclock, oclock, and xmodmap

Installed Libraries: libGL.so, libGLU.so, libSM.so, libXi.so, libXrender.so, libXt.so, and libXfont.so

Installed Directories: `/usr/X11R6/` and `/etc/X11/`

Short Descriptions

XFree86 is the X11R6 implementation of the X Window System server.

xf86config is an interactive program for generating an `XF86Config` file for use with XFree86 X servers.

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 is a script to initialize the X session. It runs **xinit**.

xinit is used to start the X Window System server.

twm (Tab Window Manager) is a window manager included with the X Window System.

xterm is a terminal emulator for X.

xwininfo is a window information utility for X.

x11perf	is an X11 server performance test program.
xlsfonts	is a program to list fonts available to the X server.
xvidtune	is a video mode tuner for XFree86.
xload	is a system load average display for X.
xcalc	is a scientific calculator for X.
xclock	is a clock programs for X.
oclock	is a clock programs for X.
xmodmap	is a utility for modifying keymaps and pointer button mappings in X.

Additional X Window System Configuration

Below you will find information on fine tuning the components of both variants of X Window System. The documentation links are specifically for XFree86, however, the information contained in those documents usually pertains to Xorg as well.

Setting up X Input Devices

This is a new section for BLFS. For now, here are some convenient links for additional configuration of X input devices. Descriptive content will be added soon.

Keyboards

The XKB Configuration Guide

How to further enhance XKB configuration

Mice

Multi-button mice can be used to their full potential by mapping the additional buttons to X button events. Wheel mice are a common example. The ordinary ones contain two buttons, and a scroll wheel that doubles as a third button. As far as X is concerned, there are 5 buttons as it counts the 'scroll up' and 'scroll down' functions (internally they are buttons). Here is an example 'InputDevice' section for a typical PS/2 wheel mouse:

```
Section "InputDevice"
    Identifier   "Mouse 0"
    Driver       "mouse"
    Option       "Device"           "/dev/input/mice"
    Option       "Protocol"         "IMPS/2"
    Option       "ZAxisMapping"     "4 5"
    Option       "Buttons"          "5"
EndSection
```

Button assignments differ for every mouse type. On more exotic mice, you may find that the rocker wheel buttons are 6 and 7. Simply add those values to the `ZAxisMapping` option, and set the `Buttons` option appropriately to enable side to side scrolling. Additional information on button assignment can be found in the following XFree86 document:

Mouse Support in XFree86

Other

To be added...

Fine Tuning Display Settings

The 'Monitor' Section

To be added...

The 'Device' Section

To be added...

Devices

X Window System 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. Each item is described in detail after the list.

- Establish a directory for the fonts and move any TrueType fonts you want into that directory. Ensure that any fonts you install are world readable. Incorrect permissions on fonts have been known to cause problems with some X applications.
- Download the fonts.
- 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.
- Update the font cache files

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.

Download the Fonts

There are two known high quality free font resources: <ftp://ftp.gnu.org/savannah/files/freefont/> and <http://corefonts.sourceforge.net/>. Copy the fonts (files with the `.ttf` suffix) to the directory you've just created.

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' or 'xorg.conf' 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

Ensure you have the following directory entries in `/etc/fonts/local.conf`, inside the `fontconfig` tags. Create `/etc/fonts/local.conf` using the following commands:

```
cat > /etc/fonts/local.conf << "EOF"
<?xml version="1.0"?>
<!DOCTYPE fontconfig SYSTEM "fonts.dtd">
<!-- /etc/fonts/local.conf file for local customizations -->

<fontconfig>
<dir>/usr/X11R6/lib/X11/fonts/TTF</dir>
<dir>/usr/X11R6/lib/X11/fonts/Type1</dir>
</fontconfig>

EOF
```

The `fc-cache` program will automatically search the above directories and all subdirectories for needed fonts.

Finally, to update all the font cache files, 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 rerun **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, 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 Fonts

Users using character sets other than ISO-8859-1 have to make a few adjustments to their font settings in order to make sure that fonts with the correct encoding are used for "fixed", "variable", "10x20" and similar aliases:

For Cyrillic alphabet, it is sufficient to put the following line into the top of the "Files" section in XF86Config or xorg.conf because this directory already contains the needed bitmap fonts and their aliases:

```
FontPath      "/usr/X11R6/lib/X11/fonts/cyrillic/"
```

For ISO-8859-[X] based locales, use the following command instead:

```
sed -i 's,iso8859-1\(\ \|$\),iso8859-[X]\1,g' \
    /usr/X11R6/lib/X11/fonts/{75dpi,100dpi,misc}/fonts.alias
```

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
```

If Linux-PAM is installed on your system, you should create a PAM entry for **xdm** by duplicating the **login** entry using the following command:

```
cp /etc/pam.d/login /etc/pam.d/xdm
```

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 of 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. In some cases the enhancement is as simple as font support. In others it is 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 for different applications. They also assist programmers by supplying common elements.

Qt-3.3.4

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/qt/source/qt-x11-free-3.3.4.tar.bz2>
- Download (FTP): <ftp://ftp.trolltech.com/qt/source/qt-x11-free-3.3.4.tar.bz2>
- Download MD5 sum: 027f4e82fbe592b39d2f160bfb3a73af
- Download size: 13.8 MB
- Estimated disk space required: 250 MB
- Estimated build time: 15.5 SBU (full), 10.9 SBU (sub-tools)

Qt Dependencies

Required

X (XFree86-4.5.0 or X.org-6.8.2)

Recommended

libjpeg-6b and libmng-1.0.9

Optional

NAS-1.7, CUPS-1.1.23, MySQL-4.1.12, PostgreSQL-8.0.3, SQLite, 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.

**Note**

If Qt is being reinstalled, run the following commands from a console or non-Qt based window manager. It overwrites Qt libraries that should not be in use during the install process.

```
sed -i -e 's:${QTDIR}/include:&/qt:' \
    -e 's:${QTDIR}/lib:&/qt:' \
    mkspecs/linux*/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 -system-libmng \
    -no-exceptions -thread -plugin-imgfmt-png \
    -system-libjpeg -system-libpng &&
find -type f -name Makefile | xargs sed -i "s@-Wl,-rpath,/usr/lib@g" &&
make &&
exit
```

Now, as the root user:

```
make install &&
ln -v -sf libqt-mt.so /usr/lib/libqt.so &&
cp -v -r doc/man /usr/share &&
cp -v -r examples /usr/share/doc/qt
```

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 revert 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-3.3.4/` 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-3.3.4 -qt-gif -system-libpng \
    -system-libmng -system-zlib -system-libjpeg -no-exceptions \
    -thread -plugin-imgfmt-png &&
make &&
exit

```

Now, as the root user:

```

make install &&
ln -v -sfn qt-3.3.4 /opt/qt &&
ln -v -s libqt-mt.so /opt/qt/lib/libqt.so &&
cp -v -r doc/man /opt/qt/doc &&
cp -v -r examples /opt/qt/doc

```



Note

If you pass the `-plugin-sql-[driver]` switch to the **configure** command, you must also pass `-I[/path/to/sql/headers]` so **make** can find the appropriate header files.

Command Explanations

sed -i -e ... mkspecs/linux*/qmake.conf: Directories in `qmake.conf` need to be adjusted to match the BLFS Method 1 installation directories.

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 build instructions to use the shared libraries that are on your system instead of creating a custom set of support libraries for these functions.

-plugin-imgfmt-png: This switch enables libpng to be linked to at runtime.

-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 paths. Otherwise, **uic** always tries to run with Qt libraries in `/usr/lib`.

ln -v -s libqt-mt.so /usr/lib/libqt.so: This command allows **configure** scripts to find a working Qt installation.

cp -v -r doc/man /usr/share (or /opt/qt/doc): This command installs the man pages which are missed by **make**

install.

cp -v -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

The `QTDIR` environment variable needs to be set when building packages that depend on Qt. Add the following to the `.bash_profile` initialization script for each user that builds packages using the Qt libraries. Alternatively, the variable can be set in the system wide `/etc/profile` file.

For Method 1 (This is optional, only set this if an application is unable to find the installed libraries):

```
export QTDIR=/usr
```

or for Method 2:

```
export QTDIR=/opt/qt
```

If you installed Qt using Method 2, you also need to update the following configuration files so that Qt is correctly found by other packages and system processes.

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
```

Update the `PKG_CONFIG_PATH` environment variable in your `~/.bash_profile` or `/etc/profile` with the following:

```
PKG_CONFIG_PATH=$PKG_CONFIG_PATH:/opt/qt/lib/pkgconfig
```

If you want the Qt executables in your shell search path, update the `PATH` environment variable in your `~/.bash_profile` or `/etc/profile` to include `/opt/qt/bin`.

As with most libraries, there is no explicit configuration to do. After updating `/etc/ld.so.conf` as explained above, run `/sbin/ldconfig` so that `ldd` can find the shared libraries.

Contents

Installed Programs:	assistant, designer, linguist, lrelease, lupdate, moc, qm2ts, qmake, qtconfig, and uic
Installed Libraries:	libqt-mt.so, libqt.so, libqui.so, libdesignercore.a, libeditor.a, and libqassistantclient.a
Installed Directories:	/opt/qt-3.3.4 or /usr/lib/qt, /usr/share/qt, /usr/share/doc/qt, /usr/include/qt, and /etc/qt

Short Descriptions

assistant	is a tool for presenting on-line documentation.
designer	is a full-fledged GUI builder. It includes powerful features such as preview mode, automatic widget layout, support for custom widgets, and an advanced property editor.
linguist	provides support for translating applications into local languages.
lrelease	is a simple command line tool. It reads a Qt project file and produces message files used by the application.
lupdate	reads a Qt project file, finds the translatable strings in the specified source, header and Qt Designer interface files, and produces or updates the translation files listed in the project file.
moc	generates Qt meta object support code.
qm2ts	is a tool for converting Qt message file formats.
qmake	qmake uses information stored in project files to determine what should go in the makefiles it generates.
qtconfig	is used to customize the appearance of Qt applications.
uic	is a Qt user interface compiler.

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 MD5 sum: 4d5cb2fc7fb7830e4af9747a36bfce20
- Download size: 2.8 MB
- Estimated disk space required: 51.1 MB
- Estimated build time: 1.01 SBU

GTK+ Dependencies

Required

GLib-1.2.10, libtiff-3.7.3, libjpeg-6b, and X (XFree86-4.5.0 or X.org-6.8.2)

Installation of GTK+

Install GTK+ by running the following commands:

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

This package does not come with a test suite.

Now, as the root user:

```
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

Installed Program:	<code>gtk-config</code>
Installed Libraries:	<code>libgdk.[so,a]</code> and <code>libgtk.[so,a]</code>
Installed Directories:	<code>/etc/gtk</code> , <code>/usr/include/gtk-1.2</code> , and <code>/usr/share/themes</code>

Short Descriptions

- gtk-config** is a tool used by **configure** scripts to determine the compiler and linker flags that should be used to compile and link programs that use GTK+.
- `libgtk.[so,a]` (GIMP Tool Kit) is a library for creating graphical user interfaces similar to the Motif “look and feel”.
- `libgdk.[so,a]` is designed as a wrapper library that lies on top of Xlib. It performs many common and desired operations for a programmer instead of the programmer having to explicitly ask for such functionality from Xlib directly.

Pango-1.8.1

Introduction to Pango

The Pango package contains the `libpango` libraries. These are useful for the layout and rendering of text.

Package Information

- Download (HTTP): <http://ftp.gnome.org/pub/GNOME/sources/pango/1.8/pango-1.8.1.tar.bz2>
- Download (FTP): <ftp://ftp.gnome.org/pub/GNOME/sources/pango/1.8/pango-1.8.1.tar.bz2>
- Download MD5 sum: 88aa6bf1876766db6864f3b93577887c
- Download size: 996 KB
- Estimated disk space required: 22 MB
- Estimated build time: 0.56 SBU (includes rebuilding the documentation)

Pango Dependencies

Required

GLib-2.6.4

Optional

Xft (included in XFree86-4.5.0 or X.org-6.8.2), Fontconfig-2.3.2 and GTK-Doc-1.3

Installation of Pango

In order for Pango to find Xft, the `PKG_CONFIG_PATH` must include `/usr/X11R6/lib/pkgconfig`. This is a good time to add it if you haven't already. You can utilize the example for `X.sh` to create a script for modifying this variable located in the section The Bash Shell Startup Files.

Install Pango by running the following commands:

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

To test the results, issue: **make check**.

Now, as the `root` user:

```
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.

Configuring Pango

Config Files

`/etc/pango/pangorc`, `~/.pangorc`, and the file specified in the environment variable `PANGO_RC_FILE`

Configuration Information

The Pango module path is specified by the key ***Pango/ModulesPath*** in the Pango config database, which is read from the config files listed above.

Contents

Installed Program:	<code>pango-querymodules</code>
Installed Libraries:	<code>libpango*.so</code> and Pango loadable modules.
Installed Directories:	<code>/etc/pango</code> , <code>/usr/include/pango-1.0</code> , <code>/usr/lib/pango</code> , and <code>/usr/share/gtk-doc/html/pango</code>

Short Descriptions

pango-querymodules	is a module registration utility that collects information about Pango loadable modules.
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-1.9.1

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/1.9/atk-1.9.1.tar.bz2>
- Download (FTP): <ftp://ftp.gnome.org/pub/GNOME/sources/atk/1.9/atk-1.9.1.tar.bz2>
- Download MD5 sum: 689eb6a77215858eb804f6dcc90058be
- Download size: 473 KB
- Estimated disk space required: 7.1 MB
- Estimated build time: 0.11 SBU

ATK Dependencies

Required

GLib-2.6.4

Optional

GTK-Doc-1.3

Installation of ATK

Install ATK by running the following commands:

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

This package does not come with a test suite.

Now, as the `root` user:

```
make install
```

Command Explanations

`--enable-gtk-doc`: This switch will rebuild the API documentation during the `make` command.

Contents

Installed Programs:	None
Installed Libraries:	libatk-1.0.so
Installed Directories:	/usr/include/atk-1.0 and /usr/share/gtk-doc/html/atk

Short Descriptions

`atklib-1.0.so` contains functions that are used by assistive technologies in order to interact with the desktop and applications.

GTK+-2.6.7

Introduction to GTK+

The GTK+ package contains GTK+ Libraries. These are useful for creating graphical user interfaces for applications.

Package Information

- Download (HTTP): <http://gd.tuwien.ac.at/graphics/gimp/gtk/v2.6/gtk+-2.6.7.tar.bz2>
- Download (FTP): <ftp://ftp.gtk.org/pub/gtk/v2.6/gtk+-2.6.7.tar.bz2>
- Download MD5 sum: b89bf892a0dee943f98b4caa12f773c8
- Download size: 11.4 MB
- Estimated disk space required: 180 MB
- Estimated build time: 2.93 SBU (additional 13.36 SBU to rebuild the documentation)

GTK+ Dependencies

Required

X (X.org-6.8.2 or XFree86-4.5.0), Pango-1.8.1, and ATK-1.9.1

Optional

libtiff-3.7.3, libjpeg-6b, GTK-Doc-1.3, and DocBook-utils-0.6.14

Installation of GTK+

Install GTK+ by running the following commands:

```
./configure --prefix=/usr --sysconfdir=/etc \
  --without-libtiff --without-libjpeg &&
make
```

To test the results, issue: **make check**.

Now, as the root user:

```
make install
```

Command Explanations

`--sysconfdir=/etc`: This switch installs the configuration files into `/etc` instead of `/usr/etc`.

`--without-libtiff`: Omit this switch if you have libtiff installed.

`--without-libjpeg`: Omit this switch if you have libjpeg installed.

`--enable-gtk-doc`: This switch will rebuild the API documentation during the **make** command.

Contents

Installed Programs:	gdk-pixbuf-csource, gdk-pixbuf-query-loaders, gtk-demo, gtk-query-immodules-2.0, and gtk-update-icon-cache
Installed Libraries:	libgdk_pixbuf-2.0.so, libgdk-x11-2.0.so, libgtk-x11-2.0.so, libgdk_pixbuf_xlib-2.0.so, and numerous engine, module, and loader plugins
Installed Directories:	/etc/gtk-2.0, /usr/include/gtk-2.0, /usr/lib/gtk-2.0, /usr/share/gtk-2.0, /usr/share/gtk-doc/html/[gdk,gdk-pixbuf,gtk], /usr/share/themes/Default/gtk*, and /usr/share/themes/Emacs/gtk-2.0-key

Short Descriptions

gdk-pixbuf-csource	generates C code containing images, useful for compiling images directly into programs.
gdk-pixbuf-query-loaders	collects information about loadable modules for gdk-pixbuf and writes it to standard output.
gtk-query-immodules-2.0	collects information about loadable input method modules for GTK+ and writes it to standard output.
gtk-update-icon-cache	creates mmap()able cache files for icon themes.
GTK+ Libraries	provide an API to implement graphical user interfaces.

LessTif-0.94.4

Introduction to LessTif

The LessTif package contains an Open Source version of OSF/Motif®.

Package Information

- Download (HTTP): <http://prdownloads.sourceforge.net/lesstif/lesstif-0.94.4.tar.bz2>
- Download (FTP):
- Download MD5 sum: 3096ca456c0bc299d895974d307c82d8
- Download size: 2.4 MB
- Estimated disk space required: 160 MB (includes building and running the test suite)
- Estimated build time: 2.89 SBU (includes building the test suite)

Additional Downloads

- Required patch: http://www.linuxfromscratch.org/blfs/downloads/6.1/lesstif-0.94.4-testsuite_fix-1.patch

LessTif Dependencies

Required

X (XFree86-4.5.0 or X.org-6.8.2)

Optional

Lynx-2.8.5 or Links-2.1pre17 (used to generate the INSTALL documentation file) and Dmalloc

Installation of LessTif

Install LessTif by running the following commands:

```
patch -Np1 -i ../lesstif-0.94.4-testsuite_fix-1.patch &&
./configure --prefix=/usr --disable-debug \
  --enable-production --with-xdnd &&
make rootdir=/usr/share/doc/lesstif-0.94.4
```

Now, as the root user:

```
make rootdir=/usr/share/doc/lesstif-0.94.4 install &&
mv -v /usr/X11R6/lib/X11/mwm /etc/X11 &&
ln -v -s ../../../../etc/X11/mwm /usr/X11R6/lib/X11 &&
ldconfig
```

Command Explanations

--disable-debug: Do not generate debugging information.

--enable-production: Build the release version of the LessTif libraries.

`--with-xdnd`: Enable XDND GNOME compatibility support.

`rootdir=/usr/share/doc/lesstif-0.94.4`: This installs the documentation into an appropriate directory instead of the non-FHS compliant `/usr/LessTif` directory.

`mv -v /usr/X11R6/lib/X11/mwm /etc/X11`: The `mwm` configuration directory is moved to its proper FHS location in `/etc/X11`.

`ln -v -s ../../../../etc/X11/mwm /usr/X11R6/lib/X11`: A symlink required by some legacy applications is created pointing to the `mwm` configuration directory moved in the previous command.

Testing LessTif

It is advisable to test the installation of LessTif using the included test suite. It is not required to install any of the resulting binaries to validate the installation. Issue the following commands to build the test suite:

```
cd test &&
./configure &&
make
```

To run the tests, issue the following commands:

```
cd Xm &&
./testall *
```

You'll need to manually close three of the test windows. The first one is from **test28** in the `list` directory. The second one is from **test10** in the `menushell` directory. You should click on the button in the window and choose “exit” (do it twice) to finish the test. The third test is from **test24** in the `scrolledwindow` directory.

As many as 100 tests are known to fail. The patch applied at the beginning of the installation created a file used to compare known failures to the failures from the test run. This file was created from an installation using the current LFS book and should be a fairly accurate representation of the failures you'll encounter. You could see some minor variances, however.

Configuring LessTif

Config Files

`/etc/X11/mwm/system.mwmrc` and `~/ .mwmrc`

Configuration Information

The config files are used to customize the behavior of the **mwm** window manager. Information about customizing these files can be found in the `mwmrc(5)` man page.

Contents

Installed Programs: motif-config, mwm, mxmkmf, uil, and xmbind

Installed Libraries: libDtPrints.so, libMrm.so, libUil.so, and libXm.so

Installed Directories: /etc/X11/mwm, /usr/include/Xm, /usr/include/Mrm, /usr/include/uil, /usr/include/Dt,

`/usr/lib/LessTif`, and `/usr/share/doc/lesstif-0.94.4`

Short Descriptions

motif-config	is used to find out configuration information for packages needing to link to the LessTif libraries.
mwm	is a window manager that adheres largely to the Motif mwm specification.
mxmkmf	is the LessTif version of xmkmf which creates a <code>Makefile</code> from an <code>Imakefile</code> .
uil	is a user interface language compiler which translates a plain text description of the user interface of a Motif application into a machine-readable form.
xmbind	configures the virtual key bindings of LessTif applications.
<code>libXm.so</code>	is an OSF/Motif® source code compatible library for the X Window System. You can download an excellent reference guide (mainly for programmers) for the Motif-2.1 specification from http://unc.dl.sourceforge.net/lesstif/6B_book.pdf .

startup-notification-0.8

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-0.8.tar.gz>
- Download (FTP):
<ftp://ftp.linux.org.uk/pub/linux/GNOME/sources/startup-notification/0.8/startup-notification-0.8.tar.bz2>
- Download MD5 sum: 9bba52ffe8c096cfeeaf7a1dcd9b943d
- Download size: 335 KB
- Estimated disk space required: 3.3 MB
- Estimated build time: less than 0.1 SBU

startup-notification Dependencies

Required

X (XFree86-4.5.0 or X.org-6.8.2)

Installation of startup-notification

Install startup-notification by running the following commands:

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

Now, as the `root` user:

```
make install &&
install -v -m644 -D doc/startup-notification.txt \
  /usr/share/doc/startup-notification-0.8/startup-notification.txt
```

Contents

Installed Programs: None

Installed Library: libstartup-notification-1.[so,a]

Installed Directories: /usr/include/startup-notification-1.0 and /usr/share/doc/startup-notification-0.8

Short Descriptions

`libstartup-notification-1.[so,a]` provides the functions to assist applications in communicating with the cursor system to provide feedback to

the user that the application is loading.

Libwnck-2.10.0

Introduction to Libwnck

The libwnck package contains a Window Navigator Construction Kit.

Package Information

- Download (HTTP): <http://ftp.gnome.org/pub/GNOME/sources/libwnck/2.10/libwnck-2.10.0.tar.bz2>
- Download (FTP): <ftp://ftp.gnome.org/pub/GNOME/sources/libwnck/2.10/libwnck-2.10.0.tar.bz2>
- Download MD5 sum: c04c79f1e8576bc930c79d2e7bb8190a
- Download size: 419 KB
- Estimated disk space required: 10 MB
- Estimated build time: 0.3 SBU

Libwnck Dependencies

Required

GTK+-2.6.7

Recommended

startup-notification-0.8

Optional

GTK-Doc-1.3

Installation of Libwnck

Install libwnck by running the following commands:

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

This package does not come with a test suite.

Now, as the root user:

```
make install
```

Contents

Installed Programs:	None
Installed Library:	libwnck-1
Installed Directories:	/usr/include/libwnck-1.0 and /usr/share/gtk-doc/html/libwnck

Short Descriptions

`libwnck-1.[so,a]` contains functions for writing pagers and task lists.

shared-mime-info-0.16

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/~jrb/shared-mime-info-0.16.tar.gz>
- Download (FTP): <ftp://ftp.fu-berlin.de/unix/linux/mirrors/gentoo/distfiles/shared-mime-info-0.16.tar.gz>
- Download MD5 sum: 255a20bae753ebd41e2286b01e7b86d0
- Download size: 753 KB
- Estimated disk space required: 7.5 MB
- Estimated build time: less than 0.1 SBU

shared-mime-info Dependencies

Required

GLib-2.6.4, libxml2-2.6.20 and XML::Parser

Installation of shared-mime-info

Install shared-mime-info by running the following commands:

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

Now, as the root user:

```
make install
```

Configuring shared-mime-info

Configuration Information

Some applications (including GNOME-2) require a properly set environment variable to locate the MIME database. Satisfy this requirement by setting the following variable in your local shell profile, or the system-wide profile:

```
XDG_DATA_DIRS=/usr/share  
export XDG_DATA_DIRS
```

Contents

Installed Program: update-mime-database
Installed Libraries: None

Installed Directory: /usr/share/mime

Short Descriptions

update-mime-database assists in adding MIME data to the database.

hicolor-icon-theme-0.8

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://icon-theme.freedesktop.org/releases/hicolor-icon-theme-0.8.tar.gz>
- Download (FTP): <ftp://ftp.fu-berlin.de/unix/linux/mirrors/gentoo/distfiles/hicolor-icon-theme-0.8.tar.gz>
- Download MD5 sum: b854ed36d523d5d72902b04c18f4b499
- Download size: 31 KB
- Estimated disk space required: 1.2 MB
- Estimated build time: less than 0.1 SBU

Installation of hicolor-icon-theme

Install hicolor-icon-theme by running the following commands:

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

Now, as the root user:

```
make install
```

Contents

Installed Programs:	None
Installed Libraries:	None
Installed Directories:	/usr/share/icons/hicolor/

Short Descriptions

/usr/share/icons/hicolor/*	contains icon definitions used as defaults.
----------------------------	---------------------------------------------

libxklavier-2.0

Introduction to libxklavier

The libxklavier package contains a utility library for X keyboard.

Package Information

- Download (HTTP): <http://prdownloads.sourceforge.net/gswitchit/libxklavier-2.0.tar.gz>
- Download (FTP):
- Download MD5 sum: 9257653ee3d194d9c8d669e969fe4332
- Download size: 435 KB
- Estimated disk space required: 7.0 MB
- Estimated build time: 0.12 SBU

libxklavier Dependencies

Required

X (XFree86-4.5.0 or X.org-6.8.2), pkg-config-0.19 and libxml2-2.6.20

Optional

Doxygen-1.4.3

Installation of libxklavier

Install libxklavier by running the following commands:

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

Now, as the root user:

```
make install
```

Contents

Installed Programs:	None
Installed Library:	libxklavier.[so,a]
Installed Directories:	/usr/include/libxklavier, /usr/share/doc/libxklavier-2.0, and /usr/share/libxklavier

Short Descriptions

libxklavier.[so,a] contains XKB utility functions.

freeglut-2.4.0

Introduction to freeglut

freeglut is intended to be a 100% compatible, completely opensourced clone of the GLUT library. GLUT is a window system independent toolkit for writing OpenGL programs, implementing a simple windowing API, which makes learning about and exploring OpenGL programming very easy.

Package Information

- Download (HTTP): <http://prdownloads.sourceforge.net/freeglut/freeglut-2.4.0.tar.gz>
- Download (FTP):
- Download MD5 sum: 6d16873bd876fbf4980a927cfbc496a1
- Download size: 459 KB
- Estimated disk space required: 7.6 MB
- Estimated build time: 0.2 SBU

freeglut Dependencies

Required

X (XFree86-4.5.0 or X.org-6.8.2)

Installation of freeglut

Install freeglut by running the following commands:

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

This package does not come with a test suite.

Now, as the root user:

```
make install &&
install -v -d -m755 /usr/share/doc/freeglut-2.4.0 &&
install -v -m644 doc/freeglut_user_interface.html \
  /usr/share/doc/freeglut-2.4.0
```

Contents

Installed Programs:	None
Installed Libraries:	libglut.{so,a}
Installed Directories:	/usr/share/doc/freeglut-2.4.0

Short Descriptions

`libglut.[so,a]` contains functions that implement the OpenGL Utility Toolkit.

Chapter 27. Window Managers

Introduction

Window Managers 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 Managers 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 sections.

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://prdownloads.sourceforge.net/sawmill/sawfish-1.3.tar.gz>
- Download (FTP):
- Download MD5 sum: 9e5ce5e76c60acecdb1889c1f173295a
- Download size: 1.5 MB
- Estimated disk space required: 17.5 MB
- Estimated build time: 0.26 SBU

sawfish Dependencies

Required

X (XFree86-4.5.0 or X.org-6.8.2), libreplex-0.17, rep-gtk-0.18, Esound-0.2.35 and GTK+-2.6.7

Installation of sawfish

Install sawfish by running the following commands:

```
./configure --prefix=/usr --libexec=/usr/sbin \  
  --infodir=/usr/share/info --disable-themer &&  
make
```

Now, as the root user:

```
make install
```

Command Explanations

--disable-themer: This option prevents building the sawfish themer. This program was not migrated to GTK-2.

--with-audiofile: This command directs sawfish to use `libaudiofile` for sound manipulation.

--with-esd: This command directs sawfish to use the Enlightened Sound Daemon.

Configuring sawfish

Configuration Information

Be sure to backup your current `.xinitrc` before proceeding.

```
cat >> ~/.xinitrc << "EOF"  
exec sawfish  
EOF
```

Contents

Installed Programs: sawfish, sawfish-client, and sawfish-ui
Installed Libraries: None
Installed Directory: /usr/share/sawfish, /usr/sbin/sawfish, and /usr/lib/rep/*/

Short Descriptions

`sawfish` is the extensible window manager using a Lisp-based scripting language.
`sawfish-client` allows you to connect to a window manager process and evaluate arbitrary Lisp forms.
`sawfish-ui` is the sawfish configurator.

Fluxbox-0.9.13

Introduction to Fluxbox

The Fluxbox package contains a window manager.

Package Information

- Download (HTTP): <http://prdownloads.sourceforge.net/fluxbox/fluxbox-0.9.13.tar.bz2>
- Download (FTP):
- Download MD5 sum: f9b7b3c3b8e1e9ce3449601b238d4fba
- Download size: 649 KB
- Estimated disk space required: 47.7 MB
- Estimated build time: 1.2 SBU

Fluxbox Dependencies

Required

X (XFree86-4.5.0 or X.org-6.8.2)

Optional

Imlib2-1.2.1 Image display library

Installation of Fluxbox

Install Fluxbox by running the following commands:

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

Now, as the root user:

```
make install
```

Command Explanations

`--enable-imlib2`: Use this option if you wish image formats additional to xpm.

Configuring Fluxbox

Config Files

`~/.fluxbox/init`, `~/.fluxbox/keys`, and `~/.fluxbox/menu`

Configuration Information

Be sure to backup your current `.xinitrc` before proceeding.

```
cat >> ~/.xinitrc << "EOF"
startfluxbox
EOF
```

Now create the Fluxbox configuration files:

```
mkdir -v ~/.fluxbox &&
cp -v /usr/share/fluxbox/init ~/.fluxbox/init &&
cp -v /usr/share/fluxbox/keys ~/.fluxbox/keys
```

Now if you have Which installed.

```
cd ~/.fluxbox &&
fluxbox-generate_menu
```

Else, if you do not have Which installed.

```
cp -v /usr/share/fluxbox/menu ~/.fluxbox/menu
```

Menu Items are added by editing `~/.fluxbox/menu`. The syntax is explained on the **fluxbox** man page.

Contents

Installed Programs:	fluxbox, fbsetbg, bsetroot, fluxbox-generate_menu, startfluxbox, and fbrun
Installed Libraries:	None
Installed Directory:	/usr/share/fluxbox and ~/.fluxbox

Short Descriptions

fluxbox	is a window manager for X11 based on Blackbox 0.61.0.
fbsetbg	is a utility that sets the background image. It needs display , Esetroot , wmsetbg , xv , qiv or xsri to be used.
bsetroot	is a Blackbox utility to change root window appearance.
fluxbox-generate_menu	is a utility that generates a menu by scanning your PATH. It requires which to function properly.
startfluxbox	is a session startup script that allows for command executions prior to fluxbox starting.
fbrun	displays a run dialog window.

Metacity-2.10.1

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/2.10/metacity-2.10.1.tar.bz2>
- Download (FTP): <ftp://ftp.gnome.org/pub/GNOME/sources/metacity/2.10/metacity-2.10.1.tar.bz2>
- Download MD5 sum: c326eb1aed8742057e9ad94b9ccae877
- Download size: 1.6 MB
- Estimated disk space required: 47.6 MB
- Estimated build time: 0.5 SBU

Metacity Dependencies

Required

intltool-0.33, GConf-2.10.0, and GTK+-2.6.7

Optional

startup-notification-0.8, Xrender*, and libXcomposite**

* libXrender is installed during an XFree86 installation, but the pkgconfig .pc file Metacity looks for is not installed. Satisfy the requirement by installing an xrender.pc file into /usr/X11R6/lib/pkgconfig (not applicable if you have Xorg installed):

```
cat > /usr/X11R6/lib/pkgconfig/xrender.pc << "EOF"
prefix=/usr/X11R6
exec_prefix=${prefix}
libdir=${exec_prefix}/lib
includedir=${prefix}/include

Name: Xrender
Description: X Render Library
Version: 0.8.3
Cflags: -I${includedir} -I/usr/X11R6/include
Libs: -L${libdir} -lXrender -L/usr/X11R6/lib -lX11
EOF
```

** libXcomposite can optionally be used, but here's what the Metacity package maintainer has to say about it in the configure script if the package is found: "Not building compositing manager by default now, must enable explicitly to get it. And it doesn't work, so don't bother unless you want to hack on it..."

Installation of Metacity

Install Metacity by running the following commands:

```
./configure --prefix=/usr --libexecdir=/usr/sbin --sysconfdir=/etc &&
```

```
make
```

Now, as the root user:

```
make install &&
install -v -m755 -d /usr/share/doc/metacity-2.10.1 &&
install -v -m644 README rationales.txt doc/*.txt \
  /usr/share/doc/metacity-2.10.1
```

Command Explanations

`--with-gconf-schema-file-dir=/etc/gnome/gconf/schemas`: Use this option if you are installing Metacity for a GNOME-2 installation.

Configuring Metacity

Configuration Information

To automatically start the Metacity window manager when you issue the `startx` command, append to (or create) `.xinitrc` using the command below (not required if you are installing Metacity for a GNOME-2 installation). Ensure you backup your current `~/ .xinitrc` before proceeding:

```
cat >> ~/.xinitrc << "EOF"
xterm &
exec metacity
EOF
```

Contents

Installed Programs:	metacity, metacity-dialog, metacity-message, metacity-theme-viewer, and metacity-window-demo
Installed Library:	libmetacity-private.[so,a]
Installed Directories:	/etc/gnome/gconf/gconf.xml.defaults/schemas/apps/metacity, /etc/gnome/gconf/gconf.xml.defaults/apps/metacity, /usr/include/metacity-1, /usr/share/doc/metacity-2.10.1, /usr/share/themes/[Crux,Simple]/metacity-1, /usr/share/themes/[Atlanta,Bright,Esco,AgingGorilla,Metabox], /usr/share/metacity, and /usr/share/gnome/wm-properties

Short Descriptions

metacity	is a window manager used mainly by GNOME.
metacity-theme-viewer	allows you to preview any installed Metacity theme. When designing a new Metacity theme, you can use metacity-theme-viewer to measure the performance of a window frame option, and to preview the option.
metacity-window-demo	demonstrates various kinds of windows that window managers and window manager themes should handle.

XFce-4.2.2

Introduction to XFce

The XFce package contains a lightweight desktop environment.

Package Information

- Download (HTTP): http://www.us.xfce.org/archive/xfce-4.2.2/fat_tarballs/xfce-4.2.2-src.tar.bz2
- Download (FTP):
- Download MD5 sum: 9c65e81b6a7b361af30ae64f3881f2c3
- Download size: 23 MB
- Estimated disk space required: 95 MB (each build directory deleted after completion)
- Estimated build time: 3.6 SBU

XFce Dependencies

Required

GTK+-2.6.7 and libxml2-2.6.20

Optional

libgtkhtml-2.6.3, startup-notification-0.8, a2ps-4.13b and PSUtils-p17

Installation of XFce

XFce now distributes as a TAR ball of base packages and module packages. For each package, run the following:

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

Now, as the `root` user:

```
make install
```

The following packages will install the bare minimum:

- libxfce4util-4.2.2
- dbh-1.0.24
- libxfcegui4-4.2.2
- libxfce4mcs-4.2.2
- xfce-mcs-manager-4.2.2
- xfwm4-4.2.2
- xfce4-panel-4.2.2
- xfdesktop-4.2.2
- xfce-utils-4.2.2

In addition, you may choose to install:

- gtk-xfce-engine-2.2.7
- xfcalendar-4.2.2
- xfce-mcs-plugins-4.2.2
- xfce4-appfinder-4.2.2
- xfce4-icon-theme-4.2.2
- xfce4-iconbox-4.2.2
- xfce4-mixer-4.2.2
- xfce4-session-4.2.2
- xfce4-systray-4.2.2
- xfce4-toys-4.2.2
- xfce4-trigger-launcher-4.2.2
- xffm-4.2.2
- xfprint-4.2.2
- xfwm4-themes-4.2.2

Configuring XFce

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

- Installed Programs:** fgr, scramble, startxfce4, xfbook, xfbook4, xfcalendar, xfce-mcs-manager, xfce-setting-show, xfce4-about, xfce4-appfinder, xfce4-iconbox, xfce4-kiosk-query, xfce4-meneditor, xfce4-mixer, xfce4-panel, xfce4-session, xfce4-session-logout, xfce4-tips, xfdesktop, xfdiff4, xffm, xffrequent, xffrequent4, xffstab, xffstab4, xfglob4, xfhelp4, xflock4, xfmime-edit, xfmountdev4, xfrecent, xfrecent4, xfprint-manager, xfprint4, xfrun4, xfsamba4, xftaskbar4, xfterm4, xftrash4, xftree4, and xfwm4
- Installed Libraries:** libdbh, libxfce4mcs, libxfce4util, libxfcegui4, libxffm, libxfsm, and libxfprint
- Installed Directories:** `/usr/share/xfce4`, `/usr/share/xffm` and `/usr/share/xfwm4`

Short Descriptions

- fgr** is a file content search engine for **xffm**.
- xfce-mcs-manager** is the settings manager for XFce.
- xfce4-about** displays the about box.

xfce4-session	starts up the XFce Desktop Environment.
xfce4-session-logout	logs out from XFce.
xfce-setting-show	displays the settings for XFce.
xfce4-panel	is the panel manager for XFce. It contains the launcher, clock, mail check, desktop switcher and separator programs.
xfdesktop	is the desktop manager for XFce.
xfhelp4	is script that launches a HTML browser to display online documentation.
xflock4	is a script used to lock the current screen during drag and drop actions.
xfmountdev4	mounts a device on the specified mount point and launches xfree4 , then unmounts the device when xfree4 finishes.
xfrun4	is the program launcher for XFce.
xfstampa4	is the Samba front end for XFce.
xfstaskbar4	is the taskbar manager for XFce.
xfstarm4	is a small terminal wrapper to be used as a drag and drop action for the XFce front panel.
xfstrash4	is a small script to be used as a drag and drop action for the XFce front panel.
xfstree4	is the file manager for XFce.
xfstwm4	is an X11 window manager for XFce.

Other Window Managers

twm is the Tab Window Manager. This is the default window manager installed by the X.org-6.8.2 and XFree86-4.5.0 X Window Systems.

mwm is the Motif® Window Manager. It is an OSF/Motif® clone packaged and installed with LessTif-0.94.4.

Part VIII. KDE

Introduction to KDE

KDE is a comprehensive desktop environment that builds on an X Window System 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.

The KDE instructions are divided 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-3.4.1`. 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

KDE 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-3.4.1
```

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:

You should consider installing the `desktop-file-utils-0.10` package. Though not required, this package will allow you to easily use existing `.desktop` files in `/usr/share/applications` (and any other locations identified by `XDG_DATA_DIRS`), and automatically add these applications to the KDE menu system.

Add to your system or personal profile:

```
export PATH=$PATH:/opt/kde-3.4.1/bin
export PKG_CONFIG_PATH=$PKG_CONFIG_PATH:/opt/kde-3.4.1/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-3.4.1/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-3.4.1/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 a new version is to replace `/opt/kde-3.4.1` with `/opt/kde` and to create a symlink from `/opt/kde-3.4.1` to `/opt/kde`.

```
ln -v -sf kde-3.4.1 /opt/kde
```

aRts-1.4.1

Introduction to aRts

The Analog Real-time Synthesizer (aRts) provides sound support for KDE and necessary libraries for kdelibs.

Package Information

- Download (HTTP): <http://mirrors.isc.org/pub/kde/stable/3.4.1/src/arts-1.4.1.tar.bz2>
- Download (FTP): <ftp://ftp.kde.org/pub/kde/stable/3.4.1/src/arts-1.4.1.tar.bz2>
- Download MD5 sum: f632984ddc976a1e4243718af54559ee
- Download size: 960 KB
- Estimated disk space required: 30.4 MB
- Estimated build time: 2.0 SBU

aRts Dependencies

Required

Qt-3.3.4 and GLib-2.6.4

Recommended

libjpeg-6b

Optional

libogg-1.1.2, libvorbis-1.1.1, ALSA-1.0.9, Audio File-0.2.6, libmad-0.15.1b, EsounD-0.2.35, MAS, and JACK

Installation of aRts

Install aRts by running the following commands:

```
./configure --prefix=$KDE_PREFIX --disable-debug \
  --disable-dependency-tracking &&
make
```

Now, as the `root` user:

```
make install
```

Command Explanations

`--prefix=$KDE_PREFIX`: This option tells the process to install the package in `$KDE_PREFIX`. aRts is installed here as it's required before installing KDE.

`--disable-debug`: This option causes the package to be compiled without debugging code.

`--disable-dependency-tracking`: This option speeds up one time builds.

Contents

Installed Programs:	artsd, artswrapper, artsshell, artsplay, artsdsp, artscat, arts-control, artsc-config, and mcpid1
Installed Libraries:	aRts libraries
Installed Directories:	kde/bin, kde/include, and kde/lib

Short Descriptions

artsd	is a daemon that provides access to the sound hardware resources.
artswrapper	is a small wrapper program which simply sets real-time priority (running as <code>root</code>) and then executes artsd as a non-root user.
artsshell	is intended as a utility to perform miscellaneous functions related to the sound server.
artsplay	is a simple utility to play a sound file.
artsdsp	provides an interim solution that allows most of legacy sound applications to run unchanged.
artscat	is a simple utility to send raw audio data to the sound server.
artscontrol	is a graphical utility for performing a number of tasks related to the sound server.
artsc-config	is a utility to assist developers using the aRts C API.
mcpid1	is the Interface Definition Language (IDL) file compiler for MCOP, the Multimedia Communication Protocol used by aRts.
aRts Libraries	contains functions that support aRts programs.

To find out information about aRts and the various programs included in the package, see *The aRts Handbook*. For information in languages other than English, see the KDE Documentation and navigate to the aRts documentation in your language.

Kdelibs-3.4.1

Introduction to Kdelibs

This package includes programs and 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/3.4.1/src/kdelibs-3.4.1.tar.bz2>
- Download (FTP): <ftp://ftp.kde.org/pub/kde/stable/3.4.1/src/kdelibs-3.4.1.tar.bz2>
- Download MD5 sum: 67224e6b55856c23b0a162cab17dd1b4
- Download size: 16.1 MB
- Estimated disk space required: 265 MB (additional 232 MB for API docs)
- Estimated build time: 19.3 SBU (additional 14.4 SBU for API docs)

Kdelibs Dependencies

Required

aRts-1.4.1

Recommended

libjpeg-6b, libart_lgpl-2.3.17, libxml2-2.6.20, libxslt-1.1.14, PCRE-6.1, FAM-2.7.0, OpenSSL-0.9.7g, and Libidn

Optional

libtiff-3.7.3, Aspell-0.60.3, CUPS-1.1.23, OpenLDAP-2.2.24, ALSA-1.0.9, Heimdal-0.7 or MIT krb5-1.4.1, OpenEXR, JasPer, GraphViz, and Doxygen-1.4.3

Installation of Kdelibs

Install kdelibs with:

```
./configure --prefix=$KDE_PREFIX --disable-debug \  
--disable-dependency-tracking --enable-fast-malloc=full &&  
make
```



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.

The **make apidox** command generates a lot of errors and warnings. In some cases it complains that Helvetica fonts are missing and substitutes a font that does not fit boxes properly. You can add the font by downloading the URW Fonts and unpacking them into `~/ .fonts`. **fc-cache** should also be run to update the font properties on your system.

The documents generated are html and are found in
`$KDE_PREFIX/share/doc/HTML/en/kdelibs-apidocs`.

Now, as the root user:

```
make install
```

Command Explanations

--prefix=\$KDE_PREFIX: This option tells the process to install the package in `$KDE_PREFIX`.

--disable-debug: This option causes the package 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.

Contents

Installed Programs: Numerous KDE support programs

Installed Libraries: Numerous KDE libraries

Installed Directories: `kde/share` and `kde/etc`

Short Descriptions

KDE Support Programs contain essential support programs needed by other KDE applications.

KDE Libraries contain essential functions that are needed by KDE applications.

The number of programs and libraries installed by `kdelibs` prohibits an explanation of each one in this section. Instead, see the KDE Documentation.

Kdebase-3.4.1

Introduction to Kdebase

kdebase is the last mandatory package required for the K Desktop Environment. It provides various applications, infrastructure files and libraries.

Package Information

- Download (HTTP): <http://mirrors.isc.org/pub/kde/stable/3.4.1/src/kdebase-3.4.1.tar.bz2>
- Download (FTP): <ftp://ftp.kde.org/pub/kde/stable/3.4.1/src/kdebase-3.4.1.tar.bz2>
- Download MD5 sum: 8fbe0b943721b79f2549064b580acdde
- Download size: 21.4 MB
- Estimated disk space required: 262 MB (additional 15 MB for API docs)
- Estimated build time: 19.2 SBU (additional 0.5 SBU for API docs)

Kdebase Dependencies

Required

kdelibs-3.4.1

Recommended

libjpeg-6b, libart_lgpl-2.3.17, libxml2-2.6.20, OpenSSL-0.9.7g, and JDK-1.5.0

Optional

libtiff-3.7.3, LessTif-0.94.4, Linux-PAM-0.80, OpenLDAP-2.2.24, Cyrus SASL-2.1.21, Samba-3.0.14a, Heimdal-0.7 or MIT krb5-1.4.1, krb4, Mtools, libraw1394, lm_sensors, JasPer, GraphViz, and Doxygen-1.4.3

Installation of Kdebase

Note: You should ensure a `nogroup` group exists on your system before performing the **make install** command, as kdebase installs a program (`$KDE_PREFIX/bin/kdesud`) with group ownership of `nogroup`.

Install kdebase with:

```
./configure --prefix=$KDE_PREFIX --disable-debug \  
--disable-dependency-tracking &&  
make
```



Note

If you wish to create the API documentation and you have Doxygen and GraphViz installed, **make apidox** must be done before **make install**.

Now, as the `root` user:

```
make install
```

Contents

Installed Programs:	kate, kcontrol, kdebugdialog, kdeprint, kdesu, kdm, kfind, khelpcenter, kicker, kinfocenter, kioslave, klipper, kmenuedit, konqueror, konsole, kpager, ksplashml, ksysguard, kwrite, and kxkb
Installed Libraries:	None
Installed Directories:	None

Short Descriptions

kate	is a programmer's text editor for KDE.
kcontrol	is the KDE Control Center.
kdebugdialog	is a dialog box for managing diagnostic messages at runtime.
kdeprint	is the printing module in KDE. It manages the actual printing from KDE applications, It handles print job administration and handles printer and print system management.
kdesu	is a graphical front end for the Unix su command.
kdm	is the KDE display manager (a replacement for xdm).
kfind	is a utility to find files.
khelpcenter	is the KDE help tool.
kicker	is the KDE control panel.
kinfocenter	provides a centralized and convenient overview of your KDE and system settings.
kioslaves	are support programs designed to be intimately familiar with a certain protocol, so that a standard interface can be used to get at data from any number of places. Examples are the http and ftp kioslaves, which will retrieve data from an http or ftp server respectively.
klipper	is a clipboard utility.
kmenuedit	is a utility to rearrange or add items to the K-menu.
konqueror	is a filesystem and web browser.
konsole	is a highly configurable X terminal emulator.
kpager	provides a thumbnail view of all virtual desktops.
ksplashml	is a splash screen that shows the progress of an application that is loading.
ksysguard	is a network enabled task manager and system monitor application, with the additional functionality of top .
kwrite	is a text editor for KDE.

xxkb is a keyboard layout switching utility based on the X11 xkb extension.

Configuring the Core KDE Packages

Back up your existing `~/ .xinitrc` file and create a new `.xinitrc` file to start KDE:

```
echo "exec startkde" > ~/.xinitrc
```

If you installed the `desktop-file-utils-0.10` package, update the MIME-type application database (as `root`):

```
update-desktop-database
```

Ensure all libraries can be found with (as `root`):

```
ldconfig
```

At this point you can bring up KDE with:

```
startx
```

Chapter 29. KDE Additional Packages

Each of the packages in this chapter depend on the base KDE installation procedures, but each is an independent group of programs that can be optionally installed. Few users will want to install every package, but instead review and install only the ones desired.

Kdeadmin-3.4.1

Introduction to Kdeadmin

Package Information

- Download (HTTP): <http://mirrors.isc.org/pub/kde/stable/3.4.1/src/kdeadmin-3.4.1.tar.bz2>
- Download (FTP): <ftp://ftp.kde.org/pub/kde/stable/3.4.1/src/kdeadmin-3.4.1.tar.bz2>
- Download MD5 sum: ee02e3caf664d825838698b44557b0ef
- Download size: 1.5 MB
- Estimated disk space required: 20.3 MB
- Estimated build time: 2.1 SBU

Kdeadmin Dependencies

Required

kdebase-3.4.1

Recommended

libjpeg-6b and libxml2-2.6.20

Optional

Linux-PAM-0.80 and LILO

Installation of Kdeadmin

Install kdeadmin with:

```
./configure --prefix=$KDE_PREFIX --disable-debug \
  --disable-dependency-tracking &&
make
```

Now, as the root user:

```
make install
```

Contents

Installed Programs: kcron, kdat, kpackage, ksysv, and kuser

Installed Libraries: None

Installed Directories: None

Short Descriptions

kcron is a task scheduler.
kdat is a tar-based tape archiver.
kpackage is a package manager.
ksysv is a Sys V-Init editor.
kuser is a graphical user manager.

Kdenetwork-3.4.1

Introduction to Kdenetwork

Package Information

- Download (HTTP): <http://mirrors.isc.org/pub/kde/stable/3.4.1/src/kdenetwork-3.4.1.tar.bz2>
- Download (FTP): <ftp://ftp.kde.org/pub/kde/stable/3.4.1/src/kdenetwork-3.4.1.tar.bz2>
- Download MD5 sum: cfdec84537bd20f032b9b27c74bc28ba
- Download size: 7.1 MB
- Estimated disk space required: 156 MB
- Estimated build time: 13.0 SBU

Kdenetwork Dependencies

Required

kdebase-3.4.1

Recommended

libjpeg-6b, libxml2-2.6.20, libxslt-1.1.14, and OpenSSL-0.9.7g

Optional

PPP-2.4.3, XMMS-1.2.10, Doxygen-1.4.3, OpenSLP, Wireless Tools, libgadu, GraphViz, and Valgrind

Installation of Kdenetwork

Install kdenetwork with:

```
./configure --prefix=$KDE_PREFIX --disable-debug \
  --disable-dependency-tracking &&
make
```

Now, as the root user:

```
make install
```

Configuring Kdenetwork

Config Files

/etc/lisarc and ~/.lisarc

Configuration Information

To utilize the LAN Browser of **konqueror** you will need to create the /etc/lisarc file and start the **lisa** daemon. Create /etc/lisarc by filling out the information in the “Guided LISa Setup” section of the “LISa Daemon” tab on the “Control Center” — “Internet & Network” — “Local Network Browsing” dialog box.

Install the `/etc/rc.d/init.d/lisa` init script included in the `blfs-bootscripts-6.1` package.

```
make install-lisa
```

There is no explicit configuration for the rest of the `kdenetwork` package, however some individual programs need to be set up with user information.

Contents

Installed Programs:	<code>kdick</code> , <code>kget</code> , <code>knewsticker</code> , <code>kopete</code> , <code>kpf</code> , <code>kppp</code> , <code>krdc</code> , <code>krfb</code> , <code>ksirc</code> , <code>ktalkd</code> , <code>kwifimanager</code> , and <code>lisa</code>
Installed Libraries:	None
Installed Directories:	None

Short Descriptions

kdick	is a graphical client for the Dictionary Server Protocol (DICT).
kget	allows you to group downloads.
knewsticker	is a news applet for the KDE Application Launcher Panel.
kopete	is KDE's multi-protocol instant messenger client.
kpf	allows you to share files over a network.
kppp	is a dial-up utility.
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	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	is a chat client.
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	is used to configure and monitor wireless LAN cards.
lisa	is intended to provide a kind of network neighborhood, but only relying on the TCP/IP protocol stack.

Kdepim-3.4.1

Introduction to Kdepim

Package Information

- Download (HTTP): <http://mirrors.isc.org/pub/kde/stable/3.4.1/src/kdepim-3.4.1.tar.bz2>
- Download (FTP): <ftp://ftp.kde.org/pub/kde/stable/3.4.1/src/kdepim-3.4.1.tar.bz2>
- Download MD5 sum: e5515aa230558bac8651e9cd9f8f9673
- Download size: 10.8 MB
- Estimated disk space required: 239 MB (additional 22 MB for API docs)
- Estimated build time: 26 SBU (additional 0.5 SBU for API docs)

Additional Downloads

- Required patch: <http://mirrors.isc.org/pub/kde/stable/3.4.1/src/kdepim-kpilot-fix.diff>

Kdepim Dependencies

Required

kdebase-3.4.1

Recommended

libjpeg-6b, libxml2-2.6.20, GnuPG-1.4.1 and OpenSSL-0.9.7g

Optional

pilot-link-0.11.8, GPGME-0.9.x (requires Libgpg-error then Libgcrypt then Libassuan then Libksba, pinentry, Pth, OpenSC and then GnuPG-1.9.x), libmal, gnokii, Bluetooth hardware and driver libraries, GraphViz, and Doxygen-1.4.3

Installation of Kdepim

Install kdepim with:

```
pushd kpilot &&
patch -Np0 -i ../../kdepim-kpilot-fix.diff &&
popd &&
./configure --prefix=$KDE_PREFIX --disable-debug \
  --disable-dependency-tracking &&
make
```



Note

If you wish to create the API documentation and you have Doxygen and GraphViz installed, **make apidox** must be done before **make install**.

Now, as the `root` user:

```
make install
```

Contents

Installed Programs:	kaddressbook, kalarm, kandy, karm, kgpgcertmanager, kmail, knode, knotes, konsolekalendar, kontakt, korganizer, korn, and kpilot
Installed Libraries:	Numerous kdeim specific libraries
Installed Directories:	Numerous subdirectories in <code>\$KDE_PREFIX/{include,share}</code>

Short Descriptions

kaddressbook	is the KDE address book.
kalarm	is a system to provide reminder messages.
kandy	is a program to synchronize mobile phone numbers.
karm	is a personal time tracker.
kgpgcertmanager	is a tool for managing X509 certificates.
kmail	is KDE's email client.
knode	is the KDE newsreader.
knotes	is a popup notes utility.
konsolehelper	is a command line interface to KDE calendars.
kontakt	is the integrated solution to personal information management (PIM) needs.
korganizer	is a personal calendar/todo system.
korn	is a KDE mail checker that has the capabilities to dock itself to kicker .
kpilot	is a program to synchronize a Palm-Pilot.

Kdemultimedia-3.4.1

Introduction to Kdemultimedia

Package Information

- Download (HTTP): <http://mirrors.isc.org/pub/kde/stable/3.4.1/src/kdemultimedia-3.4.1.tar.bz2>
- Download (FTP): <ftp://ftp.kde.org/pub/kde/stable/3.4.1/src/kdemultimedia-3.4.1.tar.bz2>
- Download MD5 sum: db69c9ab845c8295f095dc6394fba047
- Download size: 5.3 MB
- Estimated disk space required: 117 MB
- Estimated build time: 12.4 SBU

Kdemultimedia Dependencies

Required

kdebase-3.4.1

Recommended

libjpeg-6b, libxml2-2.6.20, ALSA-1.0.9, and libmad-0.15.1b

Optional

CDParanoia-III-9.8, LAME-3.96.1, Audio File-0.2.6, libogg-1.1.2, libvorbis-1.1.1, xine Libraries-1.0.1, FLAC-1.1.2, Speex-1.0.5, SDL-1.2.8, GStreamer-0.8.10 (with KGst), TagLib, libmusicbrainz, TRM Generator, and TunePimp

Installation of Kdemultimedia

Install kdemultimedia with:

```
./configure --prefix=$KDE_PREFIX --disable-debug \
  --disable-dependency-tracking &&
make
```

Now, as the root user:

```
make install
```

Contents

- | | |
|-------------------------------|----------------------------------------------------------------|
| Installed Programs: | artsbuilder, juk, kaboodle, kmid, kmix, krec, kscd, and noatun |
| Installed Libraries: | Numerous kdemultimedia specific libraries |
| Installed Directories: | Several subdirectories of \$KDE_PREFIX/{include,share} |

Short Descriptions

artsbuilder	is a tool to create new structures of small connected aRts modules.
juk	is a jukebox, tagger, and music collection manager.
kaboodle	is a multimedia player.
kmid	is a midi/karaoke player.
kmix	is a sound mixer.
krec	is a recording frontend for aRts.
kscd	is a CD player.
noatun	is another multimedia player.

Kdegraphics-3.4.1

Introduction to Kdegraphics

Package Information

- Download (HTTP): <http://mirrors.isc.org/pub/kde/stable/3.4.1/src/kdegraphics-3.4.1.tar.bz2>
- Download (FTP): <ftp://ftp.kde.org/pub/kde/stable/3.4.1/src/kdegraphics-3.4.1.tar.bz2>
- Download MD5 sum: d91ef530a416bd8407abb28103bc049c
- Download size: 6.3 MB
- Estimated disk space required: 103 MB
- Estimated build time: 8.7 SBU

Kdegraphics Dependencies

Required

kdebase-3.4.1

Recommended

libjpeg-6b, libxml2-2.6.20, and libart_lgpl-2.3.17

Optional

libtiff-3.7.3, Imlib-1.9.15, lcms-1.14, SANE-1.0.15, Xpdf-3.00pl3, TeX-3.0, FriBidi-0.10.5, gPhoto2, t1lib, OpenEXR, and libpaper

Installation of Kdegraphics

Install kdegraphics with:

```
./configure --prefix=$KDE_PREFIX --disable-debug \  
--disable-dependency-tracking &&  
make
```

Now, as the root user:

```
make install
```

Contents

- Installed Programs:** kcoloredit, kdvi, kfax, kgamma, kghostview, kiconedit, kooka, kpaint, kpdf, kpovmodeler, kruler, ksnapshot, kuickshow, and kview
- Installed Libraries:** kio_kamera and several other kdegraphics specific libraries
- Installed Directories:** Several subdirectories in \$KDE_PREFIX/share

Short Descriptions

kcoloredit	is a color pallette editor.
kdvi	is a DVI viewer.
kfax	is a FAX viewer.
kgamma	is a simple tool for monitor gamma correction.
kghostview	is a PS/PDF viewer.
kiconedit	is an icon editor.
kooka	is a raster image scan program.
kpaint	is a paint program.
kpovmodeler	is a graphical 3D modeler, which can generate scenes for POV-Ray.
kruler	is a screen ruler.
ksnapshot	is a screen capture program.
kuickshow	is an image viewer.
kview	is another image viewer.
kio_kamera	is an io slave that allows you to view and download images from a digital camera using the kamera: / URL in konqueror.

Kdeutils-3.4.1

Introduction to Kdeutils

Package Information

- Download (HTTP): <http://mirrors.isc.org/pub/kde/stable/3.4.1/src/kdeutils-3.4.1.tar.bz2>
- Download (FTP): <ftp://ftp.kde.org/pub/kde/stable/3.4.1/src/kdeutils-3.4.1.tar.bz2>
- Download MD5 sum: 0c3ef37a96ce9f5b0b3ee5d0b31ef4e4
- Download size: 2.2 MB
- Estimated disk space required: 55 MB
- Estimated build time: 5.3 SBU

Kdeutils Dependencies

Required

kdebase-3.4.1

Recommended

libjpeg-6b and libxml2-2.6.20

Optional

Net-SNMP and tpcpl

Installation of Kdeutils

Install kdeutils with:

```
./configure --prefix=$KDE_PREFIX --disable-debug \  
--disable-dependency-tracking &&  
make
```

Now, as the root user:

```
make install
```

Contents

- Installed Programs:** ark, irkick, kcalc, kcharselect, kcmlirc, kdepaswd, kdf, kedit, kfloppy, kggg, khexedit, kjots, ksim, kregexpeditor, ktimer, and kwallet
- Installed Libraries:** Several kdeutils specific libraries
- Installed Directories:** Several subdirectories in \$KDE_PREFIX/share

Short Descriptions

ark	is an archiving tool.
irkick	is the infrastructure for KDE's Infrared Remote Control functionality; irkick is the server component of that infrastructure.
kcalc	is a scientific calculator.
kchselect	is a character selector applet.
kdepasswd	is a password managing utility.
kdf	is a disk usage viewer.
kedit	is a text editor.
kfloppy	is a floppy formatter.
kgpg	a simple graphical interface for GnuPG-1.4.1.
khexedit	is a binary editor.
kjots	is a note taker.
kregexpeditor	is an editor for editing regular expressions in a graphical style (in contrast to the ASCII syntax).
ktimer	is a task scheduler.

Kdeedu-3.4.1

Introduction to Kdeedu

Package Information

- Download (HTTP): <http://mirrors.isc.org/pub/kde/stable/3.4.1/src/kdeedu-3.4.1.tar.bz2>
- Download (FTP): <ftp://ftp.kde.org/pub/kde/stable/3.4.1/src/kdeedu-3.4.1.tar.bz2>
- Download MD5 sum: 9fa1db1cf500c0fc594b0f5d291bbf69
- Download size: 22.9 MB
- Estimated disk space required: 171 MB
- Estimated build time: 10.4 SBU

Kdeedu Dependencies

Required

kdebase-3.4.1

Recommended

libjpeg-6b and libxml2-2.6.20

Optional

Boost.Python

Installation of Kdeedu

Install kdeedu with:

```
./configure --prefix=$KDE_PREFIX --disable-debug \
  --disable-dependency-tracking &&
make
```

Now, as the root user:

```
make install
```

Contents

- Installed Programs:** flashkard, kalzium, kbruch, keduca, khangman, kig, kiten, klettres, kmathtool, kmessedwords, kmpplot, kpercentage, kstars, ktouch, kverbos, and kvoctrain
- Installed Libraries:** Several kdeedu specific libraries
- Installed Directories:** Several subdirectories of \$KDE_PREFIX/share

Short Descriptions

kalzium	is a program which shows you the Periodic System of Elements.
kbruch	is a small program to generate tasks with fractions.
keduca	is flash card application, which allows you to make interactive form based tests..
khangman	is the classical hangman game for children, adapted for KDE.
kig	is a KDE application for Interactive Geometry.
kiten	is a Japanese reference/study tool for KDE.
klettres	is an alphabet tutor (French).
kmessedwords	is a simple mind-training word game.
kmplot	is a mathematical function plotter for KDE.
kpercentage	is a small math application that will help pupils to improve their skills in calculating percentages.
kstars	is a desktop planetarium.
ktouch	is a touch typing tutor.
kverbos	is an application specially designed to study Spanish verb forms.
kvoctrain	is a vocabulary trainer.

Kdesdk-3.4.1

Introduction to Kdesdk

Package Information

- Download (HTTP): <http://mirrors.isc.org/pub/kde/stable/3.4.1/src/kdesdk-3.4.1.tar.bz2>
- Download (FTP): <ftp://ftp.kde.org/pub/kde/stable/3.4.1/src/kdesdk-3.4.1.tar.bz2>
- Download MD5 sum: b7073f0f4ac7efe4d6ff33c1ba527668
- Download size: 4.4 MB
- Estimated disk space required: 101 MB
- Estimated build time: 9.1 SBU

Kdesdk Dependencies

Required

kdebase-3.4.1

Recommended

libjpeg-6b, libxml2-2.6.20, and Berkeley DB-4.3.28

Installation of Kdesdk

Install kdesdk with:

```
./configure --prefix=$KDE_PREFIX --disable-debug \
--disable-dependency-tracking &&
make
```

Now, as the root user:

```
make install
```

Contents

- Installed Programs:** cervisia, kbabel, kcacheग्रind, kompare, and umbrello
- Installed Libraries:** Several kdesdk specific libraries
- Installed Directories:** Several subdirectories in \$KDE_PREFIX/{include,share}

Short Descriptions

- cervisia** provides a graphical view of CVS.
- kbabel** is a suite of an advanced PO file editor comprising **kbabel**, a multi functional **catalogmanager** and a dictionary for translators **kbabeldict**.

kcachegrind is a KDE frontend for **cachegrind**, part of Valgrind.
kompare is a program to view the differences between files.
umbrello is a UML modelling diagram tool.

Kdevelop-3.2.1

Introduction to Kdevelop

Package Information

- Download (HTTP): <http://mirrors.isc.org/pub/kde/stable/3.4.1/src/kdevelop-3.2.1.tar.bz2>
- Download (FTP): <ftp://ftp.kde.org/pub/kde/stable/3.4.1/src/kdevelop-3.2.1.tar.bz2>
- Download MD5 sum: 7a5e9f2fb8a9539a41541dba566a234a
- Download size: 8.0 MB
- Estimated disk space required: 191 MB (additional 14.6 MB for API docs)
- Estimated build time: 16.6 SBU (additional 1.4 SBU for API docs)

Kdevelop Dependencies

Required

kdebase-3.4.1

Recommended

libjpeg-6b and libxml2-2.6.20

Optional

Python-2.4.1, DocBase, GraphViz, and Doxygen-1.4.3

Installation of Kdevelop

Install kdevelop with:

```
./configure --prefix=$KDE_PREFIX --disable-debug \
  --disable-dependency-tracking &&
make
```



Note

If you wish to create the API documentation and you have Doxygen and GraphViz installed, **make apidox** must be done before **make install**. You'll also need to run **make install-apidox** to install the API documentation.

Now, as the root user:

```
make install &&
chown -v -R root:root $KDE_PREFIX/kdevbdb
```

Command Explanations

chown -v -R root:root \$KDE_PREFIX/kdevbdb: If kdevelop is built by any user other than root the

installed Berkeley-DB files will have incorrect ownership. This command changes the ownership to root:root.

Contents

Installed Programs:	kdevelop and supporting programs
Installed Libraries:	Supporting kdevelop libraries
Installed Directories:	<code>\$KDE_PREFIX/kdevbdb</code> and supporting subdirectories in <code>\$KDE_PREFIX/{include,share}</code>

Short Descriptions

kdevelop is an Integrated Development Environment to be used for a wide variety of programming tasks in many programming languages.

Kdewebdev-3.4.1

Introduction to Kdewebdev

Package Information

- Download (HTTP): <http://mirrors.isc.org/pub/kde/stable/3.4.1/src/kdewebdev-3.4.1.tar.bz2>
- Download (FTP): <ftp://ftp.kde.org/pub/kde/stable/3.4.1/src/kdewebdev-3.4.1.tar.bz2>
- Download MD5 sum: d5c9e5c72731aead950ab29a4d620af8
- Download size: 5.7 MB
- Estimated disk space required: 100 MB
- Estimated build time: 8.8 SBU

Kdewebdev Dependencies

Required

kdebase-3.4.1

Recommended

libjpeg-6b, libxml2-2.6.20, and libxslt-1.1.14

Installation of Kdewebdev

Install kdewebdev with:

```
./configure --prefix=$KDE_PREFIX --disable-debug \
  --disable-dependency-tracking &&
make
```

Now, as the root user:

```
make install
```

Contents

- Installed Programs:** kxsldbg and quanta
- Installed Libraries:** kdewebdev specific libraries
- Installed Directories:** Several subdirectories in \$KDE_PREFIX/share

Short Descriptions

- kxsldbg** is a GUI front-end to **xsldbg**, the XSLT debugger.
- quanta** is a web development tool 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-3.4.1

Introduction to Kdebindings

Package Information

- Download (HTTP): <http://mirrors.isc.org/pub/kde/stable/3.4.1/src/kdebindings-3.4.1.tar.bz2>
- Download (FTP): <ftp://ftp.kde.org/pub/kde/stable/3.4.1/src/kdebindings-3.4.1.tar.bz2>
- Download MD5 sum: 18a4e2c42d34bb86279e691498482951
- Download size: 6.9 MB
- Estimated disk space required: 517 MB
- Estimated build time: 29 SBU

Kdebindings Dependencies

Required

kdebase-3.4.1

Recommended

libjpeg-6b, libxml2-2.6.20, and libxslt-1.1.14

Optional

Glib-1.2.10, GTK+-1.2.10, Python-2.4.1, Ruby-1.8.2, JDK-1.5.0, Mozilla-1.7.8, Mono, DotGNU Portable.NET, and Rotor

Installation of Kdebindings

Note: If KDE is installed in `/opt/kde-3.4.1`, you'll need to make a modification before the build using the following command:

```
sed -i -e 's@/usr@/opt/kde-3.4.1@' \
python/pykde/configure.py
```

Install kdebindings with:

```
./configure --prefix=$KDE_PREFIX --disable-debug \
--disable-dependency-tracking &&
make
```

Now, as the root user:

```
make install
```

Contents

Installed Programs: Several support programs for software development

Installed Libraries: KDE bindings for various programming languages

Installed Directories: Subdirectories of /usr/lib and \$KDE_PREFIX/share

Kdeaccessibility-3.4.1

Introduction to Kdeaccessibility

Package Information

- Download (HTTP): <http://mirrors.isc.org/pub/kde/stable/3.4.1/src/kdeaccessibility-3.4.1.tar.bz2>
- Download (FTP): <ftp://ftp.kde.org/pub/kde/stable/3.4.1/src/kdeaccessibility-3.4.1.tar.bz2>
- Download MD5 sum: a8f51420c214bbf36efa54c99e24fdd9
- Download size: 7.1 MB
- Estimated disk space required: 52 MB
- Estimated build time: 2.6 SBU

Kdeaccessibility Dependencies

Required

kdebase-3.4.1

Recommended

libjpeg-6b and libxml2-2.6.20

Optional

A text-to-speech synthesis program such as FreeTTS-1.2.1 or Festival is required by **kmouth** to render speech.

Installation of Kdeaccessibility

Install kdeaccessibility with:

```
./configure --prefix=$KDE_PREFIX --disable-debug \  
--disable-dependency-tracking &&  
make
```

Now, as the root user:

```
make install
```

Contents

Installed Programs:	kmag, kmousetool, and kmouth
Installed Libraries:	kdeaccessibility support libraries
Installed Directories:	None

Short Descriptions

kmag is a screen magnifier for KDE.
kmousetool is a utility which clicks the mouse whenever the mouse cursor pauses briefly.
kmouth is an application that enables persons that cannot speak to let their computers speak.

Kde toys-3.4.1

Introduction to Kde toys

Package Information

- Download (HTTP): <http://mirrors.isc.org/pub/kde/stable/3.4.1/src/kde toys-3.4.1.tar.bz2>
- Download (FTP): <ftp://ftp.kde.org/pub/kde/stable/3.4.1/src/kde toys-3.4.1.tar.bz2>
- Download MD5 sum: 8c9ad215fe076942bc9195eca5a9175f
- Download size: 3.1 MB
- Estimated disk space required: 21.6 MB
- Estimated build time: 0.9 SBU

Kde toys Dependencies

Required

kdebase-3.4.1

Recommended

libjpeg-6b and libxml2-2.6.20

Installation of Kde toys

Install kde toys with:

```
./configure --prefix=$KDE_PREFIX --disable-debug \
--disable-dependency-tracking &&
make
```

Now, as the root user:

```
make install
```

Contents

Installed Programs: amor, kmoon, kodo, kteatime, ktux, kweather, and kworldclock
Installed Libraries: kde toys support libraries
Installed Directories: Support subdirectories in \$KDE_PREFIX/share

Short Descriptions

amor Amusing Misuse of Resources.
kmoon is a Moon phase indicator.
kodo measures your desktop mileage.

kteatime	times your tea brewing.
ktux	small Tux crossing stars.
kworlclock	shows which parts of the world are currently experiencing daylight, and which parts are currently in night. It also shows the current time in a range of cities around the world.

Kdegames-3.4.1

Introduction to Kdegames

Package Information

- Download (HTTP): <http://mirrors.isc.org/pub/kde/stable/3.4.1/src/kdegames-3.4.1.tar.bz2>
- Download (FTP): <ftp://ftp.kde.org/pub/kde/stable/3.4.1/src/kdegames-3.4.1.tar.bz2>
- Download MD5 sum: 6af3f45a1c959324c44d4b08bd552f16
- Download size: 9.0 MB
- Estimated disk space required: 95 MB (additional 5.7 MB for API docs)
- Estimated build time: 5.9 SBU (additional 0.4 SBU for API docs)

Kdegames Dependencies

Required

kdebase-3.4.1

Recommended

libjpeg-6b and libxml2-2.6.20

Optional

GraphViz and Doxygen-1.4.3

Installation of Kdegames

Install kdegames with:

```
./configure --prefix=$KDE_PREFIX --disable-debug \
  --disable-dependency-tracking &&
make
```



Note

If you wish to create the API documentation and you have Doxygen and GraphViz installed, **make apidox** must be done before **make install**.

Now, as the root user:

```
make install
```

Contents

Installed Programs: a compilation of various games
Installed Libraries: Support libraries for kdegames

Installed Directories: Subdirectories of `$KDE_PREFIX/{include,share}`

Kdeartwork-3.4.1

Introduction to Kdeartwork

Package Information

- Download (HTTP): <http://mirrors.isc.org/pub/kde/stable/3.4.1/src/kdeartwork-3.4.1.tar.bz2>
- Download (FTP): <ftp://ftp.kde.org/pub/kde/stable/3.4.1/src/kdeartwork-3.4.1.tar.bz2>
- Download MD5 sum: 0f58245c2fa3c58dbe139da43037a203
- Download size: 17.3 MB
- Estimated disk space required: 99 MB
- Estimated build time: 1.5 SBU

Kdeartwork Dependencies

Required

kdebase-3.4.1

Recommended

libjpeg-6b, libxml2-2.6.20, and libart_lgpl-2.3.17

Optional

XScreenSaver-4.21

Installation of Kdeartwork

Install kdeartwork with:

```
./configure --prefix=$KDE_PREFIX --disable-debug \
  --disable-dependency-tracking &&
make
```

Now, as the root user:

```
make install
```

Contents

Installed Objects:	additional themes, screensavers, sounds, backgrounds, and widget styles for KDE
Installed Programs:	None
Installed Libraries:	None
Installed Directories:	None

Kdeaddons-3.4.1

Introduction to Kdeaddons

Package Information

- Download (HTTP): <http://mirrors.isc.org/pub/kde/stable/3.4.1/src/kdeaddons-3.4.1.tar.bz2>
- Download (FTP): <ftp://ftp.kde.org/pub/kde/stable/3.4.1/src/kdeaddons-3.4.1.tar.bz2>
- Download MD5 sum: 596c3a7f4ef43e2f0bd760196a6b119b
- Download size: 1.6 MB
- Estimated disk space required: 40 MB
- Estimated build time: 3.1 SBU

Kdeaddons Dependencies

Required

kdebase-3.4.1

Recommended

libjpeg-6b and libxml2-2.6.20

Optional

kdenetwork-3.4.1, kdemultimedia-3.4.1, kdepim-3.4.1, kdegames-3.4.1, Berkeley DB-4.3.28, XMMS-1.2.10, and SDL-1.2.8

Installation of Kdeaddons

Install kdeaddons with:

```
./configure --prefix=$KDE_PREFIX --disable-debug \  
--disable-dependency-tracking &&  
make
```

Now, as the root user:

```
make install
```

Contents

Installed Programs:	Miscellaneous KDE support programs
Installed Libraries:	Additional plugins, libraries, and scripts for KDE applications
Installed Directories:	None

Kde-i18n-3.4.1

Introduction to Kde-i18n

Package Information

- Download (HTTP): <http://mirrors.isc.org/pub/kde/stable/3.4.1/src/kde-i18n/>
- Download (FTP): <ftp://ftp.kde.org/pub/kde/stable/3.4.1/src/kde-i18n/>
- Download MD5 sum: <http://mirrors.isc.org/pub/kde/stable/3.4.1/src/MD5SUMS>
- Download size: 789 KB to 29 MB (average is about 3 MB)
- Estimated disk space required: varies
- Estimated build time: varies

Download Details

KDE has 52 separate internationalization packages in the form of:

```
kde-i18n-[xx]-3.4.1.tar.bz2
```

where the `[xx]` is a two to five letter code for the country covered. Download the package(s) you need from the directories above.

Kde-i18n Dependencies

Required

kdebase-3.4.1

Recommended

libxml2-2.6.20

Installation of Kde-i18n

Install kde-i18n with:

```
./configure --prefix=$KDE_PREFIX &&  
make
```

Now, as the root user:

```
make install
```

Configuring Kde-i18n

Configuration Information

To use translated programs, select Control Center —> Personalization —> Country & Language —> Language in your K Desktop Environment.

Contents

Installed Programs:	None
Installed Libraries:	Internationalization support for KDE
Installed Directories:	None

Part IX. GNOME

Introduction to GNOME

This chapter presents the instructions to install a complete GNOME-2.10.1 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 follow the build order defined by the GNOME development team as published in previous versions of the release notes. Note that the development team did not publish a build order for the 2.10.1 release.

The installation of GNOME-2.10.1 is a large undertaking and one we would like to see you complete with the least amount of stress. One of the first goals in this installation is to protect your previously installed software, especially if you are testing GNOME on your machine. GNOME-2.10 packages utilize the `--prefix=option` passed to **configure**, so you will use that and an environment variable (`GNOME_PREFIX`) to add flexibility to the installation.

To install GNOME as your desktop of choice, it is recommended that you install using `--prefix=/usr`. If you are not sure that you are going to keep the GNOME installation, or you think you will update to the newest releases as they become available, you should install with `--prefix=/opt/gnome-2.10`. Setting the environment variable and the additional edits required by the second option are covered on the pre-installation page.

If you choose the second option, removal of GNOME-2.10.1 is as easy as removing the edits from the pre-installation page and issuing the following command:

```
rm -rf /opt/gnome-2.10
```

If your system was completely built per LFS and BLFS instructions, you have a very good chance of using GNOME-2.10.1 after your first installation. 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-2.10.1 into your unique setup, but you will have to install almost 50 packages before you can run GNOME through any testing (assuming your window manager is preinstalled and tested). You should 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
```

Now, as the root user:

```
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-2.10.1.

Chapter 30. GNOME Core Packages

This section contains required elements of the GNOME environment to display a functional desktop.



Caution

The BLFS team recommends that you carefully evaluate the optional dependencies listed for each of the core GNOME packages. You may lose desired functionality if you don't install an optional dependency before the package that lists the dependency, even if you later install it.

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, or install it in an easy to remove location:

```
export GNOME_PREFIX=/opt/gnome-2.10
```

Remember to execute **ldconfig** as the **root** user 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=$PATH:/opt/gnome-2.10/bin
export PKG_CONFIG_PATH=$PKG_CONFIG_PATH:/opt/gnome-2.10/lib/pkgconfig
export GNOME_LIBCONFIG_PATH=/usr/lib:/opt/gnome-2.10/lib
```

Add to your `/etc/ld.so.conf`:

```
cat >> /etc/ld.so.conf << "EOF"
# Begin gnome addition to /etc/ld.so.conf

/opt/gnome-2.10/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-2.10/man

# End gnome addition to man.conf
EOF
```

ORBit2-2.12.2

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/ORBit2/2.12/ORBit2-2.12.2.tar.bz2>
- Download (FTP): <ftp://ftp.gnome.org/pub/GNOME/sources/ORBit2/2.12/ORBit2-2.12.2.tar.bz2>
- Download MD5 sum: 7f963dcd0d84e6854460449383cc8c70
- Download size: 678 KB
- Estimated disk space required: 32 MB
- Estimated build time: 0.7 SBU (additional 0.2 SBU to run the test suite)

ORBit2 Dependencies

Required

libIDL-0.8.5 and popt-1.7-5

Optional

GTK-Doc-1.3 and OpenSSL-0.9.7g

Installation of ORBit2

Install ORBit2 by running the following commands:

```
./configure --prefix=$GNOME_PREFIX --sysconfdir=/etc/gnome &&  
make
```

To test the results, issue: **make check**.

Now, as the `root` user:

```
make install
```

Command Explanations

`--prefix=$GNOME_PREFIX`: This is the Base installation for GNOME-2 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 Chapter.

`--sysconfdir=/etc/gnome`: This switch puts configuration files in `/etc/gnome` instead of `$GNOME_PREFIX/etc`.

Contents

Installed Programs: ior-decode-2, linc-cleanup-sockets, orbit-idl-2, orbit2-config and typelib-dump

Installed Libraries: libname-server-2.a, libORBit-2.[so,a], libORBit-imodule-2.[so,a], libORBitCosNaming-2.[so,a], and Everything_module.[so,a]

Installed Directories: \$GNOME_PREFIX/include/orbit-2.0, \$GNOME_PREFIX/lib/orbit-2.0, \$GNOME_PREFIX/share/gtk-doc/html/ORBit2, and \$GNOME_PREFIX/share/idl/orbit-2.0

Short Descriptions

`libORBit-2.[so,a]` is the CORBA API.

Libbonobo-2.8.1

Introduction to Libbonobo

The libbonobo package contains libbonobo libraries. This is a component and compound document system for GNOME-2.

Package Information

- Download (HTTP): <http://ftp.gnome.org/pub/GNOME/sources/libbonobo/2.8/libbonobo-2.8.1.tar.bz2>
- Download (FTP): <ftp://ftp.gnome.org/pub/GNOME/sources/libbonobo/2.8/libbonobo-2.8.1.tar.bz2>
- Download MD5 sum: 54f863c20016cf8a2cf25056f6c7cda7
- Download size: 1.0 MB
- Estimated disk space required: 35 MB
- Estimated build time: 0.8 SBU (additional 0.2 SBU to run the test suite)

Libbonobo Dependencies

Required

ORBit2-2.12.2, libxml2-2.6.20 and XML::Parser

Optional

X (XFree86-4.5.0 or X.org-6.8.2) and GTK-Doc-1.3

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
```

To test the results, issue: **make check**.

Now, as the root user:

```
make install
```

Command Explanations

`--prefix=`pkg-config --variable=prefix ORBit-2.0``: Setting the prefix with this command instead of with `GNOME_PREFIX` will ensure 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

Installed Programs:	activation-client, bonobo-slay, echo-client-2, bonobo-activation-run-query, bonobo-activation-server, and bonobo-activation-sysconf
Installed Libraries:	libbonobo-2.[so,a], libbonobo-activation.[so,a], ORBit-2 bonobo module, bonobo servers, and libmoniker_std_2.[so,a] bonobo library
Installed Directories:	/etc/gnome, \$GNOME_PREFIX/include/bonobo-activation-2.0, \$GNOME_PREFIX/include/libbonobo-2.0, \$GNOME_PREFIX/lib/bonobo[,2.0], \$GNOME_PREFIX/share/gtk-doc/html/[bonobo-activation,libbonobo], and \$GNOME_PREFIX/share/idl/bonobo-[activation-]2.0

Short Descriptions

`libbonobo-2.[so,a]` are a set of language and system independent CORBA interfaces for creating reusable components and compound documents.

GConf-2.10.0

Introduction to GConf

The GConf package contains a configuration database system.

Package Information

- Download (HTTP): <http://ftp.gnome.org/pub/GNOME/sources/GConf/2.10/GConf-2.10.0.tar.bz2>
- Download (FTP): <ftp://ftp.gnome.org/pub/GNOME/sources/GConf/2.10/GConf-2.10.0.tar.bz2>
- Download MD5 sum: a7cd37be4e317195a6668a086fc72033
- Download size: 1.7 MB
- Estimated disk space required: 26 MB
- Estimated build time: 0.4 SBU

GConf Dependencies

Required

ORBit2-2.12.2 and libxml2-2.6.20

Optional

GTK+-2.6.7, GTK-Doc-1.3 and DocBook-utils-0.6.14

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 &&
make
```

This package does not come with a test suite.

Now, as the root user:

```
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 GNOME GConf-2 configuration files in `/etc/gnome` instead of `$GNOME_PREFIX/etc`. This installation controls all future installations of schemas. If you change the location (which includes eliminating this parameter), it *must* be consistent for every subsequent GNOME GConf-2 package installation.

Contents

Installed Programs:	gconf-merge-tree, gconf-sanity-check-2, gconfd-2, and gconftool-2
Installed Library:	libgconf-2.[so,a]
Installed Directories:	/etc/gnome/gconf, \$GNOME_PREFIX/include/gconf, \$GNOME_PREFIX/lib/GConf, \$GNOME_PREFIX/share/gtk-doc/html/gconf, and \$GNOME_PREFIX/share/sgml/gconf

Short Descriptions

`libgconf-2.[so,a]` provide the functions necessary to maintain the configuration database.

Desktop-file-utils-0.10

The desktop-file-utils-0.10 package is located in Chapter 10 – General Utilities, however it is now required by GNOME-2 starting with version 2.8. desktop-file-utils is not a direct dependency of any GNOME-2 package, therefore the package is mentioned within the GNOME-2 Core Packages chapter to ensure it is installed.

GNOME MIME Data-2.4.2

Introduction to GNOME MIME Data

The GNOME MIME Data package contains the base set of file types and applications for GNOME-2.

Package Information

- Download (HTTP):
<http://ftp.gnome.org/pub/GNOME/sources/gnome-mime-data/2.4/gnome-mime-data-2.4.2.tar.bz2>
- Download (FTP):
<ftp://ftp.gnome.org/pub/GNOME/sources/gnome-mime-data/2.4/gnome-mime-data-2.4.2.tar.bz2>
- Download MD5 sum: 37242776b08625fa10c73c18b790e552
- Download size: 849 KB
- Estimated disk space required: 12 MB
- Estimated build time: less than 0.1 SBU

GNOME MIME Data Dependencies

Required

XML::Parser

Installation of GNOME MIME Data



Note

The instructions below are based on installing the package into a GNOME-2 environment. If, for whatever reason, you're installing this package without having ORBit2 and the core GNOME-2 libraries installed, you'll need to modify the `--prefix=` parameter on the **configure** script to point to your desired installation path (e.g., `--prefix=/usr`).

Install GNOME MIME Data by running the following commands:

```
./configure --prefix=`pkg-config --variable=prefix ORBit-2.0` \
  --sysconfdir=/etc/gnome &&
make
```

This package does not come with a test suite.

Now, as the root user:

```
make install &&
install -v -m644 -D man/gnome-vfs-mime.5 \
  $GNOME_PREFIX/man/man5/gnome-vfs-mime.5
```

Command Explanations

`--sysconfdir=/etc/gnome`: This switch puts configuration files in `/etc/gnome` instead of

`$GNOME_PREFIX/etc.`

Contents

Installed Programs: None
Installed Libraries: None
Installed Directories: `$GNOME_PREFIX/share/application-registry` and
`$GNOME_PREFIX/share/mime-info`

Short Descriptions

`application-registry` contains the application mime database.
`mime-info` contains the mime description database.

GNOME Virtual File System-2.10.1

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/2.10/gnome-vfs-2.10.1.tar.bz2>
- Download (FTP): <ftp://ftp.gnome.org/pub/GNOME/sources/gnome-vfs/2.10/gnome-vfs-2.10.1.tar.bz2>
- Download MD5 sum: 88b520e5de748a310a2aef62fc095c8b
- Download size: 1.9 MB
- Estimated disk space required: 49 MB
- Estimated build time: 1.3 SBU

Additional Downloads

- Required patch if HAL-0.5.0 is installed:
http://www.linuxfromscratch.org/blfs/downloads/6.1/gnome-vfs-2.10.1-hal_0.5.0-1.patch

GNOME Virtual File System Dependencies

Required

intltool-0.33, GConf-2.10.0, libbonobo-2.8.1, GNOME MIME Data-2.4.2 and shared-mime-info-0.16

Optional

Samba-3.0.14a, CDParanoia-III-9.8, FAM-2.7.0, GTK-Doc-1.3, OpenSSH-4.1p1, OpenSSL-0.9.7g or GnuTLS, Heimdal-0.7 or MIT krb5-1.4.1, OpenAFS, Howl and HAL

Installation of GNOME Virtual File System

Install GNOME Virtual File System by running the following commands:

```
patch -Np1 -i ../gnome-vfs-2.10.1-hal_0.5.0-1.patch &&
./configure --prefix=`pkg-config --variable=prefix ORBit-2.0` \
  --libexecdir=`pkg-config --variable=prefix ORBit-2.0`/sbin \
  --sysconfdir=/etc/gnome &&
make
```

To test the results, issue: **make check**.

Now, as the root user:

```
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`.

`rmdir `pkg-config --variable=prefix ORBit-2.0`/doc`: Use this command if `$(GNOME_PREFIX)` is anything other than `/usr` as the directory is unneeded and unpopulated.

Contents

Installed Programs: `gnomevfs-cat`, `gnomevfs-copy`, `gnomevfs-info`, `gnomevfs-ls`, `gnomevfs-mkdir`, `gnomevfs-mv`, `gnomevfs-rm`, and `gnome-vfs-daemon`

Installed Libraries: `libgnomevfs-2.[so,a]` and modules

Installed Directories: `/etc/gnome/gconf/schemas`,
`/etc/gnome/gconf/gconf.xml.defaults/[desktop,schemas,system]`,
`/etc/gnome/gnome-vfs-2.0`, `$(GNOME_PREFIX)/include/gnome-vfs-2.0`,
`$(GNOME_PREFIX)/include/gnome-vfs-module-2.0`,
`$(GNOME_PREFIX)/lib/gnome-vfs-2.0`, and
`$(GNOME_PREFIX)/share/gtk-doc/html/gnome-vfs-2.0`

Libgnome-2.10.0

Introduction to Libgnome

The libgnome package contains the libgnome library.

Package Information

- Download (HTTP): <http://ftp.gnome.org/pub/GNOME/sources/libgnome/2.10/libgnome-2.10.0.tar.bz2>
- Download (FTP): <ftp://ftp.gnome.org/pub/GNOME/sources/libgnome/2.10/libgnome-2.10.0.tar.bz2>
- Download MD5 sum: f8e1225d96126f5139232821a6723d15
- Download size: 871 KB
- Estimated disk space required: 18 MB
- Estimated build time: 0.2 SBU

Libgnome Dependencies

Required

GNOME Virtual File System-2.10.1 and EsoundD-0.2.35

Optional

GTK-Doc-1.3

Installation of Libgnome

Install libgnome by running the following commands:

```
./configure --prefix=`pkg-config --variable=prefix ORBit-2.0` \
  --sysconfdir=/etc/gnome --localstatedir=/var/lib &&
make
```

This package does not come with a test suite.

Now, as the root user:

```
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 sets `LIBGNOME_LOCALSTATEDIR` to `/var/lib` instead of `$GNOME_PREFIX/var` to synchronize with the GNOME Games installation and properly record high scores in `/var/lib/games`.

Contents

Installed Program: gnome-open
Installed Libraries: libgnome-2.[so,a] and the libmoniker_extra_2.[so,a] bonobo library
Installed Directories: several configuration directories under the /etc/gnome/gconf/gconf.xml.defaults/ hierarchy, /etc/gnome/sound, GNOME_PREFIX/include/libgnome-2.0, and GNOME_PREFIX/share/gtk-doc/html/libgnome

Short Descriptions

libgnome-2.[so,a] are the non-GUI portion of the GNOME libraries.

Libgnomecanvas-2.10.0

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/2.10/libgnomecanvas-2.10.0.tar.bz2>
- Download (FTP):
<ftp://ftp.gnome.org/pub/GNOME/sources/libgnomecanvas/2.10/libgnomecanvas-2.10.0.tar.bz2>
- Download MD5 sum: 88aac06c8dfd24671db3fe3bf881b5fc
- Download size: 575 KB
- Estimated disk space required: 12 MB
- Estimated build time: 0.3 SBU

Libgnomecanvas Dependencies

Required

libglade-2.5.1 and libart_lgpl-2.3.17

Optional

GTK-Doc-1.3

Installation of Libgnomecanvas



Note

The instructions below are based on installing the package into a GNOME-2 environment. If, for whatever reason, you're installing this package without having ORBit2 and the core GNOME-2 libraries installed, you'll need to modify the `--prefix=` parameter on the **configure** script to point to your desired installation path (e.g., `--prefix=/usr`).

Install libgnomecanvas by running the following commands:

```
./configure --prefix=`pkg-config --variable=prefix ORBit-2.0` &&  
make
```

To test the results, issue: **make check**.

Now, as the `root` user:

```
make install
```

Contents

Installed Programs: None

Installed Libraries: libgnomecanvas-2.[so,a] and the libcanvas.[so,a] glade library

Installed Directories: \$GNOME_PREFIX/include/libgnomecanvas-2.0, \$GNOME_PREFIX/lib/libglade, and \$GNOME_PREFIX/share/gtk-doc/html/libgnomecanvas

Libbonoboui-2.8.1

Introduction to Libbonoboui

The libbonoboui package contains libbonoboui libraries.

Package Information

- Download (HTTP): <http://ftp.gnome.org/pub/GNOME/sources/libbonoboui/2.8/libbonoboui-2.8.1.tar.bz2>
- Download (FTP): <ftp://ftp.gnome.org/pub/GNOME/sources/libbonoboui/2.8/libbonoboui-2.8.1.tar.bz2>
- Download MD5 sum: b23daafa8344a88696d497f20285ef55
- Download size: 1.0 MB
- Estimated disk space required: 28 MB
- Estimated build time: 0.9 SBU

Libbonoboui Dependencies

Required

libgnome-2.10.0 and libgnomecanvas-2.10.0

Optional

GTK-Doc-1.3

Installation of Libbonoboui

Install libbonoboui by running the following commands:

```
./configure --prefix=`pkg-config --variable=prefix ORBit-2.0` &&
make
```

To test the results, issue: **make check**.

Now, as the root user:

```
make install
```

Contents

Installed Programs:	bonobo-browser and test-moniker
Installed Libraries:	libbonoboui-2.[so,a] and libbonobo.[so,a] glade library
Installed Directories:	\$GNOME_PREFIX/include/libbonoboui-2.0, \$GNOME_PREFIX/share/applications, \$GNOME_PREFIX/share/gtk-doc/html/libbonoboui, and \$GNOME_PREFIX/share/gnome-2.0

Short Descriptions

`libbonoboui-2.[so,a]` are the GUI portion of the Bonobo libraries.

GNOME Icon Theme-2.10.1

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/2.10/gnome-icon-theme-2.10.1.tar.bz2>
- Download (FTP):
<ftp://ftp.gnome.org/pub/GNOME/sources/gnome-icon-theme/2.10/gnome-icon-theme-2.10.1.tar.bz2>
- Download MD5 sum: 680a57ed3cecb9a16824570f7002879e
- Download size: 2.9 MB
- Estimated disk space required: 28 MB
- Estimated build time: 0.2 SBU

GNOME Icon Theme Dependencies

Required

hicolor-icon-theme-0.8 and XML::Parser

Installation of GNOME Icon Theme

Install GNOME Icon Theme by running the following commands:

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

This package does not come with a test suite.

Now, as the `root` user:

```
make install
```

Contents

Installed Programs:	None
Installed Libraries:	None
Installed Directory:	<code>/usr/share/icons/gnome</code>
Installed Icons:	Several icons under the <code>/usr/share/icons/gnome</code> and <code>/usr/share/icons/hicolor</code> hierarchies.

Gnome-keyring-0.4.2

Introduction to Gnome-keyring

The gnome-keyring package contains a daemon that keeps passwords and other secrets for users.

Package Information

- Download (HTTP):
<http://ftp.gnome.org/pub/GNOME/sources/gnome-keyring/0.4/gnome-keyring-0.4.2.tar.bz2>
- Download (FTP):
<ftp://ftp.gnome.org/pub/GNOME/sources/gnome-keyring/0.4/gnome-keyring-0.4.2.tar.bz2>
- Download MD5 sum: 220930f6685780089cc5c769dd4ad561
- Download size: 369 KB
- Estimated disk space required: 5 MB
- Estimated build time: 0.1 SBU

Gnome-keyring Dependencies

Required

GTK+-2.6.7

Installation of Gnome-keyring



Note

The instructions below are based on installing the package into a GNOME-2 environment. If, for whatever reason, you're installing this package without having ORBit2 and the core GNOME-2 libraries installed, you'll need to modify the `--prefix=` parameter on the **configure** script to point to your desired installation path (e.g., `--prefix=/usr`).

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
```

This package does not come with a test suite.

Now, as the root user:

```
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

Installed Programs: gnome-keyring-ask and gnome-keyring-daemon
Installed Library: libgnome-keyring.so
Installed Directory: \$GNOME_PREFIX/include/gnome-keyring-1

Short Descriptions

gnome-keyring-daemon is a session daemon that keeps passwords for users.
libgnome-keyring.so let other applications utilize **gnome-keyring-daemon**.

Libgnomeui-2.10.0

Introduction to Libgnomeui

The libgnomeui package contains libgnomeui libraries.

Package Information

- Download (HTTP): <http://ftp.gnome.org/pub/GNOME/sources/libgnomeui/2.10/libgnomeui-2.10.0.tar.bz2>
- Download (FTP): <ftp://ftp.gnome.org/pub/GNOME/sources/libgnomeui/2.10/libgnomeui-2.10.0.tar.bz2>
- Download MD5 sum: e17c0d97e5f240513ac2d36268d696ed
- Download size: 1.6 MB
- Estimated disk space required: 37 MB
- Estimated build time: 0.9 SBU

Libgnomeui Dependencies

Required

libbonoboui-2.8.1 and gnome-keyring-0.4.2

Optional

libjpeg-6b and GTK-Doc-1.3

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 &&
make
```

This package does not come with a test suite.

Now, as the root user:

```
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`.

Configuring Libgnomeui

Configuration Information

Some applications cannot properly discover the libglade interface library installed by libgnomeui. Get around this problem by initializing an environment variable which identifies the location of the library. Add the

following line to the system-wide `/etc/profile` file, or to individual user's `~/.profile` or `~/.bashrc` files:

```
export LIBGLADE_MODULE_PATH=$GNOME_PREFIX/lib/libglade/2.0
```

Contents

Installed Program:	<code>gnome_segvt2</code>
Installed Libraries:	<code>libgnomeui-2[so,a]</code> , <code>libgnome[so,a]</code> glade library, and <code>libgnome-vfs[so,a]</code> GTK+ library.
Installed Directories:	<code>\$GNOME_PREFIX/include/libgnomeui-2.0</code> , <code>\$GNOME_PREFIX/lib/gtk-2.0/2.4.0/filesystems</code> , and <code>\$GNOME_PREFIX/share/gtk-doc/html/libgnomeui</code>

Short Descriptions

`libgnomeui-2.[so,a]` are the GUI portion of the GNOME libraries.

GTK Engines-2.6.3

Introduction to GTK Engines

The GTK Engines package contains eight themes/engines and two additional engines for GTK2.

Package Information

- Download (HTTP): <http://ftp.gnome.org/pub/GNOME/sources/gtk-engines/2.6/gtk-engines-2.6.3.tar.bz2>
- Download (FTP): <ftp://ftp.gnome.org/pub/GNOME/sources/gtk-engines/2.6/gtk-engines-2.6.3.tar.bz2>
- Download MD5 sum: ba5975f8ab390fa43fc0bf94f4a3b023
- Download size: 469 KB
- Estimated disk space required: 13 MB
- Estimated build time: 0.4 SBU

GTK Engines Dependencies

Required

GTK+-2.6.7

Installation of GTK Engines

Install GTK Engines by running the following commands:

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

This package does not come with a test suite.

Now, as the `root` user:

```
make install
```

Contents

Installed Programs:	None
Installed Libraries:	GTK-2 engines libraries
Installed Directories:	/usr/lib/gtk-2.0/engines and /usr/share/themes/[theme name]
Installed Themes:	Crux, Clearlooks, Industrial, LighthouseBlue, Metal, Mist, Redmond, and ThinIce

Short Descriptions

engines libraries are manager systems for specific themes.

GNOME Themes-2.10.1

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/2.10/gnome-themes-2.10.1.tar.bz2>
- Download (FTP):
<ftp://ftp.gnome.org/pub/GNOME/sources/gnome-themes/2.10/gnome-themes-2.10.1.tar.bz2>
- Download MD5 sum: f365c73ccfbe35640e17fe8d877273fe
- Download size: 2.5 MB
- Estimated disk space required: 19 MB
- Estimated build time: 0.2 SBU

GNOME Themes Dependencies

Required

intltool-0.33 and GTK Engines-2.6.3

Installation of GNOME Themes

Install GNOME Themes by running the following commands:

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

This package does not come with a test suite.

Now, as the `root` user:

```
make install
```

Contents

Installed Programs:	None
Installed Libraries:	None
Installed Directories:	Several directories under <code>/usr/share/[themes,icons]</code>
Installed Themes:	Several themes under the <code>/usr/share/themes</code> hierarchy and icons under the <code>/usr/share/icons</code> hierarchy

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 MD5 sum: b175e582a6cec3e50a9de73a5bb7455a
- Download size: 546 KB
- Estimated disk space required: 12 MB
- Estimated build time: 0.1 SBU

ScrollKeeper Dependencies

Required

intltool-0.33, libxslt-1.1.14 and DocBook XML DTD-4.4

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-3.4.1/share/omf:/opt/gnome-2.10/share/omf &&
make
```

This package does not come with a test suite.

Now, as the root user:

```
make install
```

Command Explanations

`--sysconfdir=/etc`: This switch puts the configuration files in `/etc` instead of `/usr/etc`.

`--localstatedir=/var`: This switch puts ScrollKeeper's database directory in `/var/lib/scrollkeeper`.

`--disable-static`: This switch prevents the static library from being built.

`--with-omfdirs=...`: This switch defines the locations of OMF files for ScrollKeeper. This information is stored in `/etc/scrollkeeper.conf` and can be updated manually, if necessary.

Configuring ScrollKeeper

Config Files

`/etc/scrollkeeper.conf`

Configuration Information

The configuration file 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` directory is created.

Contents

Installed Programs:	<code>scrollkeeper-config</code> , <code>scrollkeeper-extract</code> , <code>scrollkeeper-gen-seriesid</code> , <code>scrollkeeper-get-cl</code> , <code>scrollkeeper-get-content-list</code> , <code>scrollkeeper-get-extended-content-list</code> , <code>scrollkeeper-get-index-from-docpath</code> , <code>scrollkeeper-get-toc-from-docpath</code> , <code>scrollkeeper-get-toc-from-id</code> , <code>scrollkeeper-install</code> , <code>scrollkeeper-preinstall</code> , <code>scrollkeeper-rebuilddb</code> , <code>scrollkeeper-uninstall</code> , and <code>scrollkeeper-update</code>
Installed Library:	<code>libscrollkeeper.so</code>
Installed Directories:	<code>/usr/share/doc/scrollkeeper-0.3.14</code> , <code>/usr/share/omf/scrollkeeper</code> , <code>/usr/share/scrollkeeper</code> , <code>/usr/share/xml/scrollkeeper</code> , and <code>/var/lib/scrollkeeper</code>

Short Descriptions

ScrollKeeper utility programs	The ScrollKeeper utility programs and scripts listed above are for performing installation, building, getting and updating table of contents files.
<code>libscrollkeeper.so</code>	provides the API necessary for help browsers to interact with documentation written to utilize ScrollKeeper.

GNOME Desktop-2.10.1

Introduction to GNOME Desktop

The GNOME Desktop package contains the **gnome-about** program, the `libgnome-desktop-2` library and GNOME's core graphics files and icons.

Package Information

- Download (HTTP):
`http://ftp.gnome.org/pub/GNOME/sources/gnome-desktop/2.10/gnome-desktop-2.10.1.tar.bz2`
- Download (FTP):
`ftp://ftp.gnome.org/pub/GNOME/sources/gnome-desktop/2.10/gnome-desktop-2.10.1.tar.bz2`
- Download MD5 sum: 5d6d21e4b5d66975c9c2c04add7da6e2
- Download size: 1.0 MB
- Estimated disk space required: 12 MB
- Estimated build time: 0.2 SBU

GNOME Desktop Dependencies

Required

`libgnomeui-2.10.0` and `ScrollKeeper-0.3.14`

Recommended

`startup-notification-0.8`

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
```

This package does not come with a test suite.

Now, as the `root` user:

```
make install
```

Command Explanations

`--sysconfdir=/etc/gnome`: This switch puts configuration files in `/etc/gnome` instead of `$GNOME_PREFIX/etc`.

Contents

Installed Program: `gnome-about`

Installed Library: libgnome-desktop-2.[so,a]
Installed Directory: \$GNOME_PREFIX/include/gnome-desktop-2.0, \$GNOME_PREFIX/share/gnome,
\$GNOME_PREFIX/share/gnome-about, and \$GNOME_PREFIX/share/omf

Short Descriptions

gnome-about produces the about screen.
`libgnome-desktop-2.[so,a]` contains APIs being tested for inclusion in libgnome or libgnomeui.

Gnome-backgrounds-2.10.1

Introduction to Gnome-backgrounds

The gnome-backgrounds package contains a set of backgrounds used in the GNOME desktop.

Package Information

- Download (HTTP):
<http://ftp.gnome.org/pub/GNOME/sources/gnome-backgrounds/2.10/gnome-backgrounds-2.10.1.tar.bz2>
- Download (FTP):
<ftp://ftp.gnome.org/pub/GNOME/sources/gnome-backgrounds/2.10/gnome-backgrounds-2.10.1.tar.bz2>
- Download MD5 sum: 2a4ec2862c6a1a2bf3ad330c830edae4
- Download size: 2.2 MB
- Estimated disk space required: 6 MB
- Estimated build time: less then 0.1 SBU

Gnome-backgrounds Dependencies

Required

intltool-0.33

Installation of Gnome-backgrounds



Note

The instructions below are based on installing the package into a GNOME-2 environment. If, for whatever reason, you're installing this package without having ORBit2 and the core GNOME-2 libraries installed, you'll need to modify the `--prefix=` parameter on the **configure** script to point to your desired installation path (e.g., `--prefix=/usr`).

Install gnome-backgrounds by running the following commands:

```
./configure --prefix=`pkg-config --variable=prefix ORBit-2.0` &&  
make
```

This package does not come with a test suite.

Now, as the root user:

```
make install
```

Contents

Installed Programs: None

Installed Libraries: None

Installed Directories: \$GNOME_PREFIX/share/pixmaps/backgrounds and
\$GNOME_PREFIX/share/gnome-background-properties

Short Descriptions

GNOME backgrounds are backgrounds for the GNOME desktop.

Gnome-menus-2.10.1

Introduction to Gnome-menus

The gnome-menus package contains an implementation of the draft “Desktop Menu Specification” from freedesktop.org (<http://www.freedesktop.org/Standards/menu-spec>). Also contained are the GNOME menu layout configuration files, `.directory` files and a menu related utility program.

Package Information

- Download (HTTP):
<http://ftp.gnome.org/pub/GNOME/sources/gnome-menus/2.10/gnome-menus-2.10.1.tar.bz2>
- Download (FTP):
<ftp://ftp.gnome.org/pub/GNOME/sources/gnome-menus/2.10/gnome-menus-2.10.1.tar.bz2>
- Download MD5 sum: 83d9695a35ed2215620e8773ee918b8a
- Download size: 339 KB
- Estimated disk space required: 5 MB
- Estimated build time: 0.1 SBU

Gnome-menus Dependencies

Required

GNOME Virtual File System-2.10.1

Installation of Gnome-menus

Install gnome-menus by running the following commands:

```
./configure --prefix=`pkg-config --variable=prefix ORBit-2.0` \
  --sysconfdir=/etc/gnome &&
make
```

This package does not come with a test suite.

Now, as the root user:

```
make install
```

Configuring Gnome-menus

Configuration Information

So that GNOME can find the desktop configuration files, ensure you set the `XDG_CONFIG_DIRS` environment variable in the system profile, or in individual user's profiles as shown below:

```
XDG_CONFIG_DIRS=/etc/gnome/xdg
```

Contents

Installed Program: `gnome-menu-spec-test`
Installed Library: `libgnome-menu.[so,a]`
Installed Directories: `/etc/gnome/xdg`, `$GNOME_PREFIX/include/gnome-menus` and
`$GNOME_PREFIX/share/desktop-directories`

Short Descriptions

`gnome-menu-spec-test` is used to test GNOME's implementation of the Desktop Menu Specification.
`libgnome-menu.[so,a]` contains functions required to support GNOME's implementation of the Desktop Menu Specification.

GNOME Panel-2.10.1

Introduction to GNOME Panel

The GNOME Panel package contains hooks to the menu sub-system and the applet sub-system.

Package Information

- Download (HTTP):
<http://ftp.gnome.org/pub/GNOME/sources/gnome-panel/2.10/gnome-panel-2.10.1.tar.bz2>
- Download (FTP): <ftp://ftp.gnome.org/pub/GNOME/sources/gnome-panel/2.10/gnome-panel-2.10.1.tar.bz2>
- Download MD5 sum: a2719f5c79a9e48bca086f08a77a6889
- Download size: 2.3 MB
- Estimated disk space required: 55 MB
- Estimated build time: 0.7 SBU

GNOME Panel Dependencies

Required

GNOME Desktop-2.10.1, libwnck-2.10.0 and gnome-menus-2.10.1

Recommended

startup-notification-0.8 and Evolution Data Server-1.2.2 (if you plan on installing Evolution-2.0)

Optional

GTK-Doc-1.3

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 &&  
make
```

This package does not come with a test suite.

Now, as the root user:

```
make install &&  
chmod -v 644 `pkg-config --variable=prefix ORBit-2.0`/share/gnome/help/  
{fish-applet-2,window-list,workspace-switcher}/C/*.xml
```

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

Installed Programs:	clock-applet, fish-applet-2, gnome-desktop-item-edit, gnome-panel, gnome-desktop-item-edit, notification-area-applet, and wnck-applet
Installed Libraries:	libpanel-applet-2.[so,a] and bonobo servers
Installed Directories:	<code>/etc/gnome/gconf/gconf.xml.defaults/[schemas]/apps</code> , <code>\$GNOME_PREFIX/include/panel-2.0</code> , <code>\$GNOME_PREFIX/share/idl/gnome-panel-2.0</code> , some help directories under the <code>\$GNOME_PREFIX/share/gnome/help</code> hierarchy, <code>\$GNOME_PREFIX/share/gnome/icons</code> , <code>\$GNOME_PREFIX/share/gnome/panel</code> , <code>\$GNOME_PREFIX/share/gtk-doc/html/panel-applet</code> , and <code>\$GNOME_PREFIX/share/omf/gnome-panel</code>

Short Descriptions

`libpanel-applet-2.[so,a]` allow development of small applications (applets) which may be embedded in the panel.

GNOME Session-2.10.0

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/2.10/gnome-session-2.10.0.tar.bz2
- Download (FTP):
ftp://ftp.gnome.org/pub/GNOME/sources/gnome-session/2.10/gnome-session-2.10.0.tar.bz2
- Download MD5 sum: cbeb2db49dac11bf8088e6b025265fff
- Download size: 796 KB
- Estimated disk space required: 11 MB
- Estimated build time: 0.2 SBU

GNOME Session Dependencies

Required

libgnomeui-2.10.0

Optional

tcpwrappers-7.6

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
```

This package does not come with a test suite.

Now, as the root user:

```
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

Installed Programs:	gnome-session, gnome-session-properties, gnome-session-remove, gnome-session-save, gnome-smproxy, and gnome-wm
Installed Libraries:	None
Installed Directories:	/etc/gnome/gconf/gconf.xml.defaults/schemas/apps/gnome-session, /etc/gnome/gconf/gconf.xml.defaults/apps/gnome-session, and \$GNOME_PREFIX/share/pixmaps/splash

Short Descriptions

gnome-session	starts up the GNOME desktop.
gnome-session-*	session utilities includes a configuration program and other session management related utilities.
gnome-smproxy	handles basic session management for applications that do not support XSM.
gnome-wm	uses the \$WINDOW_MANAGER environment variable to allow a user to define a window manager of choice. If no \$WINDOW_MANAGER is defined, gnome-wm defaults to metacity as the default window manager.

VTE-0.11.13

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-0.11.13.tar.bz2>
- Download (FTP): <ftp://ftp.gnome.org/pub/GNOME/sources/vte/0.11/vte-0.11.13.tar.bz2>
- Download MD5 sum: 5eb73c7de433fb6e53ac4378df9d23b5
- Download size: 952 KB
- Estimated disk space required: 24 MB
- Estimated build time: 0.7 SBU

VTE Dependencies

Required

GTK+-2.6.7 and Python-2.4.1

Optional

GTK-Doc-1.3 and PyGTK

Installation of VTE

Install VTE by running the following commands:

```
sed -i -e 's%\177:%&kh=\\EOH:@7=\\EOF:%g' termcaps/xterm &&
./configure --prefix=/usr --libexecdir=/usr/sbin --disable-gtk-doc &&
make
```

This package does not come with a test suite.

Now, as the `root` user:

```
make install
```

Command Explanations

`sed -i -e ...`: The Home and End keys are broken in the `xterm` termcap file. This `sed` command fixes them.

`--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. Remove it if you have `GTK-Doc` installed and wish to rebuild the documentation.

Contents

Installed Programs: `gnome-pty-helper` and `vte`

Installed Libraries: libvte.[so,a] and vtemodule.[so,a] Python module

Installed Directories: /usr/include/vte, /usr/lib/vte, /usr/share/gtk-doc/html/vte, and /usr/share/vte

Short Descriptions

gnome-pty-helper is a setuid helper for opening ptys.

vte is a test application for the VTE libraries.

libvte.[so,a] provide the functions necessary to implement a “termcap file” for terminal emulators.

GNOME Terminal-2.10.0

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/2.10/gnome-terminal-2.10.0.tar.bz2>
- Download (FTP):
<ftp://ftp.gnome.org/pub/GNOME/sources/gnome-terminal/2.10/gnome-terminal-2.10.0.tar.bz2>
- Download MD5 sum: 062744daca0c7f708b8c52f47b5db0d1
- Download size: 2.3 MB
- Estimated disk space required: 33 MB
- Estimated build time: 0.2 SBU

GNOME Terminal Dependencies

Required

libgnomeui-2.10.0, ScrollKeeper-0.3.14, VTE-0.11.13 and startup-notification-0.8

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
```

This package does not come with a test suite.

Now, as the root user:

```
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

Installed Program: gnome-terminal

Installed Library: gnome-terminal.server bonobo server

Installed Directories: /etc/gnome/gconf/gconf.xml.defaults/schemas/apps/gnome-terminal,
/etc/gnome/gconf/gconf.xml.defaults/apps/gnome-terminal,
\$GNOME_PREFIX/share/gnome/help/gnome-terminal,
\$GNOME_PREFIX/share/gnome-terminal, and
\$GNOME_PREFIX/share/omf/gnome-terminal

Short Descriptions

gnome-terminal provides the command prompt in the GNOME environment.

LibGTop-2.10.1

Introduction to LibGTop

The LibGTop package contains the GNOME top libraries.

Package Information

- Download (HTTP): <http://ftp.gnome.org/pub/GNOME/sources/libgtop/2.10/libgtop-2.10.1.tar.bz2>
- Download (FTP): <ftp://ftp.gnome.org/pub/GNOME/sources/libgtop/2.10/libgtop-2.10.1.tar.bz2>
- Download MD5 sum: b006baa3bd486005411a03534b45708e
- Download size: 750 KB
- Estimated disk space required: 14 MB
- Estimated build time: 0.3 SBU

LibGTop Dependencies

Required

GLib-2.6.4

Optional

popt-1.7-5, GDBM-1.8.3 and X (XFree86-4.5.0 or X.org-6.8.2)

Installation of LibGTop



Note

The instructions below are based on installing the package into a GNOME-2 environment. If, for whatever reason, you're installing this package without having ORBit2 and the core GNOME-2 libraries installed, you'll need to modify the `--prefix=` parameter on the **configure** script to point to your desired installation path (e.g., `--prefix=/usr`).

Install LibGTop by running the following commands:

```
./configure --prefix=`pkg-config --variable=prefix ORBit-2.0` \
  --infodir=$GNOME_PREFIX/share/info &&
make
```

This package does not come with a test suite.

Now, as the root user:

```
make install
```

If you passed `--with-libgtop-examples` to the **configure** script to build the example programs, install them using the following commands as the root user:

```
install -v -m755 -d $GNOME_PREFIX/share/libgtop-2.10.1/examples &&
```

```
install -v -m755 examples/.libs/* \
  $GNOME_PREFIX/share/libgtop-2.10.1/examples
```

Command Explanations

`--infodir=$GNOME_PREFIX/share/info`: This switch installs the info documentation in `$GNOME_PREFIX/share/info` instead of `$GNOME_PREFIX/info`.

`--with-libgtop-examples`: Adding this parameter to the **configure** script will build numerous example programs.

`--with-libgtop-inodedb`: Add this parameter to the **configure** script if you have GDBM installed and wish to build the inodedb programs.

Configuring LibGTop

Configuration Information

If `$GNOME_PREFIX` is anything other than `/usr`, update the `INFOPATH` environment variable by adding the following to your system-wide or personal profile:

```
export INFOPATH=/usr/share/info:$GNOME_PREFIX/share/info
```

Contents

Installed Programs:	file_by_inode2, mkinodedb2
Installed Library:	libgtop-2.0
Installed Directories:	<code>\$GNOME_PREFIX/include/libgtop-2.0</code> and <code>\$GNOME_PREFIX/share/libgtop-2.10.1</code>

Short Descriptions

`libgtop-2.0.[so,a]` contains the functions that allow access to system performance data.

GAIL-1.8.3

Introduction to GAIL

The GAIL package contains the GNOME Accessibility Implementation Libraries.

Package Information

- Download (HTTP): <http://ftp.gnome.org/pub/GNOME/sources/gail/1.8/gail-1.8.3.tar.bz2>
- Download (FTP): <ftp://ftp.gnome.org/pub/GNOME/sources/gail/1.8/gail-1.8.3.tar.bz2>
- Download MD5 sum: 9e5db197dea8f92eec1f07984f12542a
- Download size: 562 KB
- Estimated disk space required: 19 MB
- Estimated build time: 0.5 SBU

GAIL Dependencies

Required

libgnomecanvas-2.10.0

Optional

GTK-Doc-1.3

Installation of GAIL



Note

The instructions below are based on installing the package into a GNOME-2 environment. If, for whatever reason, you're installing this package without having ORBit2 and the core GNOME-2 libraries installed, you'll need to modify the `--prefix=` parameter on the **configure** script to point to your desired installation path (e.g., `--prefix=/usr`).

Install GAIL by running the following commands:

```
./configure --prefix=`pkg-config --variable=prefix ORBit-2.0` &&  
make
```

This package does not come with a test suite.

Now, as the root user:

```
make install
```

GTK+ will look for the GAIL modules in `/usr/lib` even if `$GNOME_PREFIX` is *NOT* `/usr`. If `$GNOME_PREFIX` is anything other than `/usr`, create a symlink to `$GNOME_PREFIX` to satisfy this requirement:

```
ln -v -sf `pkg-config --variable=prefix ORBit-2.0`/lib/gtk-2.0/modules \
```

```
/usr/lib/gtk-2.0
```

Contents

Installed Programs:	None
Installed Libraries:	libgailutil.so and GAIL GTK+ modules
Installed Directories:	\$GNOME_PREFIX/include/gail-1.0, \$GNOME_PREFIX/lib/gtk-2.0/modules, and \$GNOME_PREFIX/share/gtk-doc/html/gail-libgail-util

Short Descriptions

`libgailutil.so` provides the functions that solve accessibility problems in a consistent manner across GNOME.

GNOME Applets-2.10.1

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/2.10/gnome-applets-2.10.1.tar.bz2
- Download (FTP):
ftp://ftp.gnome.org/pub/GNOME/sources/gnome-applets/2.10/gnome-applets-2.10.1.tar.bz2
- Download MD5 sum: da9cd75f77972c96eec9551d41878a7f
- Download size: 6.2 MB
- Estimated disk space required: 108 MB
- Estimated build time: 0.9 SBU

GNOME Applets Dependencies

Required

GAIL-1.8.3, GNOME Panel-2.10.1 and libxklavier-2.0

Optional

LibGTop-2.10.1, gst-plugins-0.8.10, gucharmap-1.4.3, system-tools-backends-1.2.0, DocBook-utils-0.6.14 and libapm

Installation of GNOME Applets

Install GNOME Applets by running the following commands:

```
export 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
```

This package does not come with a test suite.

Now, as the `root` user:



Note

If you switch to the `root` user in a manner which causes the `PRE` environment variable to be unset, ensure you set it again before installing the package.

```
make tooldir=$PRE/lib/gnome-applets install &&
make -C man install-man &&
chmod -v 644 $PRE/share/gnome/help/\
```

```
{gtik2_applet2/C/*.xml,cpufreq-applet/{C,uk}/legal.xml}
```

Remove the variable from the unprivileged user's environment using the following command:

```
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=$PRE/lib/gnome-applets`: This puts the mini-commander applet files in `$PRE/lib/gnome-applets` instead of `$PRE/sbin/gnome-applets`.

`make -C man install-man`: This installs the man-pages in `$PRE/man`.

Contents

- Installed Programs:** accessx-status-applet, battstat-applet-2, charpick_applet2, cpufreq-applet, cpufreq-selector, drivemount_applet2, geyes_applet2, gnome-keyboard-applet, gswitchit-plugins-capplet, gtik2_applet2, gweather-applet-2, mini_commander_applet, mixer_applet2, modem_applet, multiloader-applet-2, null_applet, stickynotes_applet, and trashapplet
- Installed Libraries:** bonobo servers
- Installed Directories:** several config directories under the `/etc/gnome/gconf/gconf.xml.defaults/` hierarchy, `$GNOME_PREFIX/include/libgswitchit`, `$GNOME_PREFIX/lib/gnome-applets`, several help directories under the `$GNOME_PREFIX/share/gnome/help/` hierarchy, `$GNOME_PREFIX/share/gnome-applets`, `$GNOME_PREFIX/share/omf/gnome-applets`, `$GNOME_PREFIX/share/pixmaps/[accessx-status-applet,cpufreq-applet,stickynotes]`, and `$GNOME_PREFIX/share/xmodmap`

EEL-2.10.1

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/2.10/eel-2.10.1.tar.bz2>
- Download (FTP): <ftp://ftp.gnome.org/pub/GNOME/sources/eel/2.10/eel-2.10.1.tar.bz2>
- Download MD5 sum: 2978fae17565dfb6e2d7ca129e738b9d
- Download size: 672 KB
- Estimated disk space required: 13 MB
- Estimated build time: 0.4 SBU

EEL Dependencies

Required

libgnomeui-2.10.0 and GAIL-1.8.3

Installation of EEL

Install EEL by running the following commands:

```
./configure --prefix=`pkg-config --variable=prefix ORBit-2.0` &&
make
```

To test the results, issue: **make check**.

Now, as the `root` user:

```
make install
```

Contents

Installed Programs:	None
Installed Library:	libeel-2.[so,a]
Installed Directory:	\$GNOME_PREFIX/include/eel-2

Short Descriptions

`libeel-2.[so,a]` is a collection of widgets developed by the Nautilus project.

Nautilus-2.10.1

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/2.10/nautilus-2.10.1.tar.bz2>
- Download (FTP): <ftp://ftp.gnome.org/pub/GNOME/sources/nautilus/2.10/nautilus-2.10.1.tar.bz2>
- Download MD5 sum: 976d725db15e901bc881dfb8c50145c1
- Download size: 5.9 MB
- Estimated disk space required: 81 MB
- Estimated build time: 0.9 SBU

Nautilus Dependencies

Required

EEL-2.10.1, libexif-0.6.12, librsvg-2.9.5 and GNOME Desktop-2.10.1

Optional

startup-notification-0.8, libgsf-1.12.0, libcroco-0.6.0, CDParanoia-III-9.8, libjpeg-6b, DocBook-utils-0.6.14 and medusa

Installation of Nautilus

Install Nautilus by running the following commands:

```
./configure --prefix=`pkg-config --variable=prefix ORBit-2.0` \
  --sysconfdir=/etc/gnome &&
make
```

To test the results, issue: **make check**.

Now, as the root user:

```
make install &&
install -v -m755 -d \
  `pkg-config --variable=prefix ORBit-2.0`/share/doc/nautilus-2.10.1 &&
install -v -m644 docs/*.{txt,dia,pdf,sxw,faq,html} \
  `pkg-config --variable=prefix ORBit-2.0`/share/doc/nautilus-2.10.1
```

Command Explanations

`--sysconfdir=/etc/gnome`: This switch puts configuration files in `/etc/gnome` instead of `$GNOME_PREFIX/etc`.

Contents

Installed Programs: nautilus, nautilus-connect-server, and nautilus-file-management-properties

Installed Libraries: libnautilus-extension.so, libnautilus-private.so, and Nautilus_shell.server bonobo server

Installed Directories: /etc/gnome/gconf/gconf.xml.defaults/[apps,schemas/apps]/nautilus, \$GNOME_PREFIX/include/nautilus, \$GNOME_PREFIX/share/doc/nautilus-2.10.1, \$GNOME_PREFIX/share/nautilus, and \$GNOME_PREFIX/share/pixmaps/nautilus

Short Descriptions

nautilus is the GNOME file manager.

libnautilus-*.so supply the functions needed by the file manager.

GNOME Doc Utils-0.2.0

Introduction to GNOME Doc Utils

The GNOME Doc Utils package is a collection of documentation utilities for the GNOME project. Notably, it contains utilities for building documentation and all auxiliary files in your source tree, and it contains the DocBook XSLT stylesheets that were once distributed with Yelp. Starting with GNOME 2.8, Yelp will require GNOME Doc Utils for the XSLT.

Package Information

- Download (HTTP):
<http://ftp.gnome.org/pub/GNOME/sources/gnome-doc-utils/0.2/gnome-doc-utils-0.2.0.tar.bz2>
- Download (FTP):
<ftp://ftp.gnome.org/pub/GNOME/sources/gnome-doc-utils/0.2/gnome-doc-utils-0.2.0.tar.bz2>
- Download MD5 sum: c72f2a974e4f05210d2736e92399c58e
- Download size: 285 KB
- Estimated disk space required: 5 MB
- Estimated build time: 0.2 SBU

GNOME Doc Utils Dependencies

Required

ScrollKeeper-0.3.14

Optional

pkg-config-0.19 and Python-2.4.1

Installation of GNOME Doc Utils



Note

The instructions below are based on installing the package into a GNOME-2 environment. If, for whatever reason, you're installing this package without having ORBit2 and the core GNOME-2 libraries installed, you'll need to modify the `--prefix=` parameter on the **configure** script to point to your desired installation path (e.g., `--prefix=/usr`).

Install GNOME Doc Utils by running the following commands:

```
./configure --prefix=`pkg-config --variable=prefix ORBit-2.0` \  
  --localstatedir=/var/lib &&  
make
```

To test the results, issue: **make check**.

Now, as the root user:

```
make install
```

Command Explanations

`--localstatedir=/var/lib`: This switch puts ScrollKeeper files in `/var/lib/scrollkeeper` instead of `$GNOME_PREFIX/var/scrollkeeper`.

Contents

Installed Programs:	gnome-doc-prepare and xml2po
Installed Libraries:	None
Installed Directories:	\$GNOME_PREFIX/share/gnome-doc-utils, \$GNOME_PREFIX/share/gnome/help/gnome-doc-make, \$GNOME_PREFIX/share/gnome/help/gnome-doc-xslt, \$GNOME_PREFIX/share/omf/gnome-doc-make, \$GNOME_PREFIX/share/omf/gnome-doc-xslt, \$GNOME_PREFIX/share/xml/gnome and \$GNOME_PREFIX/share/xml2po
Installed Stylesheets:	Custom DocBook XSLT stylesheets used by Yelp

Short Descriptions

gnome-doc-prepare	prepares a package to use gnome-doc-utils.
xml2po	is a Python script used to translate XML documents.

Libgtkhtml-2.6.3

Introduction to Libgtkhtml

The libgtkhtml package contains the libgtkhtml-2 library. This library provides an API for rendering HTML.

Package Information

- Download (HTTP): <http://ftp.gnome.org/pub/GNOME/sources/libgtkhtml/2.6/libgtkhtml-2.6.3.tar.bz2>
- Download (FTP): <ftp://ftp.gnome.org/pub/GNOME/sources/libgtkhtml/2.6/libgtkhtml-2.6.3.tar.bz2>
- Download MD5 sum: c77789241d725e189ffc0391eda94361
- Download size: 392 KB
- Estimated disk space required: 31 MB
- Estimated build time: 0.8 SBU

Libgtkhtml Dependencies

Required

GNOME Virtual File System-2.10.1

Optional

GAIL-1.8.3

Installation of Libgtkhtml

Install libgtkhtml by running the following commands:

```
./configure --prefix=`pkg-config --variable=prefix ORBit-2.0` \
            --disable-accessibility &&
make
```

This package does not come with a test suite.

Now, as the root user:

```
make install
```

Command Explanations

--disable-accessibility: This forces the package to build without linking to the libgailutil accessibility library. Remove this switch if you have GAIL installed.

Contents

Installed Programs: None
Installed Library: libgtkhtml-2.[so,a]

Installed Directory: \$GNOME_PREFIX/include/gtkhtml-2.0

Short Descriptions

`libgtkhtml-2.[so,a]` provides the functions necessary to render and/or edit HTML.

Yelp-2.6.5

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-2.6.5.tar.bz2>
- Download (FTP): <ftp://ftp.gnome.org/pub/GNOME/sources/yelp/2.6/yelp-2.6.5.tar.bz2>
- Download MD5 sum: 9bd94af344ee6a0bf69aa6f9cbd6b7e9
- Download size: 654 KB
- Estimated disk space required: 9 MB
- Estimated build time: 0.2 SBU

Yelp Dependencies

Required

libgnomeui-2.10.0, libgtkhtml-2.6.3 and ScrollKeeper-0.3.14

Recommended

GNOME Doc Utils-0.2.0 (required for XSLT transformations)

Installation of Yelp

Install Yelp by running the following commands:

```
./configure --prefix=`pkg-config --variable=prefix ORBit-2.0` \
  --localstatedir=/var/lib &&
make
```

This package does not come with a test suite.

Now, as the root user:

```
make install
```

Command Explanations

`--localstatedir=/var/lib`: This switch puts ScrollKeeper files in `/var/lib/scrollkeeper` instead of `$GNOME_PREFIX/var/scrollkeeper`.

Contents

- | | |
|-------------------------------|------------------------------------------------------------------------------------------------|
| Installed Programs: | gnome-help and yelp |
| Installed Library: | GNOME_Yelp.server bonobo server |
| Installed Directories: | <code>\$GNOME_PREFIX/share/sgml/docbook/yelp</code> and <code>\$GNOME_PREFIX/share/yelp</code> |

Short Descriptions

gnome-help is a symbolic link to **yelp**.

yelp is the GNOME help browser.

Control Center-2.10.1

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/2.10/control-center-2.10.1.tar.bz2>
- Download (FTP):
<ftp://ftp.gnome.org/pub/GNOME/sources/control-center/2.10/control-center-2.10.1.tar.bz2>
- Download MD5 sum: d95a5746aa349536dc0f59c61cdaf19f
- Download size: 2.6 MB
- Estimated disk space required: 54 MB
- Estimated build time: 1.0 SBU

Control Center Dependencies

Required

libxklavier-2.0, gnome-menus-2.10.1, Metacity-2.10.1, Nautilus-2.10.1 and GNOME Icon Theme-2.10.1

Optional

ALSA-1.0.9, gst-plugins-0.8.10 and XScreenSaver-4.21

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
```

This package does not come with a test suite.

Now, as the root user:

```
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

- Installed Programs:** gnome-accessibility-keyboard-properties, gnome-at-properties, gnome-background-properties, gnome-control-center, gnome-default-applications-properties, gnome-display-properties, gnome-font-properties, gnome-font-viewer, gnome-keybinding-properties, gnome-keyboard-properties, gnome-mouse-properties, gnome-network-preferences, gnome-settings-daemon, gnome-sound-properties, gnome-theme-applier, gnome-theme-manager, gnome-theme-thumbailer, gnome-thumbnail-font, gnome-typing-monitor, gnome-ui-properties, and gnome-window-properties
- Installed Libraries:** libgnome-window-settings.[so,a], GNOME VFS and window manager settings library modules and Nautilus library module extensions
- Installed Directories:** several config directories under the `/etc/gnome/gconf/gconf.xml.defaults/` hierarchy, `$GNOME_PREFIX/include/gnome-window-settings-2.0`, `$GNOME_PREFIX/lib/[nautilus,window-manager-settings]`, `$GNOME_PREFIX/share/control-center-2.0`, and `$GNOME_PREFIX/share/gnome/[cursor-fonts,vfolders]`

GNOME2 User Docs-2.8.1

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/2.8/gnome2-user-docs-2.8.1.tar.bz2>
- Download (FTP):
<ftp://ftp.gnome.org/pub/GNOME/sources/gnome2-user-docs/2.8/gnome2-user-docs-2.8.1.tar.bz2>
- Download MD5 sum: 90bdd21ea3e3e794f641dd805216f275
- Download size: 1.0 MB
- Estimated disk space required: 6 MB
- Estimated build time: less than 0.1 SBU

GNOME2 User Docs Dependencies

Required

ScrollKeeper-0.3.14

Optional

DocBook-utils-0.6.14

Installation of GNOME2 User Docs



Note

The instructions below are based on installing the package into a GNOME-2 environment. If, for whatever reason, you're installing this package without having ORBit2 and the core GNOME-2 libraries installed, you'll need to modify the `--prefix=` parameter on the **configure** script to point to your desired installation path (e.g., `--prefix=/usr`).

Install GNOME2 User Docs by running the following commands:

```
./configure --prefix=`pkg-config --variable=prefix ORBit-2.0` \
  --localstatedir=/var/lib &&
make
```

This package does not come with a test suite.

Now, as the root user:

```
make install &&
chmod -v 644 `pkg-config --variable=prefix ORBit-2.0`/share/gnome/help/\
{gnome-access-guide,system-admin-guide,user-guide}/C/*.xml
```

Command Explanations

`--localstatedir=/var/lib`: This switch puts ScrollKeeper files in `/var/lib/scrollkeeper` instead of `$GNOME_PREFIX/var/scrollkeeper`.

Contents

Installed Programs: None

Installed Libraries: None

Installed Directories: `$GNOME_PREFIX/share/gnome/help/[gnome-access-guide,system-admin-guide,user-guide]`
and `$GNOME_PREFIX/share/omf/[gnome2-user-docs,user-guide]`

Short Descriptions

OMF files contain user documentation. These include introductions and help on the core packages.

Configuring the Core GNOME Packages

Create (or append to) an `.xinitrc` file to start GNOME:

```
echo "exec gnome-session" >> ~/.xinitrc
```

Ensure all libraries can be found with (as `root`):

```
ldconfig
```

Update the MIME-type application database (as `root`):

```
update-desktop-database
```

At this point you can bring up GNOME with `startx`.

Chapter 31. GNOME Additional Packages

These packages are modular and add desktop applications and assorted utilities to the GNOME environment. Feel free to install them on an as needed or as desired basis.

libgnomecups-0.2.0

Introduction to libgnomecups

The libgnomecups package contains a library used to wrap the CUPS API in a GLib fashion, so CUPS code can be cleanly integrated with GLib code.

Package Information

- Download (HTTP):
<http://ftp.gnome.org/pub/GNOME/sources/libgnomecups/0.2/libgnomecups-0.2.0.tar.bz2>
- Download (FTP): <ftp://ftp.gnome.org/pub/GNOME/sources/libgnomecups/0.2/libgnomecups-0.2.0.tar.bz2>
- Download MD5 sum: 227cb2b119412b164bece23b287a130d
- Download size: 310 KB
- Estimated disk space required: 4 MB
- Estimated build time: less than 0.1 SBU

libgnomecups Dependencies

Required

CUPS-1.1.23, GLib-2.6.4 and intltool-0.33

Installation of libgnomecups



Note

The instructions below are based on installing the package into a GNOME-2 environment. If, for whatever reason, you're installing this package without having ORBit2 and the core GNOME-2 libraries installed, you'll need to modify the `--prefix=` parameter on the **configure** script to point to your desired installation path (e.g., `--prefix=/usr`).

Install libgnomecups by running the following commands:

```
./configure --prefix=`pkg-config --variable=prefix ORBit-2.0` &&  
make
```

This package does not come with a test suite.

Now, as the root user:

```
make install
```

Contents

Installed Programs: None
Installed Library: libgnomecups-1.0.[so,a]
Installed Directory: \$GNOME_PREFIX/include/libgnomecups-1

Short Descriptions

libgnomecups-1.0.[so,a] libraries are used to wrap the CUPS API in a GLib type interface.

libgnomeprint-2.10.3

Introduction to libgnomeprint

The libgnomeprint package contains libgnomeprint libraries.

Package Information

- Download (HTTP):
<http://ftp.gnome.org/pub/GNOME/sources/libgnomeprint/2.10/libgnomeprint-2.10.3.tar.bz2>
- Download (FTP):
<ftp://ftp.gnome.org/pub/GNOME/sources/libgnomeprint/2.10/libgnomeprint-2.10.3.tar.bz2>
- Download MD5 sum: 9052dc919ad038b1a9e4d5301148588e
- Download size: 727 KB
- Estimated disk space required: 20 MB
- Estimated build time: 0.5 SBU

libgnomeprint Dependencies

Required

Pango-1.8.1, libart_lgpl-2.3.17, Fontconfig-2.3.2, popt-1.7-5, libxml2-2.6.20 and XML::Parser

Optional

CUPS-1.1.23 (and libgnomecups-0.2.0), GTK-Doc-1.3 and DocBook-utils-0.6.14

Installation of libgnomeprint



Note

The instructions below are based on installing the package into a GNOME-2 environment. If, for whatever reason, you're installing this package without having ORBit2 and the core GNOME-2 libraries installed, you'll need to modify the `--prefix=` parameter on the **configure** script to point to your desired installation path (e.g., `--prefix=/usr`).

Install libgnomeprint by running the following commands:

```
./configure --prefix=`pkg-config --variable=prefix ORBit-2.0` \
  --sysconfdir=/etc/gnome --disable-gtk-doc &&
make
```

The test suite requires Acroread-4 to be installed and passing `--with-metadata-printer` to the **configure** script. If the previous requirements are met and you wish to run the regression tests, change directories to the `tests` directory and issue: **./run-test.pl**.

Now, as the root user:

```
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. Remove this parameter if you have GTK-Doc installed and wish to rebuild the documentation.

Contents

Installed Programs: None

Installed Libraries: `libgnomeprint-2-2.[so,a]` and modules

Installed Directories: `$GNOME_PREFIX/include/libgnomeprint-2.2`,
`$GNOME_PREFIX/lib/libgnomeprint`,
`$GNOME_PREFIX/share/gtk-doc/html/libgnomeprint`, and
`$GNOME_PREFIX/share/libgnomeprint`

Short Descriptions

`libgnomeprint-2-2.[so,a]` implements the GNOME Printing Architecture.

libgnomeprintui-2.10.2

Introduction to libgnomeprintui

The libgnomeprintui package contains the libgnomeprintui library.

Package Information

- Download (HTTP):
<http://ftp.gnome.org/pub/GNOME/sources/libgnomeprintui/2.10/libgnomeprintui-2.10.2.tar.bz2>
- Download (FTP):
<ftp://ftp.gnome.org/pub/GNOME/sources/libgnomeprintui/2.10/libgnomeprintui-2.10.2.tar.bz2>
- Download MD5 sum: 01fce7918f4e106e00ee8b5447783e4c
- Download size: 626 KB
- Estimated disk space required: 15 MB
- Estimated build time: 0.3 SBU

libgnomeprintui Dependencies

Required

GTK+-2.6.7, libgnomeprint-2.10.3, GNOME Icon Theme-2.10.1 and libgnomecanvas-2.10.0

Optional

GTK-Doc-1.3

Installation of libgnomeprintui



Note

The instructions below are based on installing the package into a GNOME-2 environment. If, for whatever reason, you're installing this package without having ORBit2 and the core GNOME-2 libraries installed, you'll need to modify the `--prefix=` parameter on the **configure** script to point to your desired installation path (e.g., `--prefix=/usr`).

Install libgnomeprintui by running the following commands:

```
./configure --prefix=`pkg-config --variable=prefix ORBit-2.0` &&  
make
```

This package does not come with a test suite.

Now, as the root user:

```
make install
```

Contents

Installed Programs: None
Installed Library: libgnomeprintui-2-2.[so,a]
Installed Directories: \$GNOME_PREFIX/include/libgnomeprintui-2.2 and
\$GNOME_PREFIX/share/gtk-doc/html/libgnomeprintui

Short Descriptions

libgnomeprintui-2-2.[so,a] is the GUI portion of the GNOME Printing Architecture implementation.

GAL-2.4.2

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/2.4/gal-2.4.2.tar.bz2>
- Download (FTP): <ftp://ftp.gnome.org/pub/gnome/sources/gal/2.4/gal-2.4.2.tar.bz2>
- Download MD5 sum: 70e07fde659f0553ba56caee4f51908
- Download size: 1.2 MB
- Estimated disk space required: 63 MB
- Estimated build time: 1.5 SBU

GAL Dependencies

Required

libgnomeui-2.10.0 and libgnomeprintui-2.10.2

Optional

GTK-Doc-1.3

Installation of GAL

In order to build the documentation using GTK-Doc, issue the following commands to fix a build problem:

```
mv docs/gal-decl.txt docs/gal-2.4-decl.txt &&
mv docs/gal-sections.txt docs/gal-2.4-sections.txt &&
sed -i -e "s/gal-decl/gal-2.4-decl/" \
    -e "s/gal-sections/gal-2.4-sections/" docs/Makefile.in
```

Install GAL by running the following commands:

```
./configure --prefix=`pkg-config --variable=prefix ORBit-2.0` &&
make
```

This package does not come with a test suite.

Now, as the root user:

```
make install
```

Contents

Installed Programs: None

Installed Libraries: libgal-a11y-2.4.[so,a] and libgal-2.4.[so,a]

Installed Directories: \$GNOME_PREFIX/include/gal-2.4,
\$GNOME_PREFIX/share/gtk-doc/html/gal-2.4, and
\$GNOME_PREFIX/share/gal-2.4

GtkHTML-3.6.2

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/3.6/gtkhtml-3.6.2.tar.bz2>
- Download (FTP): <ftp://ftp.gnome.org/pub/gnome/sources/gtkhtml/3.6/gtkhtml-3.6.2.tar.bz2>
- Download MD5 sum: 37465fde0f1e1d7ba2284c5a4fd06fe7
- Download size: 1.4 MB
- Estimated disk space required: 54 MB
- Estimated build time: 1.2 SBU

GtkHTML Dependencies

Required

GAL-2.4.2

Optional

libsoup-2.2.3 and GAIL-1.8.3

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
```

This package does not come with a test suite.

Now, as the root user:

```
make install
```

Contents

Installed Programs:	None
Installed Libraries:	libgtkhtml-3.6.[so,a], libgnome-gtkhtml-editor-3.6[so,a], and GNOME_GtkHTML_Editor-3.6.server bonobo server
Installed Directories:	\$GNOME_PREFIX/include/libgtkhtml-3.6, \$GNOME_PREFIX/lib/gtkhtml, and \$GNOME_PREFIX/share/gtkhtml-3.6

Short Descriptions

`libgtkhtml-3.6.[so,a]` provide the functions to render HTML within applications.

Evolution Data Server-1.2.2

Introduction to Evolution Data Server

The Evolution Data Server package provides a unified backend for programs that work with contacts, tasks, and calendar information. It was originally developed for Evolution (hence the name), but is now used by other packages as well.

Package Information

- Download (HTTP):
<http://ftp.gnome.org/pub/gnome/sources/evolution-data-server/1.2/evolution-data-server-1.2.2.tar.bz2>
- Download (FTP):
<ftp://ftp.gnome.org/pub/gnome/sources/evolution-data-server/1.2/evolution-data-server-1.2.2.tar.bz2>
- Download MD5 sum: 2b15cba799e4594926472dca3e1747bb
- Download size: 7.5 MB
- Estimated disk space required: 146 MB
- Estimated build time: 2.9 SBU

Evolution Data Server Dependencies

Required

libgnomeui-2.10.0 and libsoup-2.2.3

Optional

OpenLDAP-2.2.24, Mozilla-1.7.8 (nsp4 libs for SSL and S/MIME support), Sendmail-8.13.4, Heimdal-0.7 or MIT krb5-1.4.1, krb4, GTK-Doc-1.3 and DocBook-utils-0.6.14

Installation of Evolution Data Server

Install Evolution Data Server 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
```

To test the results, issue: **make check**.

Now, as the root user:

```
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`.



Note

To enable many of the optional dependencies, review the information from `./configure --help` for the necessary parameters you must pass to the **configure** script.

Contents

Installed Programs:	camel-index-control-1.2, camel-lock-helper-1.2, and evolution-data-server-1.2
Installed Libraries:	libcamel-1.2.so, libcamel-provider-1.2.so, libebook-1.2.so, libecal-1.2.so, libedata-book-1.2.so, libedata-cal-1.2.so, libedataserver-1.2.so, libedataserverui-1.2.so, libgroupwise-1.2.so, and numerous provider and extension modules.
Installed Directories:	<code>\$GNOME_PREFIX/include/evolution-data-server-1.2</code> , <code>\$GNOME_PREFIX/lib/evolution-data-server-1.2</code> , <code>\$GNOME_PREFIX/share/evolution-data-server-1.2</code> , <code>\$GNOME_PREFIX/share/pixmaps/evolution-data-server-1.2</code> , <code>\$GNOME_PREFIX/share/idl/evolution-data-server-1.2</code> , and <code>\$GNOME_PREFIX/share/gtk-doc/html/libe*</code>

Short Descriptions

evolution-data-server-1.2	is the Evolution database backend server.
<code>libe*.so</code>	libraries are client, backend and utility libraries for the Evolution address books, calendar and data servers.

bug-buddy-2.10.0

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/2.10/bug-buddy-2.10.0.tar.bz2>
- Download (FTP): <ftp://ftp.gnome.org/pub/GNOME/sources/bug-buddy/2.10/bug-buddy-2.10.0.tar.bz2>
- Download MD5 sum: c821a933f3d7be64071c7bfc07ee1ac
- Download size: 718 KB
- Estimated disk space required: 10 MB
- Estimated build time: 0.1 SBU

bug-buddy Dependencies

Required

GNOME Desktop-2.10.1 and gnome-menus-2.10.1

Installation of bug-buddy

Install bug-buddy by running the following commands:

```
./configure --prefix=`pkg-config --variable=prefix ORBit-2.0` \
  --sysconfdir=/etc/gnome --localstatedir=/var/lib &&
make
```

This package does not come with a test suite.

Now, as the root user:

```
make install
```

Command Explanations

`--sysconfdir=/etc/gnome`: This switch puts GConf schema 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

Installed Program: bug-buddy

Installed Libraries: None

Installed Directories: /etc/gnome/gconf/gconf.xml.defaults/apps/bug-buddy,
/etc/gnome/gconf/gconf.xml.defaults/schemas/apps/bug-buddy,
\$GNOME_PREFIX/share/bug-buddy,
\$GNOME_PREFIX/share/gnome/help/bug-buddy and
\$GNOME_PREFIX/share/omf/bug-buddy

Short Descriptions

bug-buddy is a graphical bug reporting system.

gtksourceview-1.2.0

Introduction to gtksourceview

The `gtksourceview` package contains `libgtksourceview` libraries. This is useful for extending the GTK text functions to include syntax highlighting.

Package Information

- Download (HTTP):
`http://ftp.gnome.org/pub/GNOME/sources/gtksourceview/1.2/gtksourceview-1.2.0.tar.bz2`
- Download (FTP): `ftp://ftp.gnome.org/pub/GNOME/sources/gtksourceview/1.2/gtksourceview-1.2.0.tar.bz2`
- Download MD5 sum: `0a9f68a3faf982599b64276487c37c6d`
- Download size: 882 KB
- Estimated disk space required: 12 MB
- Estimated build time: 0.2 SBU

gtksourceview Dependencies

Required

GNOME Virtual File System-2.10.1 and `libgnomeprintui-2.10.2`

Optional

GTK-Doc-1.3

Installation of gtksourceview

Install `gtksourceview` by running the following commands:

```
./configure --prefix=`pkg-config --variable=prefix ORBit-2.0` &&  
make
```

This package does not come with a test suite, however, after the package is installed you can change to the `tests` directory in the source tree and issue `./test-widget` to test the functionality of the `libgtksourceview-1.0` library.

Now, as the root user:

```
make install
```

Contents

Installed Programs:	None
Installed Library:	<code>libgtksourceview-1.0.[so,a]</code>
Installed Directories:	<code>\$GNOME_PREFIX/include/gtksourceview-1.0</code> , <code>\$GNOME_PREFIX/share/gtk-doc/html/gtksourceview</code> , and

`$GNOME_PREFIX/share/gtksourceview-1.0`

Short Descriptions

`libgtksourceview-1.0.[so,a]` contains function extensions for the `GtkTextView` widget.

gedit-2.10.2

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/2.10/gedit-2.10.2.tar.bz2>
- Download (FTP): <ftp://ftp.gnome.org/pub/GNOME/sources/gedit/2.10/gedit-2.10.2.tar.bz2>
- Download MD5 sum: e3cf99b9233377583a69c4ad235e8494
- Download size: 3.1 MB
- Estimated disk space required: 56 MB
- Estimated build time: 0.6 SBU

gedit Dependencies

Required

EEL-2.10.1 and gtksourceview-1.2.0

Optional

Aspell-0.60.3

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
```

This package does not come with a test suite.

Now, as the root user:

```
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

Installed Programs: gedit and gnome-text-editor

Installed Libraries: GNOME_Gedit.server bonobo server and several gedit plugin modules

Installed Directories: /etc/gnome/gconf/gconf.xml.defaults/apps/gedit-2,
/etc/gnome/gconf/gconf.xml.defaults/schemas/apps/gedit-2,
\$GNOME_PREFIX/include/gedit-2.10, \$GNOME_PREFIX/lib/gedit-2,
\$GNOME_PREFIX/share/gedit-2, \$GNOME_PREFIX/share/gnome/help/gedit, and
\$GNOME_PREFIX/share/omf/gedit

Short Descriptions

gedit is a lightweight text editor.

gnome-text-editor is a symlink to **gedit**.

EOG-2.10.0

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/2.10/eog-2.10.0.tar.bz2>
- Download (FTP): <ftp://ftp.gnome.org/pub/GNOME/sources/eog/2.10/eog-2.10.0.tar.bz2>
- Download MD5 sum: 45c345a0aed600c7ab17c5af750b7c8c
- Download size: 903 KB
- Estimated disk space required: 14 MB
- Estimated build time: 0.2 SBU

EOG Dependencies

Required

libgnomeui-2.10.0

Optional

libjpeg-6b and libexif-0.6.12

Installation of EOG

Install EOG by running the following commands:

```
./configure --prefix=`pkg-config --variable=prefix ORBit-2.0` \
  --localstatedir=/var/lib --sysconfdir=/etc/gnome &&
make
```

This package does not come with a test suite.

Now, as the root user:

```
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

Installed Program: eog

Installed Libraries: None

Installed Directories: /etc/gnome/gconf/gconf.xml.defaults/apps/eog,
/etc/gnome/gconf/gconf.xml.defaults/schemas/apps/eog,
\$GNOME_PREFIX/share/eog, \$GNOME_PREFIX/share/gnome/help/eog,
\$GNOME_PREFIX/share/omf/eog and \$GNOME_PREFIX/share/pixmaps/eog

Short Descriptions

eog is a fast and functional image viewer as well as an image cataloging program.

GGV-2.8.4

Introduction to GGV

The GGV package contains a PostScript file viewer.

Package Information

- Download (HTTP): <http://ftp.gnome.org/pub/GNOME/sources/ggv/2.8/ggv-2.8.4.tar.bz2>
- Download (FTP): <ftp://ftp.gnome.org/pub/GNOME/sources/ggv/2.8/ggv-2.8.4.tar.bz2>
- Download MD5 sum: 7a465dcc795ebab69daa0ed658d2e978
- Download size: 1.3 MB
- Estimated disk space required: 17 MB
- Estimated build time: 0.3 SBU

GGV Dependencies

Required

libgnomeui-2.10.0 and ESP Ghostscript-7.07.1 or AFPL Ghostscript-8.51

Optional

CUPS-1.1.23 or LPRng-3.8.28

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
```

This package does not come with a test suite.

Now, as the root user:

```
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

Installed Programs:	ggv and ggv-postscript-viewer
Installed Libraries:	GNOME_GGV.server bonobo server
Installed Directories:	/etc/gnome/gconf/gconf.xml.defaults/apps/ggv, /etc/gnome/gconf/gconf.xml.defaults/schemas/apps/ggv, \$GNOME_PREFIX/share/gnome/help/ggv, \$GNOME_PREFIX/share/omf/ggv, and \$GNOME_PREFIX/share/pixmaps/ggv

Short Descriptions

ggv is a GNOME 2 based PostScript viewer.

File Roller-2.10.3

Introduction to File Roller

File Roller is an archive manager for GNOME with support for tar, bzip2, gzip, zip, jar, compress, lzop and many other archive formats.

Package Information

- Download (HTTP): <http://ftp.gnome.org/pub/GNOME/sources/file-roller/2.10/file-roller-2.10.3.tar.bz2>
- Download (FTP): <ftp://ftp.gnome.org/pub/GNOME/sources/file-roller/2.10/file-roller-2.10.3.tar.bz2>
- Download MD5 sum: dd152e2cb1bfe5c46930ae74c73e4f8e
- Download size: 1.3 MB
- Estimated disk space required: 20 MB
- Estimated build time: 0.3 SBU

File Roller Dependencies

Required

libgnomeui-2.10.0 and ScrollKeeper-0.3.14

Optional

Nautilus-2.10.1

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
```

This package does not come with a test suite.

Now, as the root user:

```
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

Installed Program: file-roller
Installed Libraries: bonobo component and nautilus extension
Installed Directories: /etc/gnome/gconf/gconf.xml.defaults/apps/file-roller,
/etc/gnome/gconf/gconf.xml.defaults/schemas/apps/file-roller,
\$GNOME_PREFIX/share/file-roller,
\$GNOME_PREFIX/share/gnome/help/file-roller, and
\$GNOME_PREFIX/share/omf/file-roller

Short Descriptions

file-roller is an archiver for GNOME.

GConf Editor-2.10.0

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/2.10/gconf-editor-2.10.0.tar.bz2>
- Download (FTP): <ftp://ftp.gnome.org/pub/GNOME/sources/gconf-editor/2.10/gconf-editor-2.10.0.tar.bz2>
- Download MD5 sum: 651a18f7eb5af91761521aa4f04ccc07
- Download size: 543 KB
- Estimated disk space required: 7 MB
- Estimated build time: 0.1 SBU

GConf Editor Dependencies

Required

libgnomeui-2.10.0

Installation of GConf Editor

Install GConf Editor by running the following commands:

```
./configure --prefix=`pkg-config --variable=prefix ORBit-2.0` \
  --sysconfdir=/etc/gnome --localstatedir=/var/lib &&
make
```

This package does not come with a test suite.

Now, as the root user:

```
make install
```

Command Explanations

`--sysconfdir=/etc/gnome`: This switch puts GConf schema files in `/etc/gnome/gconf/schemas` instead of `$GNOME_PREFIX/etc/gconf/schemas`.

`--localstatedir=/var/lib`: This switch puts ScrollKeeper files in `/var/lib/scrollkeeper` instead of `$GNOME_PREFIX/var/scrollkeeper`.

Contents

Installed Program: gconf-editor
Installed Libraries: None
Installed Directories: /etc/gnome/gconf/gconf.xml.defaults/apps/gconf-editor,

`/etc/gnome/gconf/gconf.xml.defaults/schemas/apps/gconf-editor,`
`$GNOME_PREFIX/share/gnome/help/gconf-editor,`
`$GNOME_PREFIX/share/omf/gconf-editor,` and
`$GNOME_PREFIX/share/pixmaps/gconf-editor`

Short Descriptions

gconf-editor allows direct modification of the GConf configuration database.

GNOME Utilities-2.10.1

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/2.10/gnome-utils-2.10.1.tar.bz2>
- Download (FTP): <ftp://ftp.gnome.org/pub/GNOME/sources/gnome-utils/2.10/gnome-utils-2.10.1.tar.bz2>
- Download MD5 sum: 78c0afdc112757b13d203fe1ad9c04ad
- Download size: 2.0 MB
- Estimated disk space required: 27 MB
- Estimated build time: 0.3 SBU

GNOME Utilities Dependencies

Required

GNOME Panel-2.10.1 and libgnomeprintui-2.10.2

Optional

Linux-PAM-0.80 (requires consolehelper) and HAL

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
```

This package does not come with a test suite.

Now, as the root user:

```
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`.

`--disable-hal`: Use this switch if you have HAL version `>0.4.7` installed, as the build will fail with higher versions due to the D-BUS/HAL ABI changes.

Contents

Installed Programs:	<code>gdictp-applet</code> , <code>gfloppy</code> , <code>gnome-dictionary</code> , <code>gnome-panel-screenshot</code> , <code>gnome-screenshot</code> , <code>gnome-search-tool</code> , and <code>gnome-system-log</code>
Installed Libraries:	<code>GNOME_GDictApplet.server</code> bonobo server
Installed Directories:	<code>/etc/gnome/gconf/gconf.xml.defaults/apps/gfloppy</code> , <code>/etc/gnome/gconf/gconf.xml.defaults/apps/gnome-dictionary</code> , <code>/etc/gnome/gconf/gconf.xml.defaults/apps/gnome-screenshot</code> , <code>/etc/gnome/gconf/gconf.xml.defaults/apps/gnome-search-tool</code> , <code>/etc/gnome/gconf/gconf.xml.defaults/apps/gnome-system-log</code> , <code>/etc/gnome/gconf/gconf.xml.defaults/schemas/apps/gfloppy</code> , <code>/etc/gnome/gconf/gconf.xml.defaults/schemas/apps/gnome-dictionary</code> , <code>/etc/gnome/gconf/gconf.xml.defaults/schemas/apps/gnome-screenshot</code> , <code>/etc/gnome/gconf/gconf.xml.defaults/schemas/apps/gnome-search-tool</code> , <code>/etc/gnome/gconf/gconf.xml.defaults/schemas/apps/gnome-system-log</code> , <code>\$GNOME_PREFIX/share/gnome-screenshot</code> , <code>\$GNOME_PREFIX/share/gnome-utils</code> , <code>\$GNOME_PREFIX/share/gnome/help/gfloppy</code> , <code>\$GNOME_PREFIX/share/gnome/help/gnome-dictionary</code> , <code>\$GNOME_PREFIX/share/gnome/help/gnome-search-tool</code> , <code>\$GNOME_PREFIX/share/gnome/help/gnome-system-log</code> , and <code>\$GNOME_PREFIX/share/omf/gnome-utils</code>

Short Descriptions

<code>gfloppy</code>	formats floppy disks under Linux.
<code>gnome-dictionary</code>	allows you to look up definitions and spelling of words.
<code>gnome-screenshot</code>	is used to capture the contents of the current desktop as a graphics formatted file.
<code>gnome-search-tool</code>	allows you to search for files on your system using simple and advanced search options.
<code>gnome-system-log</code>	allows you to monitor and view system log files.

system-tools-backends-1.2.0

Introduction to system-tools-backends

The system-tools-backends are a set of cross-platform scripts for Linux and other Unix systems. The backends provide a standard XML interface for modifying the configuration regardless of the distribution being used.

Package Information

- Download (HTTP):
<http://ftp.gnome.org/pub/GNOME/sources/system-tools-backends/1.2/system-tools-backends-1.2.0.tar.bz2>
- Download (FTP):
<ftp://ftp.gnome.org/pub/GNOME/sources/system-tools-backends/1.2/system-tools-backends-1.2.0.tar.bz2>
- Download MD5 sum: 96b00eb0f800c1b5346be2f71d4dc3b2
- Download size: 532 KB
- Estimated disk space required: 9 MB
- Estimated build time: less than 0.1 SBU

system-tools-backends Dependencies

Required

intltool-0.33

Installation of system-tools-backends



Note

The instructions below are based on installing the package into a GNOME-2 environment. If, for whatever reason, you're installing this package without having ORBit2 and the core GNOME-2 libraries installed, you'll need to modify the `--prefix=` parameter on the **configure** script to point to your desired installation path (e.g., `--prefix=/usr`).

Install system-tools-backends by running the following commands:

```
./configure --prefix=`pkg-config --variable=prefix ORBit-2.0` &&  
make
```

This package does not come with a test suite.

Now, as the `root` user:

```
make install
```

Contents

Installed Programs: None

Installed Libraries: None

Installed Directories: \$GNOME_PREFIX/share/setup-tool-backends

Short Descriptions

System tools backend scripts are configuration files, Perl and shell scripts used to perform setup of various desktop frontend processes and services.

GNOME System Monitor-2.10.1

Introduction to GNOME System Monitor

The GNOME System Monitor package contains **gnome-system-monitor**, GNOME's replacement for **gtop**.

Package Information

- Download (HTTP):
<http://ftp.gnome.org/pub/GNOME/sources/gnome-system-monitor/2.10/gnome-system-monitor-2.10.1.tar.bz2>
- Download (FTP):
<ftp://ftp.gnome.org/pub/GNOME/sources/gnome-system-monitor/2.10/gnome-system-monitor-2.10.1.tar.bz2>
- Download MD5 sum: 22acb1699193f8bd2ced656d44f57377
- Download size: 766 KB
- Estimated disk space required: 8 MB
- Estimated build time: 0.1 SBU

GNOME System Monitor Dependencies

Required

libgnomeui-2.10.0, libwnck-2.10.0 and LibGTop-2.10.1

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
```

This package does not come with a test suite.

Now, as the root user:

```
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

Installed Program: gnome-system-monitor

Installed Libraries: None

Installed Directories: /etc/gnome/gconf/gconf.xml.defaults/apps/procman,
/etc/gnome/gconf/gconf.xml.defaults/schemas/apps/procman,
\$GNOME_PREFIX/share/gnome/help/gnome-system-monitor, and,
\$GNOME_PREFIX/share/omf/gnome-system-monitor

Short Descriptions

gnome-system-monitor displays the process tree and hardware meters.

Nautilus CD Burner-2.10.1

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 using the GNOME file manager, Nautilus.

Package Information

- Download (HTTP):
<http://ftp.gnome.org/pub/GNOME/sources/nautilus-cd-burner/2.10/nautilus-cd-burner-2.10.1.tar.bz2>
- Download (FTP):
<ftp://ftp.gnome.org/pub/GNOME/sources/nautilus-cd-burner/2.10/nautilus-cd-burner-2.10.1.tar.bz2>
- Download MD5 sum: ce2b3bd588ca77190976e2487badc17d
- Download size: 515 KB
- Estimated disk space required: 8 MB
- Estimated build time: 0.2 SBU

Nautilus CD Burner Dependencies

Required

Nautilus-2.10.1 and Cdrtools-2.01

Optional

HAL

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
```

This package does not come with a test suite.

Now, as the root user:

```
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-hal`: Use this switch if you have HAL version >0.4.7 installed, as the build will fail with higher versions due to the D-BUS/HAL ABI changes.

Contents

Installed Programs:	mapping-daemon and nautilus-cd-burner
Installed Libraries:	libnautilus-burn.so and gnome-vfs and nautilus modules
Installed Directories:	/etc/gnome/gconf/gconf.xml.defaults/apps/nautilus-cd-burner, /etc/gnome/gconf/gconf.xml.defaults/schemas/apps/nautilus-cd-burner, \$GNOME_PREFIX/include/libnautilus-burn, and \$GNOME_PREFIX/share/nautilus-cd-burner

Short Descriptions

mapping-daemon	is the central daemon which keeps track of file mappings.
nautilus-cd-burner	is an extension to Nautilus that lets you burn CDs easily.

GNOME Media-2.10.2

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/2.10/gnome-media-2.10.2.tar.bz2>
- Download (FTP): <ftp://ftp.gnome.org/pub/GNOME/sources/gnome-media/2.10/gnome-media-2.10.2.tar.bz2>
- Download MD5 sum: 3d73cd40cfa52c5eef882302f92c60d6
- Download size: 3.3 MB
- Estimated disk space required: 36 MB
- Estimated build time: 0.50 SBU

GNOME Media Dependencies

Required

libgnomeui-2.10.0, Nautilus CD Burner-2.10.1, gst-plugins-0.8.10 and ScrollKeeper-0.3.14

Optional

GAIL-1.8.3, MTA, DocBook-utils-0.6.14

Installation of GNOME Media

Install GNOME Media by running the following commands:

```
sed -i -e \  

"s/-lORBit-2 -lbonobo-2 -lobject-2.0 -lglib-2.0/\$(CDDBSLAVE_LIBS)/" \  

  cddb-slave2/Makefile.in &&  

./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
```

This package does not come with a test suite.

Now, as the root user:

```
make install &&  

gst-register
```

Command Explanations

sed -i -e ... cddb-slave2/Makefile.in: This command fixes a bug encountered if `$GNOME_PREFIX` is not set to `/usr`.

--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

Installed Programs:	CDDDBSlave2, cddb-slave2-properties, cddb-track-editor, gnome-audio-profiles-properties, gnome-cd, gnome-sound-recorder, gnome-volume-control, gstreamer-properties, and vumeter
Installed Libraries:	libcddb-slave2.[so,a], libgnome-media-profiles.[so,a], libgnome-media-profiles.[so,a] libglade library, and GNOME_Media_CDDDBSlave2.server bonobo server
Installed Directories:	/etc/gnome/gconf/gconf.xml.defaults/apps/CDDDB-Slave2, /etc/gnome/gconf/gconf.xml.defaults/apps/gnome-cd, /etc/gnome/gconf/gconf.xml.defaults/apps/gnome-sound-recorder, /etc/gnome/gconf/gconf.xml.defaults/schemas/apps/CDDDB-Slave2, /etc/gnome/gconf/gconf.xml.defaults/schemas/apps/gnome-cd, /etc/gnome/gconf/gconf.xml.defaults/schemas/apps/gnome-sound-recorder, /etc/gnome/gconf/gconf.xml.defaults/schemas/system/gstreamer/audio, /etc/gnome/gconf/gconf.xml.defaults/system/gstreamer/audio, \$GNOME_PREFIX/include/[cddb-slave2,gnome-media], \$GNOME_PREFIX/share/gnome-media, \$GNOME_PREFIX/share/gnome-sound-recorder, \$GNOME_PREFIX/share/gnome/help/gnome-cd, \$GNOME_PREFIX/share/gnome/help/gnome-sound-recorder, \$GNOME_PREFIX/share/gnome/help/gnome-volume-control, \$GNOME_PREFIX/share/gnome/help/grecord, \$GNOME_PREFIX/share/gnome/help/gstreamer-properties, \$GNOME_PREFIX/share/gstreamer-properties, \$GNOME_PREFIX/share/omf/gnome-media, \$GNOME_PREFIX/share/pixmaps/gnome-cd, and \$GNOME_PREFIX/share/pixmaps/gnome-media

Short Descriptions

gnome-cd	is GNOME's CD Player.
gnome-sound-recorder	is GNOME's recorder.
gnome-volume-control	is GNOME's mixer with volume applet.
gstreamer-properties	is a GUI front-end to GStreamer's audio/video input/output parameters.
vumeter	is a visual volume meter.

gnome-audio-2.0.0

Introduction to gnome-audio

The `gnome-audio` package contains a set of default sounds for the GNOME GUI desktop. Sound files for startup, shutdown and many GTK+ events are included. These sounds compliment the GNOME Media package.

Package Information

- Download (HTTP): <http://ftp.gnome.org/pub/GNOME/sources/gnome-audio/2.0/gnome-audio-2.0.0.tar.bz2>
- Download (FTP): <ftp://ftp.gnome.org/pub/GNOME/sources/gnome-audio/2.0/gnome-audio-2.0.0.tar.bz2>
- Download MD5 sum: `cd14b84af59fb2ec673527d32f4e379f`
- Download size: 1.4 MB
- Estimated disk space required: 4 MB
- Estimated build time: less than 0.1 SBU

Installation of gnome-audio



Note

The instructions below are based on installing the package into a GNOME-2 environment. If, for whatever reason, you're installing this package without having ORBit2 and the core GNOME-2 libraries installed, you'll need to modify the `--prefix=` parameter on the **configure** script to point to your desired installation path (e.g., `--prefix=/usr`).

Install `gnome-audio` by running the following command as the `root` user:

```
make prefix=`pkg-config --variable=prefix ORBit-2.0` install
```

Contents

Installed Programs:	None
Installed Libraries:	None
Installed Directory:	<code>\$GNOME_PREFIX/share/sounds</code>

GNOME Netstatus-2.10.0

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 such as IP information and Ethernet address.

Package Information

- Download (HTTP):
<http://ftp.gnome.org/pub/GNOME/sources/gnome-netstatus/2.10/gnome-netstatus-2.10.0.tar.bz2>
- Download (FTP):
<ftp://ftp.gnome.org/pub/GNOME/sources/gnome-netstatus/2.10/gnome-netstatus-2.10.0.tar.bz2>
- Download MD5 sum: b1a044cfbe3299e00d514d966d4766e8
- Download size: 510 KB
- Estimated disk space required: 8 MB
- Estimated build time: 0.1 SBU

GNOME Netstatus Dependencies

Required

GNOME Panel-2.10.1

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
```

This package does not come with a test suite.

Now, as the root user:

```
make install &&
chmod 644 `pkg-config --variable=prefix ORBit-2.0` \
  /share/gnome/help/gnome-netstatus/C/*.xml
```

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

Installed Program:	<code>gnome-netstatus-applet</code>
Installed Library:	<code>GNOME_NetstatusApplet_Factory.server</code> bonobo server
Installed Directories:	<code>/etc/gnome/gconf/gconf.xml.defaults/apps/netstatus_applet</code> , <code>/etc/gnome/gconf/gconf.xml.defaults/schemas/apps/netstatus_applet</code> , <code>\$GNOME_PREFIX/share/gnome-netstatus</code> , <code>\$GNOME_PREFIX/share/gnome/help/gnome-netstatus</code> , and <code>\$GNOME_PREFIX/share/omf/gnome-netstatus</code>

Short Descriptions

<code>gnome-netstatus-applet</code>	displays information about a network interface on your panel.
--------------------------------------------	---------------------------------------------------------------

gcalctool-5.5.42

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/5.5/gcalctool-5.5.42.tar.bz2>
- Download (FTP): <ftp://ftp.gnome.org/pub/GNOME/sources/gcalctool/5.5/gcalctool-5.5.42.tar.bz2>
- Download MD5 sum: 0f42e6e437f64c844b7b30e3255b02aa
- Download size: 1.0 MB
- Estimated disk space required: 16 MB
- Estimated build time: 0.2 SBU

gcalctool Dependencies

Required

libgnomeui-2.10.0 and ScrollKeeper-0.3.14

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
```

This package does not come with a test suite.

Now, as the root user:

```
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

Installed Programs: gcalctool and gnome-calculator

Installed Libraries: None

Installed Directories: /etc/gnome/gconf/gconf.xml.defaults/apps/gcalctool,
/etc/gnome/gconf/gconf.xml.defaults/schemas/apps/gcalctool,
\$GNOME_PREFIX/share/gnome/help/gcalctool, and
\$GNOME_PREFIX/share/omf/gcalctool

Short Descriptions

gcalctool is a desktop calculator for GNOME.
gnome-calculator is a symlink to the **gcalctool** program.

GPdf-2.10.0

Introduction to GPdf

GPdf is a PDF viewer for GNOME. It is based on Xpdf and the GNOME Print Preview widget.

Package Information

- Download (HTTP): <http://ftp.gnome.org/pub/GNOME/sources/gpdf/2.10/gpdf-2.10.0.tar.bz2>
- Download (FTP): <ftp://ftp.gnome.org/pub/GNOME/sources/gpdf/2.10/gpdf-2.10.0.tar.bz2>
- Download MD5 sum: 9278cd3b9d06e3b1d364452f0e512fa9
- Download size: 1.0 MB
- Estimated disk space required: 36 MB
- Estimated build time: 0.5 SBU

GPdf Dependencies

Required

libgnomeui-2.10.0 and libgnomeprintui-2.10.2

Optional

TeX-3.0 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
```

To test the results, issue: **make check**.

Now, as the root user:

```
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

Installed Programs:	gpdf and gnome-pdf-viewer
Installed Library:	GNOME_PDF.server bonobo server
Installed Directories:	/etc/gnome/gconf/gconf.xml.defaults/apps/gpdf, /etc/gnome/gconf/gconf.xml.defaults/schemas/apps/gpdf, \$GNOME_PREFIX/share/gnome/help/gpdf, \$GNOME_PREFIX/share/gpdf, \$GNOME_PREFIX/share/omf/gpdf, and \$GNOME_PREFIX/share/pixmaps/gpdf

Short Descriptions

gpdf is a PDF viewer for GNOME.

gucharmap-1.4.3

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-1.4.3.tar.bz2>
- Download (FTP): <ftp://ftp.gnome.org/pub/GNOME/sources/gucharmap/1.4/gucharmap-1.4.3.tar.bz2>
- Download MD5 sum: 9003427becd6fae9b2df5ddf1a6c390b
- Download size: 1.5 MB
- Estimated disk space required: 25 MB
- Estimated build time: 0.2 SBU

gucharmap Dependencies

Required

intltool-0.33 and GTK+-2.6.7

Optional

libgnomeui-2.10.0 and ScrollKeeper-0.3.14

Installation of gucharmap



Note

The instructions below are based on installing the package into a GNOME-2 environment. If, for whatever reason, you're installing this package without having ORBit2 and the core GNOME-2 libraries installed, you'll need to modify the `--prefix=` parameter on the **configure** script to point to your desired installation path (e.g., `--prefix=/usr`).

Install gucharmap by running the following commands:

```
./configure --prefix=`pkg-config --variable=prefix ORBit-2.0` \
  --localstatedir=/var/lib &&
make
```

This package does not come with a test suite.

Now, as the `root` user:

```
make install
```

Command Explanations

`--localstatedir=/var/lib`: This switch puts ScrollKeeper files in `/var/lib/scrollkeeper` instead of `$GNOME_PREFIX/var/scrollkeeper`.

Contents

Installed Programs: charmap, gnome-character-map, and gucharmap
Installed Library: libgucharmap.so
Installed Directories: \$GNOME_PREFIX/include/gucharmap,
\$GNOME_PREFIX/share/gnome/help/gucharmap, and
\$GNOME_PREFIX/share/omf/gucharmap

Short Descriptions

gucharmap is a Unicode character map and font viewer.

Zenity-2.10.0

Introduction to Zenity

Zenity is a rewrite of `gdialog`, the GNOME port of `dialog` which allows you to display GTK+ dialog boxes from the command line and shell scripts.

Package Information

- Download (HTTP): <http://ftp.gnome.org/pub/GNOME/sources/zenity/2.10/zenity-2.10.0.tar.bz2>
- Download (FTP): <ftp://ftp.gnome.org/pub/GNOME/sources/zenity/2.10/zenity-2.10.0.tar.bz2>
- Download MD5 sum: `2e501bba72b6e7d4f951080b9e5f675b`
- Download size: 742 KB
- Estimated disk space required: 6 MB
- Estimated build time: less than 0.1 SBU

Zenity Dependencies

Required

`intltool-0.33`, `popt-1.7-5`, `libgnomecanvas-2.10.0` and `ScrollKeeper-0.3.14`

Installation of Zenity

Install Zenity by running the following commands:

```
./configure --prefix=`pkg-config --variable=prefix ORBit-2.0` \
  --localstatedir=/var/lib &&
make
```

This package does not come with a test suite.

Now, as the `root` user:

```
make install
```

Command Explanations

`--localstatedir=/var/lib`: This switch puts `ScrollKeeper` files in `/var/lib/scrollkeeper` instead of `$GNOME_PREFIX/var/scrollkeeper`.

Contents

Installed Programs:	<code>gdialog</code> and <code>zenity</code>
Installed Libraries:	None
Installed Directories:	<code>\$GNOME_PREFIX/share/gnome/help/zenity</code> , <code>\$GNOME_PREFIX/share/omf/zenity</code> , and <code>\$GNOME_PREFIX/share/zenity</code>

Short Descriptions

gdialog is a Perl wrapper script which can be used with legacy scripts.

zenity is a program that will display GTK+ dialogs, and return the user's input.

AT SPI-1.6.4

Introduction to AT SPI

The AT SPI package contains the 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/1.6/at-spi-1.6.4.tar.bz2>
- Download (FTP): <ftp://ftp.gnome.org/pub/GNOME/sources/at-spi/1.6/at-spi-1.6.4.tar.bz2>
- Download MD5 sum: be8b3077e2fab51a427303f228dffc2e
- Download size: 499 KB
- Estimated disk space required: 15 MB
- Estimated build time: 0.5 SBU

AT SPI Dependencies

Required

GAIL-1.8.3 and libbonobo-2.8.1

Optional

GTK-Doc-1.3

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 &&
make
```

The test suite cannot be run until after the package is installed. To run the test suite after installation, issue: **make check**.

Now, as the root user:

```
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

Installed Program: at-spi-registryd

Installed Libraries: libspi.[so,a], libcsapi.[so,a], libloginhelper.[so,a], the libatk-bridge.so GTK+ module, and ORBit-2.0 Accessibility modules

Installed Directories: \$GNOME_PREFIX/include/at-spi-1.0,
\$GNOME_PREFIX/share/gtk-doc/html/at-spi-cspi and
\$GNOME_PREFIX/share/idl/at-spi-1.0

Short Descriptions

at-spi-registryd is the registry daemon that allows communication between the UI and assistance devices.

libgail-gnome-1.1.1

Introduction to libgail-gnome

The libgail-gnome package contains the GNOME Accessibility Implementation library additions which implement ATK interfaces for libbonoboui and libgnomeui widgets.

Package Information

- Download (HTTP): <http://ftp.gnome.org/pub/gnome/sources/libgail-gnome/1.1/libgail-gnome-1.1.1.tar.bz2>
- Download (FTP): <ftp://ftp.gnome.org/pub/gnome/sources/libgail-gnome/1.1/libgail-gnome-1.1.1.tar.bz2>
- Download MD5 sum: 03f0bc21808484b5f64baffbad47ab0a
- Download size: 209 KB
- Estimated disk space required: 3 MB
- Estimated build time: 0.1 SBU

libgail-gnome Dependencies

Required

GNOME Panel-2.10.1 and AT SPI-1.6.4

Installation of libgail-gnome

Install libgail-gnome by running the following commands:

```
./configure --prefix=`pkg-config --variable=prefix ORBit-2.0` &&
make
```

To test the results, issue: **make check**.

Now, as the `root` user:

```
make install
```

Contents

Installed Programs:	None
Installed Library:	libgail-gnome.so GTK+ module
Installed Directories:	None

Short Descriptions

`libgail-gnome.so` library module is a GAIL addition which implements ATK interfaces for libbonoboui and libgnomeui widgets.

Java Access Bridge-1.4.5

Introduction to Java Access Bridge

The Java Access Bridge package contains Java components which connect the built-in accessibility support in Java Swing applications to the GNOME Accessibility framework, specifically the Assistive Technology Service Provider Interface (AT-SPI).

Package Information

- Download (HTTP):
<http://ftp.gnome.org/pub/GNOME/sources/java-access-bridge/1.4/java-access-bridge-1.4.5.tar.bz2>
- Download (FTP):
<ftp://ftp.gnome.org/pub/GNOME/sources/java-access-bridge/1.4/java-access-bridge-1.4.5.tar.bz2>
- Download MD5 sum: 55530a282c7b9d2634e72361d789378b
- Download size: 120 KB
- Estimated disk space required: 6 MB
- Estimated build time: 1.0 SBU

Java Access Bridge Dependencies

Required

AT SPI-1.6.4 and JDK-1.5.0

Installation of Java Access Bridge

Install Java Access Bridge by running the following commands:

```
./configure --prefix=`pkg-config --variable=prefix ORBit-2.0` &&  
make
```

This package does not come with a test suite.

Now, as the root user:

```
make install &&  
cat `pkg-config --variable=prefix \  
ORBit-2.0`/share/jar/accessibility.properties \  
>> $JAVA_HOME/jre/lib/accessibility.properties &&  
ln -v -sf `pkg-config --variable=prefix \  
ORBit-2.0`/share/jar/gnome-java-bridge.jar \  
$JAVA_HOME/jre/lib/ext
```

Command Explanations

cat `pkg-config ...`: This command appends to (or creates) the Java runtime `accessibility.properties` file required for Java Access Bridge.

ln -v -sf `pkg-config ...`: This command creates a link from the access bridge jar file to the Java runtime

library extensions directory.

Configuring Java Access Bridge

Config Files

`~/.orbitrc`

Configuration Information

Before running a Java program with the Java Access Bridge, you should ensure that your GNOME 2 installation enables CORBA traffic over IP from the ORBit2 ORB. Do this by adding the following line to `~/.orbitrc` using the following command:

```
cat >> ~/.orbitrc << "EOF"
ORBIIOPIPv4=1
EOF
```

Contents

Installed Programs:	None
Installed Libraries:	gnome-java-bridge.jar and JNav.jar
Installed Directories:	\$GNOME_PREFIX/share/jar

Short Descriptions

`gnome-java-bridge.jar` is a Java runtime environment extension that connects the built-in accessibility support in Java Swing applications to the GNOME Accessibility framework.

GNOME Speech-0.3.7

Introduction to GNOME Speech

The GNOME Speech package provides 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 built by default; 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-0.3.7.tar.bz2>
- Download (FTP): <ftp://ftp.gnome.org/pub/GNOME/sources/gnome-speech/0.3/gnome-speech-0.3.7.tar.bz2>
- Download MD5 sum: 0afa367c75288357fa3b8e274e72584d
- Download size: 275 KB
- Estimated disk space required: 5 MB
- Estimated build time: 0.1 SBU

GNOME Speech Dependencies

Required

libbonobo-2.8.1

Optional

Java Access Bridge-1.4.5, FreeTTS-1.2.1, Festival, ViaVoice, Eloquence, DECTalk and Theta

Installation of GNOME Speech



Note

You must install at least one of the backend drivers for GNOME Speech to render speech through the audio hardware. Testing the installation of the backend driver to ensure it produces desired results before installing GNOME Speech is recommended.

Install GNOME Speech by running the following commands:

```
./configure --prefix=`pkg-config --variable=prefix ORBit-2.0` &&  
make
```

This package does not come with a test suite.

Now, as the root user:

```
make install &&  
install -v -m644 -D doc/gnome-speech.html \  
    `pkg-config --variable=prefix ORBit-2.0`\  
/share/doc/gnome-speech-0.3.7/gnome-speech.html
```

Command Explanations

`--with-jab-dir=`pkg-config --variable=prefix ORBit-2.0`/share/jar`: Use this option if you have installed the Java Access Bridge package and wish to have GNOME Speech build in Java support.

Note: see the README and INSTALL files in the package source tree for the correct parameters to pass to **configure** to enable the desired backends.

Testing the Installation

You can test all the available backend drivers, voices and audio hardware using the **test-speech** command. Invoking **test-speech** produces a menu allowing you to select a backend driver and the desired voice, then prompts you (with on-screen prompts and text-to-speech audio) for additional information.

Contents

Installed Programs:	festival-synthesis-driver, freetts-synthesis-driver and test-speech
Installed Library:	libgnomespeech.[so,a]. Other drivers and libraries are also installed if you have enabled additional backends.
Installed Directories:	\$GNOME_PREFIX/include/gnome-speech-1.0, \$GNOME_PREFIX/share/doc/gnome-speech-0.3.7, \$GNOME_PREFIX/share/gnome-speech and \$GNOME_PREFIX/share/idl/gnome-speech-1.0

Short Descriptions

test-speech	is used to test the various backend drivers and voices installed on the system.
<code>libgnomespeech.[so,a]</code>	provides the API for programs to convert text into speech.

GNOME Magnifier-0.12.1

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/0.12/gnome-mag-0.12.1.tar.bz2>
- Download (FTP): <ftp://ftp.gnome.org/pub/GNOME/sources/gnome-mag/0.12/gnome-mag-0.12.1.tar.bz2>
- Download MD5 sum: 8987cdd1034baeae4554ea50f82715aa
- Download size: 332 KB
- Estimated disk space required: 6 MB
- Estimated build time: 0.2 SBU

GNOME Magnifier Dependencies

Required

AT SPI-1.6.4

Optional (For XFree86 Only)

Xdamage (requires XExtensions* then FixesExt then Xfixes then DamageExt)

* The XExtensions package is included with the BLFS XFree86 installation, but the pkgconfig .pc file FixesExt looks for is not installed. Satisfy the requirement by installing a xextensions.pc file:

As the root user:

```
cat > /usr/X11R6/lib/pkgconfig/xextensions.pc << "EOF"
prefix=/usr/X11R6
exec_prefix=${prefix}
libdir=${exec_prefix}/lib
includedir=${prefix}/include

Name: XExtensions
Description: Sundry X extension headers
Version: 1.0.1
Cflags: -I${includedir}

EOF
```

Installation of GNOME Magnifier

Install GNOME Magnifier by running the following commands:

```
./configure --prefix=`pkg-config --variable=prefix ORBit-2.0` &&
make
```

This package does not come with a test suite.

Now, as the `root` user:

```
make install
```

Contents

Installed Program: `magnifier`
Installed Library: `libgnome-mag.so`
Installed Directories: `$GNOME_PREFIX/include/gnome-mag-1.0`, `$GNOME_PREFIX/share/gnome-mag`
 and `$GNOME_PREFIX/share/idl/gnome-mag-1.0`

Short Descriptions

magnifier is a screen zooming utility.

Gnopernicus-0.10.9

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, automatic screen reading and more.

Package Information

- Download (HTTP): <http://ftp.gnome.org/pub/GNOME/sources/gnopernicus/0.10/gnopernicus-0.10.9.tar.bz2>
- Download (FTP): <ftp://ftp.gnome.org/pub/GNOME/sources/gnopernicus/0.10/gnopernicus-0.10.9.tar.bz2>
- Download MD5 sum: dd36c9b729344153812918c03dd84b12
- Download size: 2.0 MB
- Estimated disk space required: 38 MB
- Estimated build time: 0.6 SBU

Gnopernicus Dependencies

Required

libgail-gnome-1.1.1, ScrollKeeper-0.3.14, GNOME Speech-0.3.7 and GNOME Magnifier-0.12.1

Optional

GTK-Doc-1.3 and BRLTTY

Installation of Gnopernicus

Install Gnopernicus 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 \
  --with-default-fonts-path=/usr/X11R6/lib/X11/fonts/Type1 &&
make
```

This package does not come with a test suite.

Now, as the root user:

```
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`.

`--with-default-fonts-path=/usr/X11R6/lib/X11/fonts/Type1`: This switch installs Braille fonts into `/usr/X11R6/lib/X11/fonts/Type1` instead of `/usr/share/fonts/default/Type1`.

Contents

Installed Programs: brlmonitor, gnopernicus, gnopernicus-mag-config and srore

Installed Libraries: Gnopernicus support libraries

Installed Directories: /etc/gnome/gconf/gconf.xml.defaults/apps/gnopernicus,
 /etc/gnome/gconf/gconf.xml.defaults/schemas/apps/gnopernicus,
 /etc/gnome/gnopernicus-1.0, \$GNOME_PREFIX/include/gnopernicus-1.0,
 \$GNOME_PREFIX/lib/gnopernicus-1.0,
 \$GNOME_PREFIX/share/gnome/help/{brlmonitor,gnopernicus},
 \$GNOME_PREFIX/share/gnopernicus and
 \$GNOME_PREFIX/share/omf/gnopernicus

Short Descriptions

brlmonitor is a braille display simulator.

gnopernicus is a GUI menu interface used to access and configure the various functionality parameters provided for users with limited vision.

GOK-1.0.4

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/1.0/gok-1.0.4.tar.bz2>
- Download (FTP): <ftp://ftp.gnome.org/pub/GNOME/sources/gok/1.0/gok-1.0.4.tar.bz2>
- Download MD5 sum: 5fb60bc9f9868fef1edbb92ef62affcf
- Download size: 1.4 MB
- Estimated disk space required: 40 MB
- Estimated build time: 0.6 SBU

GOK Dependencies

Required

libgnomeui-2.10.0, ScrollKeeper-0.3.14, libwnck-2.10.0, AT SPI-1.6.4 and GNOME Speech-0.3.7

Optional

GTK-Doc-1.3

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
```

To test the results, issue: **make check**.

Now, as the root user:

```
make install &&
chmod -v 644 `pkg-config --variable=prefix ORBit-2.0` \
  /share/gnome/help/gok/C/legal.xml
```

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`.

Configuring GOK

Configuration Information

It is recommended that you configure your input device as an “Extended” input device. Exact configuration methods depend on the type of hardware attached to your system. See the README file in the package source tree and GOK Help for information on how to configure your input device.

Contents

Installed Programs: gok and create-branching-keyboard

Installed Libraries: None

Installed Directories: /etc/gnome/gconf/gconf.xml.defaults/apps/gok,
/etc/gnome/gconf/gconf.xml.defaults/schemas/apps/gok,
\$GNOME_PREFIX/share/gnome/help/gok, \$GNOME_PREFIX/share/gok,
\$GNOME_PREFIX/share/gtk-doc/html/gok and \$GNOME_PREFIX/share/omf/gok

Short Descriptions

gok is a dynamic onscreen keyboard utility.

Epiphany-1.6.2

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/1.6/epiphany-1.6.2.tar.bz2>
- Download (FTP): <ftp://ftp.gnome.org/pub/GNOME/sources/epiphany/1.6/epiphany-1.6.2.tar.bz2>
- Download MD5 sum: 3161495ac4af4a7435918a98896b05e9
- Download size: 3.0 MB
- Estimated disk space required: 59 MB
- Estimated build time: 0.9 SBU

Epiphany Dependencies

Required

GNOME Desktop-2.10.1, and Mozilla-1.7.8 or Firefox-1.0.6 or Thunderbird-1.0.6

Optional

startup-notification-0.8, D-BUS and GTK-Doc-1.3

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
```

This package does not come with a test suite.

Now, as the root user:

```
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`.

`--with-mozilla=firefox` or `--with-mozilla=thunderbird`: Use this option to use a system installed version of Firefox or Thunderbird instead of the default Mozilla.

Contents

Installed Program:	epiphany
Installed Libraries:	GNOME_Epiphany_Automation.server bonobo server
Installed Directories:	/etc/gnome/gconf/gconf.xml.defaults/apps/epiphany, /etc/gnome/gconf/gconf.xml.defaults/schemas/apps/epiphany, \$GNOME_PREFIX/include/epiphany-1.6, \$GNOME_PREFIX/share/epiphany, \$GNOME_PREFIX/share/gnome/help/epiphany, \$GNOME_PREFIX/share/gtk-doc/html/epiphany, and \$GNOME_PREFIX/share/omf/epiphany

Short Descriptions

epiphany is a GNOME web browser based on the Mozilla rendering engine.

GnomeMeeting-1.2.1

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/1.2/gnomemeeting-1.2.1.tar.bz2>
- Download (FTP): <ftp://ftp.gnome.org/pub/GNOME/sources/gnomemeeting/1.2/gnomemeeting-1.2.1.tar.bz2>
- Download MD5 sum: e765914ed1eb547d4a15d211e2ae9f57
- Download size: 3.7 MB
- Estimated disk space required: 48 MB
- Estimated build time: 0.9 SBU

GnomeMeeting Dependencies

Required

libgnomeui-2.10.0, ScrollKeeper-0.3.14, Evolution Data Server-1.2.2, OpenLDAP-2.2.24, PWLib-1.8.4 (compiled with OpenLDAP support) and OpenH323-1.15.3

Optional

SDL-1.2.8 (required for full-screen video), D-BUS and Howl

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
```

This package does not come with a test suite.

Now, as the root user:

```
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

Installed Programs: gnomemeeting and gnomemeeting-config-tool
Installed Libraries: None
Installed Directories: /etc/gnome/gconf/gconf.xml.defaults/apps/gnomemeeting,
/etc/gnome/gconf/gconf.xml.defaults/schemas/apps/gnomemeeting,
\$GNOME_PREFIX/share/gnome/help/gnomemeeting,
\$GNOME_PREFIX/share/gnomemeeting,
\$GNOME_PREFIX/share/omf/gnomemeeting and
\$GNOME_PREFIX/share/sounds/gnomemeeting

Short Descriptions

gnomemeeting is a H.323 Voip, Telephony and Video Conferencing application which uses the H.323 protocol.

GNOME Games-2.10.1

Introduction to GNOME Games

The GNOME Games package contains games. Starting with GNOME-2.8, the background graphics, artwork and themes for the games are supplied in a separate package. You can download the GNOME Games Extra Data package from <http://ftp.gnome.org/pub/GNOME/sources/gnome-games-extra-data/2.10/>.

Package Information

- Download (HTTP):
<http://ftp.gnome.org/pub/GNOME/sources/gnome-games/2.10/gnome-games-2.10.1.tar.bz2>
- Download (FTP):
<ftp://ftp.gnome.org/pub/GNOME/sources/gnome-games/2.10/gnome-games-2.10.1.tar.bz2>
- Download MD5 sum: b7d21e5e12de80c50266e8735e04577c
- Download size: 5.3 MB
- Estimated disk space required: 70 MB
- Estimated build time: 0.9 SBU

GNOME Games Dependencies

Required

libgnomeui-2.10.0, ScrollKeeper-0.3.14 and librsvg-2.9.5

Optional

Guile-1.6.7 (required to build the AisleRiot solitaire games), Howl and GOB2

Installation of GNOME Games

Some of the GNOME Games game binaries need 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 -v -m755 -d /var/lib/games &&
groupadd -g 60 games &&
useradd -c 'Games High Score Owner' -d /var/lib/games \
        -g games -s /bin/false -u 60 games &&
chown -v 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
```

This package does not come with a test suite.

Now, as the root user:

```
make install
```

Command Explanations

`--localstatedir=/var/lib`: This switch puts ScrollKeeper files in `/var/lib/scrollkeeper` instead of `$GNOME_PREFIX/var/scrollkeeper` and also causes the programs to use `/var/lib/games` as the directory holding the high score files.

`--sysconfdir=/etc/gnome`: This switch puts configuration files in `/etc/gnome` instead of `$GNOME_PREFIX/etc`.

`--disable-setgid`: This will prevent the setgid bit on the executables from being set. It provides system administrators with the option to disable setgid binaries, though it also means that the functionality to save high game scores will be disabled.

Contents

Installed Programs: blackjack, games-server.py, gataxx, glines, gnect, gnibbles, gnobots2, gnome-stones, gnometriz, gnomine, gnotravex, gnotski, gtali, iagno, mahjongg, same-gnome, and sol

Installed Libraries: **gnome-stones** objects

Installed Directories: `/etc/gnome/gconf/gconf.xml.defaults/apps/[game name]`,
`/etc/gnome/gconf/gconf.xml.defaults/schemas/apps/[game name]`,
`$GOME_PREFIX/lib/gnome-stones`, `$GOME_PREFIX/share/gnome-games`,
`$GOME_PREFIX/share/[help,pixmaps,sound]/[game name]`,
`$GOME_PREFIX/share/omf/gnome-games`, and `/var/lib/games`

Short Descriptions

See the README file in the source tree for a description of each game.

GDM-2.6.0.9

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-2.6.0.9.tar.bz2>
- Download (FTP): <ftp://ftp.gnome.org/pub/GNOME/sources/gdm/2.6/gdm-2.6.0.9.tar.bz2>
- Download MD5 sum: d845fe205412bb101d4c66d1e88a317d
- Download size: 3.4 MB
- Estimated disk space required: 46 MB
- Estimated build time: 0.5 SBU

GDM Dependencies

Required

libgnomeui-2.10.0, ScrollKeeper-0.3.14 and librsvg-2.9.5

Optional

Linux-PAM-0.80, tcpwrappers-7.6 and SELinux

Installation of GDM

It is recommended to have a dedicated user and group to take control of the **gdm-binary** daemon after it is started. Issue the following commands as the `root` user:

```
groupadd -g 21 gdm &&
useradd -c "GDM Daemon Owner" -d /dev/null -g gdm -s /bin/bash -u 21 gdm
```

Install GDM by running the following commands as an unprivileged user:

```
./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
```

This package does not come with a test suite.

Now, as the `root` user:

```
make install &&
chmod -v 644 --prefix=`pkg-config --variable=prefix ORBit-2.0` \
  /share/gdm/BuiltInSessions/default.desktop &&
chmod -v 644 --prefix=`pkg-config --variable=prefix ORBit-2.0` \
  /share/xsessions/gnome.desktop
```

Command Explanations

`--sysconfdir=/etc/gnome`: This command puts configuration files in `/etc/gnome` instead of `$GNOME_PREFIX/etc`.

`--localstatedir=/var/lib`: This command puts files in `/var/lib` instead of `$GNOME_PREFIX/var`. This also has the downside affect of using `/var/lib/log/gdm` as the log directory. See the “Configuration Information” section below for information how to relocate the log file directory.

`--with-pam-prefix=/etc`: This command puts PAM configuration files in `/etc/pam.d` instead of `/etc/gnome`.

Configuring GDM

Config Files

`/etc/gnome/gdm/gdm.conf`

Configuration Information

If desired, change the directory containing the GDM log files to the `/var/log` hierarchy by modifying the `/etc/gnome/gdm/gdm.conf` configuration file as the root user:

```
sed -i -e "s|var/lib/log|var/log|" /etc/gnome/gdm/gdm.conf
```

The GDM PAM config files contain modules not present in a BLFS installation. The following commands will replace those files (issue as the root user):

```
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.

Boot Script

To start a graphical login at boot, install the `/etc/rc.d/init.d/gdm` init script included in the `blfs-bootscripts-6.1` package. If your `GNOME_PREFIX` environment variable is anything other than `/usr` or `/opt/gnome-2.10`, you will need to modify the `PATH` statement in the script to include the path where you

have GNOME installed.

```
make install-gdm
```

To autostart with a graphical login, edit `/etc/inittab` so that the line containing:

```
id:3:initdefault:
```

is changed to:

```
id:5:initdefault:
```

Contents

Installed Programs:	gdm, gdm-binary, gdmXnest, gdmXnestchooser, gdmchooser, gdmflexiserver, gdmgreeter, gdmlogin, gdmphotosetup, gdmsetup, gdmthemetester, gdm-restart, gdm-safe-restart, gdm-stop, gdmconfig, gdmopen, and gdmtranslate
Installed Libraries:	None
Installed Directories:	<code>/etc/gnome/dm</code> , <code>/etc/gnome/gdm</code> , <code>\$GNOME_PREFIX/share/gdm</code> , <code>\$GNOME_PREFIX/share/gnome/capplets</code> , <code>\$GNOME_PREFIX/share/gnome/help/gdm</code> , <code>\$GNOME_PREFIX/share/omf/gdm</code> , <code>\$GNOME_PREFIX/share/xsessions</code> , <code>/var/lib/gdm</code> and <code>/var/log/gdm</code>

Short Descriptions

gdm	is a wrapper script to execute the GDM binary, the configurable GNOME based login prompt.
gdmchooser	is an application for selecting XDMCP enabled hosts on the local network.
gdmsetup	is a graphical interface to edit the <code>gdm.conf</code> file.
gdm-restart	sends the HUP signal to the GDM daemon so that it restarts. It's used after the config file is edited
gdm-safe-restart	sends the USR1 signal to the GDM daemon so that it restarts. It's used after the config file is edited.
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 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 installation.

Pre-installation Configuration

Add to your system or personal profile:

```
export PATH=$PATH:/opt/gnome-1.4/bin
export PKG_CONFIG_PATH=$PKG_CONFIG_PATH:/opt/gnome-1.4/lib/pkgconfig
export GNOME_LIBCONFIG_PATH=/usr/lib

if [ -z $INFOPATH ]
then
    export INFOPATH=/usr/share/info:/opt/gnome-1.4/info
else
    export INFOPATH=$INFOPATH:/opt/gnome-1.4/info
fi
```

Add to your `/etc/ld.so.conf`:

```
cat >> /etc/ld.so.conf << "EOF"
# Begin GNOME-1 addition to /etc/ld.so.conf

/opt/gnome-1.4/lib

# End GNOME-1 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-1 addition to man.conf

MANPATH /opt/gnome-1.4/man

# END GNOME-1 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 MD5 sum: 35acc6f8d49d930b566104fcceb893d3
- Download size: 1.0 MB
- Estimated disk space required: 29 MB
- Estimated build time: 0.6 SBU

ORBit Dependencies

Required

GLib-1.2.10

Optional

tcpwrappers-7.6

Installation of ORBit

Install ORBit by running the following commands:

```
./configure --prefix=/opt/gnome-1.4 &&
make
```

To test the results, issue: **make check**.

Now, as the `root` user:

```
make install &&
install -v -m755 -d /opt/gnome-1.4/share/doc/ORBit-0.5.17 &&
cp -v -R docs/* /opt/gnome-1.4/share/doc/ORBit-0.5.17
```

Contents

Installed Programs:	ior-decode, libIDL-config, name-client, old-name-server, orbit-config, orbit-idl, orbit-ird, orbit-event-server, and orbit-name-server
Installed Libraries:	libIDL.[so,a], libIIOP.[so,a], libname-server.a, liborbit-c-backend.a, libORBit.[so,a], libORBitCosNaming.[so,a], and libORBitutil.[so,a]
Installed Directories:	/opt/gnome-1.4, /opt/gnome-1.4/include/libIDL-1.0,

/opt/gnome-1.4/include/orbit-1.0, /opt/gnome-1.4/share/doc/ORBit-0.5.17 and
/opt/gnome-1.4/share/idl

Short Descriptions

libIDL.[so,a]	library is the Interface Definition Language mappings for CORBA.
libIIOP.[so,a]	is for low level CORBA communications.
libORBit.[so,a]	is the CORBA API.
libORBitutil.[so,a]	contains 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 MD5 sum: ed9aa2ceb70bba34034b3134b22d2729
- Download size: 435 KB
- Estimated disk space required: 7 MB
- Estimated build time: 0.2

OAF Dependencies

Required

ORBit-0.5.17, libxml-1.8.17 and popt-1.7-5

Optional

GTK-Doc-1.3

Installation of OAF

Install OAF by running the following commands:

```
ldconfig &&
./configure --prefix=/opt/gnome-1.4 --disable-gtk-doc &&
make
```

Now, as the root user:

```
make install &&
install -v -m755 -d /opt/gnome-1.4/share/gtk-doc/html/oaf-0.6.10 \
    /opt/gnome-1.4/share/doc/oaf-0.6.10 &&
install -v -m644 api-docs/html/* \
    /opt/gnome-1.4/share/gtk-doc/html/oaf-0.6.10 &&
install -v -m644 docs/{INTERNALS,*.txt} \
    /opt/gnome-1.4/share/doc/oaf-0.6.10
```

To test the results, issue: **make check** as an unprivileged user (the package must be installed before running the tests, else many tests fail).

Contents

Installed Programs: oaf-client, oaf-config, oaf-empty-server, oaf-run-query, oaf-slay, oaf-sysconf and oafd

Installed Libraries: liboaf.so

Installed Directories: /opt/gnome-1.4/etc/oaf, /opt/gnome-1.4/include/liboaf,
/opt/gnome-1.4/share/doc/oaf-0.6.10 and
/opt/gnome-1.4/share/gtk-doc/html/oaf-0.6.10

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 MD5 sum: 6111e91b143a90afb30f7a8c1e6cbbd6
- Download size: 2.8 MB
- Estimated disk space required: 70 MB
- Estimated build time: 1.4 SBU

GNOME Libraries Dependencies

Required

ORBit-0.5.17, GTK+-1.2.10, Imlib-1.9.15 and Berkeley DB-4.3.28

Optional

Audio File-0.2.6, EsounD-0.2.35 and GTK-Doc-1.3

Installation of GNOME Libraries

The installation process expects a `games` group to exist on the system. If you have not previously created this group, issue the following command as the `root` user:

```
groupadd -g 60 games
```

Install GNOME Libraries by running the following commands:

```
./configure --prefix=/opt/gnome-1.4 --disable-gtk-doc &&  
make
```

To test the results, issue: **make check**.

Now, as the `root` user:

```
make install
```

Configuring GNOME Libraries

Config Files

`/opt/gnome-1.4/etc/mime-magic,` `/opt/gnome-1.4/etc/paper.config,`
`/opt/gnome-1.4/etc/sound/events/gnome.soundlist` `and`

```
/opt/gnome-1.4/etc/sound/events/gtk-events.soundlist
```

Contents

Installed Programs:	dns-helper, gconfigger, gnome-bug, gnome-config, gnome-dump-metadata, gnome-gen-mimedb, gnome-moz-remote, gnome-name-service, gnome-pty-helper, gnome_segV, goad-browser, libart-config, loadshlib and new-object
Installed Libraries:	libart_lgpl.[so,a], libgnome.[so,a], libgnomeui.[so,a], libgnomesupport.[so,a], libgnorba.[so,a], libgnorbagtk.[so,a], libgtkxmhtml.[so,a], and libzvt.[so,a]
Installed Directories:	/opt/gnome-1.4/doc, /opt/gnome-1.4/etc/sound, /opt/gnome-1.4/include/gnome-1.0, /opt/gnome-1.4/lib/gnome-libs, /opt/gnome-1.4/share/gnome, /opt/gnome-1.4/share/gtk-doc/html/libart, /opt/gnome-1.4/share/mime-info, /opt/gnome-1.4/share/pixmaps, /opt/gnome-1.4/share/type-convert and /opt/gnome-1.4/var

Short Descriptions

libart_lgpl.[so,a]	is the LGPL component of libart.
libgnome.[so,a]	is the non-GUI part of the GNOME library.
libgnomeui.[so,a]	is the GUI part of the GNOME library.
libgnorbagtk.[so,a]	is the GNOME CORBA GTK framework.
libzvt.[so,a]	provides the functions necessary to emulate xterm .

GDK 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 MD5 sum: 05fcb68ceaa338614ab650c775efc2f2
- Download size: 398 KB
- Estimated disk space required: 9 MB
- Estimated build time: 0.3 SBU

GDK Pixel Buffer Dependencies

Required

GTK+-1.2.10

Optional

GNOME Libraries-1.4.2, GTK-Doc-1.3 and DocBook-utils-0.6.14

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-1.4 --disable-gtk-doc &&
make
```

To test the results, issue: **make check**.

Now, as the `root` user:

```
make install
```

Contents

Installed Programs:	gdk-pixbuf-config
Installed Libraries:	libgdk_pixbuf.[so,a], libgdk_pixbuf_xlib.[so,a], libgnomecanvaspixbuf.[so,a], and many gdk-pixbuf loader modules
Installed Directories:	/opt/gnome-1.4/include/gdk-pixbuf-1.0, /opt/gnome-1.4/lib/gdk-pixbuf and /opt/gnome-1.4/share/gnome/html/gdk-pixbuf

Short Descriptions

`libgdk_pixbuf.[so,a]` contains 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 MD5 sum: f9e13f4f17b04baceec1cdeed0f88eae
- Download size: 768 KB
- Estimated disk space required: 19 MB
- Estimated build time: 0.6

Additional Downloads

- Required Patch: http://www.linuxfromscratch.org/blfs/downloads/6.1/gnome-print-0.37-ft217_fixes-1.patch

GNOME Print Dependencies

Required

GDK Pixel Buffer-0.22.0, GNOME Libraries-1.4.2 and libxml-1.8.17

Installation of GNOME Print

Install GNOME Print by running the following commands:

```
patch -Np1 -i ../gnome-print-0.37-ft217_fixes-1.patch &&
./configure --prefix=/opt/gnome-1.4 &&
make
```

This package does not come with a test suite.

Now, as the `root` user:

```
make install
```

Contents

Installed Programs:	gnome-font-install
Installed Libraries:	libgnomeprint.[so,a]
Installed Directories:	/opt/gnome-1.4/etc/gnome, /opt/gnome-1.4/include/gnome-1.0/libgnomeprint, /opt/gnome-1.4/share/fonts, /opt/gnome-1.4/share/gnome-print and /opt/gnome-1.4/share/gnome/fonts

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 compound documents.

Package Information

- Download (HTTP): <http://ftp.gnome.org/pub/GNOME/sources/bonobo/1.0/bonobo-1.0.22.tar.bz2>
- Download (FTP): <ftp://ftp.gnome.org/pub/GNOME/sources/bonobo/1.0/bonobo-1.0.22.tar.bz2>
- Download MD5 sum: 7718c374ed82911b24d95fa3ab55dda5
- Download size: 1.2 MB
- Estimated disk space required: 48 MB
- Estimated build time: 1.5 SBU

Bonobo Dependencies

Required

OAF-0.6.10 and GNOME Print-0.37

Optional

GTK-Doc-1.3 and DocBook-utils-0.6.14

Installation of Bonobo

Install Bonobo by running the following commands:

```
./configure --prefix=/opt/gnome-1.4 &&
make
```

To test the results, issue: **make check**.

Now, as the `root` user:

```
make install &&
install -v -m755 -d /opt/gnome-1.4/share/doc/bonobo-1.0.22 &&
install -v -m644 doc/{FAQ,Monikers,*.txt} \
/opt/gnome-1.4/share/doc/bonobo-1.0.22
```

Command Explanations

`--prefix=/opt/gnome-1.4`: Installs Bonobo in the GNOME 1.4 directory structure.

Contents

Installed Programs: bonobo-application-x-mines, bonobo-audio-ulaw, bonobo-echo, bonobo-moniker-gunzip, bonobo-moniker-http, bonobo-sample-canvas-item,

bonobo-sample-controls, bonobo-sample-hello, bonobo-sample-paint, bonobo-selector, bonobo-text-plain, echo-client, efstool, gshell, libefs-config, moniker-test, sample-container and sample-control-container

Installed Libraries: libbonobo.[so,a], libbonobobox.[so,a], libbonobo-print.[so,a], libefs.[so,a] and Bonobo plugin and moniker modules

Installed Directories: /opt/gnome-1.4/include/gnome-1.0/bonobo, /opt/gnome-1.4/lib/bonobo, /opt/gnome-1.4/share/bonobo, /opt/gnome-1.4/share/doc/bonobo-1.0.22, /opt/gnome-1.4/share/gnome/bonobo, /opt/gnome-1.4/share/gnome/ui and /opt/gnome-1.4/share/libefs

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 MD5 sum: 613aea1d9b7a9c504f52217451c7bf99
- Download size: 784 KB
- Estimated disk space required: 17 MB
- Estimated build time: 0.3

Additional Downloads

- Required patch for Berkeley DB:
<http://www.linuxfromscratch.org/blfs/downloads/6.1/GConf-1.0.9-db43-2.patch>

GConf Dependencies

Required

OAF-0.6.10 and popt-1.7-5

Optional

GTK+-1.2.10, Berkeley DB-4.3.28, Guile-1.6.7 and GTK-Doc-1.3

Installation of GConf

If you have Berkeley DB installed, apply the following patch:

```
patch -Np1 -i ../GConf-1.0.9-db43-2.patch
```

Install GConf by running the following commands:

```
./configure --prefix=/opt/gnome-1.4 &&  
make
```

If you have GTK-Doc installed and wish to build the HTML documentation, issue the following commands:

```
cd doc/gconf &&  
make templates &&  
make sgml &&  
make html &&  
cd ../..
```

This package does not come with a test suite.

Now, as the root user:

```
make install
```

Contents

Installed Programs:	gconf-config, gconf-config-1, gconf-sanity-check-1, gconfd-1, gconftool, gconftool-1
Installed Libraries:	libgconf-1.[so,a], libgconf-gtk-1.[so,a] and GConf backend modules
Installed Directories:	/opt/gnome-1.4/etc/gconf, /opt/gnome-1.4/include/gconf, /opt/gnome-1.4/lib/GConf and /opt/gnome-1.4/share/gconf

Short Descriptions

`libgconf-1.[so,a]` 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 MD5 sum: e2a17a6b178f54c43968241258f3e729
- Download size: 781 KB
- Estimated disk space required: 17 MB
- Estimated build time: 0.9 SBU

Additional Downloads

- Required Patch: <http://www.linuxfromscratch.org/blfs/downloads/6.1/gnome-vfs-1.0.5-gcc34-1.patch>

GNOME Virtual File System Dependencies

Required

GNOME MIME Data-2.4.2 and GNOME Libraries-1.4.2

Optional

pkg-config-0.19, OAF-0.6.10, libxml-1.8.17, GConf-1.0.9, Bonobo-1.0.22, OpenSSL-0.9.7g, CDPParanoia-III-9.8, GTK-Doc-1.3 and DocBook-utils-0.6.14

Installation of GNOME Virtual File System

Install GNOME Virtual File System by running the following commands:

```
patch -Np1 -i ../gnome-vfs-1.0.5-gcc34-1.patch &&
./configure --prefix=/opt/gnome-1.4 --disable-gtk-doc &&
make
```

To test the results, issue: **make check**.

Now, as the `root` user:

```
make install
```

Contents

Installed Programs: gnome-vfs-config

Installed Libraries: libgnomevfs.[so,a], libgnomevfs-pthread.[so,a] and GNOME VFS filesystem modules

Installed Directories: /opt/gnome-1.4/etc/vfs, /opt/gnome-1.4/include/gnome-vfs-1.0,
/opt/gnome-1.4/lib/gnome-vfs-1.0, /opt/gnome-1.4/lib/vfs and
/opt/gnome-1.4/share/gtk-doc/html/gnome-vfs

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 MD5 sum: 38b2e2cfd813783fe157617813bfe3b3
- Download size: 418 KB
- Estimated disk space required: 5.9 MB
- Estimated build time: 0.2 SBU

Libglade Dependencies

Required

libxml-1.8.17 and GTK+-1.2.10

Optional

GNOME Libraries-1.4.2, Bonobo-1.0.22, Python-2.4.1 (to run the **libglade-xgettext** script) and GTK-Doc-1.3

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-1.4 --disable-gtk-doc &&  
make
```

This package does not come with a test suite.

Now, as the `root` user:

```
make install
```

Command Explanations

`--enable-bonobo`: Enables Bonobo support.

Contents

Installed Programs: libglade-config and libglade-xgettext

Installed Libraries: libglade.[so,a] and optionally, libglade-bonobo.[so,a] and libglade-gnome.[so,a]

Installed Directories: `/opt/gnome-1.4/include/libglade-1.0` and `/opt/gnome-1.4/share/gnome/html/libglade`

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 MD5 sum: 9f9790d4e8763c4ce74e5d59f47aa509
- Download size: 1.0 MB
- Estimated disk space required: 52 MB
- Estimated build time: 1.0 SBU

GAL Dependencies

Required

GNOME Print-0.37 and libglade-0.17

Optional

GNOME Virtual File System-1.0.5 and GTK-Doc-1.3

Installation of GAL

Install GAL by running the following commands:

```
./configure --prefix=/opt/gnome-1.4 &&  
make
```

If you have GTK-Doc installed and wish to build the HTML documentation, issue the following commands:

```
cd docs &&  
make templates &&  
make sgml &&  
make html &&  
cd ..
```

This package does not come with a test suite.

Now, as the root user:

```
make install
```

Command Explanations

`--prefix=/opt/gnome-1.4`: Installs GAL in the GNOME 1.4 directory structure.

Contents

Installed Programs: None

Installed Libraries: libgal.[so,a]

Installed Directories: /opt/gnome-1.4/include/gal-1.0, /opt/gnome-1.4/share/etable and /opt/gnome-1.4/share/gal

Guppi-0.40.3

Introduction to Guppi

The Guppi package contains a Guile scriptable plot library 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 MD5 sum: 26ec6eb5b6fe7fb4e32ecff64d4f1b16
- Download size: 1.0 MB
- Estimated disk space required: 32 MB
- Estimated build time: 1.3 SBU

Additional Downloads

- Required Patch: <http://www.linuxfromscratch.org/blfs/downloads/6.1/Guppi-0.40.3-gcc34-1.patch>
- Required Patch: http://www.linuxfromscratch.org/blfs/downloads/6.1/Guppi-0.40.3-legend_fix-1.patch

Guppi Dependencies

Required

GNOME Print-0.37 and libglade-0.17

Optional

Bonobo-1.0.22, GTK-Doc-1.3 and DocBook-utils-0.6.14

Installation of Guppi

Install Guppi by running the following commands:

```
patch -Np1 -i ../Guppi-0.40.3-gcc34-1.patch &&
patch -Np1 -i ../Guppi-0.40.3-legend_fix-1.patch &&
./configure --prefix=/opt/gnome-1.4 &&
make
```

This package does not come with a test suite.

Now, as the `root` user:

```
make install
```

Command Explanations

`--prefix=/opt/gnome-1.4`: Installs Guppi in the GNOME 1.4 directory structure.

Contents

Installed Programs: None

Installed Libraries: libguppi.so, libguppitank.so and numerous plotting plugin modules

Installed Directories: /opt/gnome-1.4/include/gnome-1.0/libguppi, /opt/gnome-1.4/lib/guppi, /opt/gnome-1.4/share/gnome/help/guppi, /opt/gnome-1.4/share/guppi and /opt/gnome-1.4/share/pixmaps/guppi

Libcapplet-1.5.11

Introduction to libcapplet

The libcapplet package contains a control panel applet library.

Package Information

- Download (HTTP): <http://ftp.gnome.org/pub/GNOME/sources/libcapplet/1.5/libcapplet-1.5.11.tar.bz2>
- Download (FTP): <ftp://ftp.gnome.org/pub/GNOME/sources/libcapplet/1.5/libcapplet-1.5.11.tar.bz2>
- Download MD5 sum: c6ba2bd6a08d82cba6b2b5360baab23c
- Download size: 312 KB
- Estimated disk space required: 2.7 MB
- Estimated build time: less than 0.1 SBU

Libcapplet Dependencies

Required

GNOME Libraries-1.4.2

Optional

pkg-config-0.19

Installation of Libcapplet

Install libcapplet by running the following commands:

```
./configure --prefix=/opt/gnome-1.4 &&  
make
```

This package does not come with a test suite.

Now, as the `root` user:

```
make install
```

Command Explanations

`--prefix=/opt/gnome-1.4`: Installs libcapplet in the GNOME 1.4 directory structure.

Contents

Installed Programs:	None
Installed Library:	libcapplet.[so,a]
Installed Directory:	/opt/gnome-1.4/include/libcapplet-1.4

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 MD5 sum: 61bb2fef816ce164af62f8a3a5bd782e
- Download size: 323 KB
- Estimated disk space required: 7.8 MB
- Estimated build time: 0.2

Additional Downloads

- Required Patch: http://www.linuxfromscratch.org/blfs/downloads/6.1/soup-0.7.11-gcc_3.4-1.patch

Soup Dependencies

Required

GLib-1.2.10 or GLib-2.6.4, libxml-1.8.17 or libxml2-2.6.20 and popt-1.7-5

Optional

Apache-2.0.54, OpenSSL-0.9.7g or Mozilla-1.7.8 (for the NSS libraries), GTK-Doc-1.3 and DocBook-utils-0.6.14

Installation of Soup

Install Soup by running the following commands:

```
patch -Np1 -i ../soup-0.7.11-gcc_3.4-1.patch &&
./configure --prefix=/opt/gnome-1.4 --disable-gtk-doc &&
make
```

This package does not come with a test suite.

Now, as the `root` user:

```
make install
```

Command Explanations

`--prefix=/opt/gnome-1.4`: Installs Soup in the GNOME 1.4 directory structure.

`--enable-apache=no`: This command can be added to prevent building against Apache.

Contents

Installed Programs:	soup-config, soup-httpd, soup-ssl-proxy and soup-wsdl
Installed Libraries:	libsoup.[so,a], libsoup-apache.[so,a] and libwsdl.[so,a]
Installed Directories:	/opt/gnome-1.4/include/soup and /opt/gnome-1.4/share/gtk-doc/html/soup

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 MD5 sum: 0690e7456f9a15c635f240f3d6d5dab2
- Download size: 147 KB
- Estimated disk space required: 1.5 MB
- Estimated build time: less than 0.1 SBU

Installation of Libghttp

Install libghttp by running the following commands:

```
./configure --prefix=/opt/gnome-1.4 &&  
make
```

This package does not come with a test suite.

Now, as the root user:

```
make install &&  
install -v -m644 -D doc/ghttp.html \  
    /opt/gnome-1.4/share/doc/libghttp-1.0.9/ghttp.html
```

Command Explanations

`--prefix=/opt/gnome-1.4`: Installs libghttp in the GNOME 1.4 directory structure.

Contents

Installed Programs:	None
Installed Library:	libghttp.[so,a]
Installed Directory:	/opt/gnome-1.4/share/doc/libghttp-1.0.9

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 MD5 sum: 83cd60ab9a108d2a0d65b3bf760affa4
- Download size: 1.0 MB
- Estimated disk space required: 36 MB
- Estimated build time: 1.4 SBU

Additional Downloads

- Required Patch: <http://www.linuxfromscratch.org/blfs/downloads/6.1/gtkhtml-1.1.7-gcc34-1.patch>

GtkHTML Dependencies

Required

GAL-0.24 and libcapplet-1.5.11

Optional

GConf-1.0.9, Soup-0.7.11, Bonobo-1.0.22, libghttp-1.0.9 and GTK-Doc-1.3

Installation of GtkHTML

Install GtkHTML by running the following commands:

```
patch -Np1 -i ../gtkhtml-1.1.7-gcc34-1.patch &&
./configure --prefix=/opt/gnome-1.4 --disable-gtk-doc &&
make
```

This package does not come with a test suite.

Now, as the root user:

```
make install
```

Command Explanations

`--prefix=/opt/gnome-1.4`: Install GtkHTML in the GNOME 1.4 directory structure.

Contents

Installed Programs: ebrowser, gnome-gtkhtml-editor-1.1 and gtkhtml-properties-capplet

Installed Libraries: libgtkhtml-1.1.[so,a], Bonobo plugin modules and Glade rendering components

Installed Directories: /opt/gnome-1.4/include/gtkhtml-1.1, /opt/gnome-1.4/share/control-center, /opt/gnome-1.4/share/gnome/apps, /opt/gnome-1.4/share/gnome/html/gtkhtml and /opt/gnome-1.4/share/gtkhtml-1.1

Part X. X Software

Chapter 33. Individual Office Programs

This chapter is a collection of independent 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-2.2.8

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://www.abisource.com/downloads/abiword/2.2.8/source/abiword-2.2.8.tar.bz2>
- Download (FTP):
- Download MD5 sum: f6f58e6ea4720ca635ede7b7f13cf156
- Download size: 23.4 MB
- Estimated disk space required: 208 MB
- Estimated build time: 2.7 SBU

AbiWord Dependencies

Required

popt-1.7-5, libglade-2.5.1 and FriBidi-0.10.5

Recommended

libjpeg-6b

Optional

gucharmap-1.4.3, libgnomeprintui-2.10.2, Nautilus-2.10.1, ImageMagick-6.2.3-5, Enchant (uses Aspell-0.60.3) and wv

Optional for Plugins

libsvg-2.9.5, GNOME Utilities-2.10.1, Python-2.4.1for gypstthon mailmerge, aiksaurus, libgda, libwmf, libwpd and libots

Installation of AbiWord

Install AbiWord by running the following commands:

```
cd abi &&
./configure --prefix=/usr &&
make &&
cd ../abiword-plugins &&
sed -i 's:python2.3:python2.4:g' configure &&
```

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

Now, as the root user:

```
cd ../abi &&
make install &&
cp -v -rf docs /usr/share/AbiSuite-2.2/AbiWord &&
cd ../abiword-plugins &&
make install
```

To build the help files, issue the following commands as an unprivileged user:

```
cd ../abiword-docs &&
./make-html.sh
```

And, as the root user:

```
install -v -m644 man/abiword.1 /usr/share/man/man1 &&
install -v -m644 Manual/en/Abiword_Manual.abw \
    /usr/share/AbiSuite-2.2/AbiWord/docs &&
cp -v -rf help /usr/share/AbiSuite-2.2/AbiWord &&
find /usr/share/AbiSuite-2.2/AbiWord/help \
    -type d -exec chmod -v 755 {} \;
```

To integrate AbiWord into your GNOME-2 environment, run the following commands:

```
cd .. &&
install -v -m644 abidistfiles/GNOME_AbiWord_Control_2_2.server \
    $GNOME_PREFIX/lib/bonobo/servers &&
install -v -m644 abi/abiword.desktop $GNOME_PREFIX/share/applications
```

Command Explanations

/make-html.sh: This command creates the HTML files used by AbiWord when help is requested from the main menu.

Contents

Installed Programs: abiword, AbiWord-2.2, ttfadmin.sh, and ttftool
Installed Libraries: None
Installed Directory: /usr/share/AbiSuite-2.2

Short Descriptions

abiword is a symbolic link to the main **AbiWord-2.2** executable.
AbiWord-2.2 is the word-processing program executable.
ttfadmin.sh generates support files required by AbiWord for each TrueType font in a given directory.

ttftool is a utility for processing TrueType fonts.

Gnumeric-1.4.3

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/1.4/gnumeric-1.4.3.tar.bz2>
- Download (FTP): <ftp://ftp.gnome.org/pub/GNOME/sources/gnumeric/1.4/gnumeric-1.4.3.tar.bz2>
- Download MD5 sum: b684eec48b1696d7a8d7152d1e17741c
- Download size: 13.7 MB
- Estimated disk space required: 216 MB
- Estimated build time: 2.4 SBU

Gnumeric Dependencies

Required

libgnomeprintui-2.10.2 and libgsf-1.12.0

Optional

libgnomeui-2.10.0, Python-2.4.1, PyGTK, libgnomedb (requires libgda), pplib and Psiconv



Note

Though only a run-time dependency, if you don't install the Yelp-2.6.5 package, the built-in help functionality in Gnumeric will not be available.

Installation of Gnumeric

Install Gnumeric by running the following commands:

```
./configure --prefix=/usr --without-gnome \
  --localstatedir=/var/lib --sysconfdir=/etc/gnome &&
make
```

This package does not come with a test suite.

Now, as the root user:

```
make install
```

If desired, install the developer documentation using the following commands:

```
install -v -m755 -d /usr/share/doc/gnumeric-1.4.3 &&
install -v -m644 doc/developer/* /usr/share/doc/gnumeric-1.4.3 &&
rm -v /usr/share/doc/gnumeric-1.4.3/Makefile*
```

Command Explanations

`--without-gnome`: This switch prevents the build from looking for the GNOME session related components. Remove this switch if you have a GNOME desktop or even just libgnomeui-2.10.0 installed.

`--localstatedir=/var/lib`: This switch puts ScrollKeeper files in `/var/lib/scrollkeeper` instead of `$GNOME_PREFIX/var/scrollkeeper`. This switch may not be applicable if you don't have Yelp-2.6.5 installed, but won't affect the build otherwise.

`--sysconfdir=/etc/gnome`: This switch puts configuration files in `/etc/gnome` instead of `$GNOME_PREFIX/etc`. This switch may not be applicable if you don't have GConf-2.10.0 installed, but won't affect the build otherwise.

Contents

Installed Programs:	gnumeric, gnumeric-1.4.3, and sconvert
Installed Libraries:	numerous filters, plugins and GNOME components
Installed Directories:	<code>/etc/gnome/gconf/gconf.xml.defaults/apps/gnumeric</code> , <code>/etc/gnome/gconf/gconf.xml.defaults/schemas/apps/gnumeric</code> , <code>/usr/lib/gnumeric</code> , <code>/usr/share/doc/gnumeric-1.4.3</code> , <code>/usr/share/gnumeric</code> , <code>/usr/share/mc</code> , <code>/usr/share/omf/gnumeric</code> and <code>/usr/share/pixmaps/gnumeric</code>

Short Descriptions

gnumeric	is a symlink to gnumeric-1.4.1
gnumeric-1.4.1	is GNOME's spreadsheet application.
sconvert	is a command line utility to convert spreadsheet files between various spreadsheet file formats.

GnuCash-1.8.11

Introduction to GnuCash

GnuCash is a personal finance manager.

Package Information

- Download (HTTP): <http://www.gnucash.org/pub/gnucash/sources/stable/gnucash-1.8.11.tar.gz>
- Download (FTP): <ftp://ftp.at.gnucash.org/pub/gnucash/gnucash/sources/stable/gnucash-1.8.11.tar.gz>
- Download MD5 sum: 62f94331936e37ed1b1d28b5a1863bb3
- Download size: 7.8 MB
- Estimated disk space required: 110 MB (additional 22 MB for Help documentation)
- Estimated build time: 2.9 SBU

Additional Downloads

- Help documentation: <http://www.gnucash.org/pub/gnucash/sources/stable/gnucash-docs-1.8.5.tar.gz>
- Download MD5 sum: 9758d8e523530c2509912761e327a9d5

GnuCash Dependencies

Required

OAF-0.6.10, GAL-0.24, GtkHTML-1.1.7, libhttp-1.0.9, gwrap-1.3.4 and SLIB-3a1

Optional

PostgreSQL-8.0.3, Guppi-0.40.3, ScrollKeeper-0.3.14, Doxygen-1.4.3, GraphViz, Guile-www, Electric Fence

Optional (for On-Line Banking)

LibOFX (requires OpenSP-1.5.1 and cURL-7.14.0), KtoBlzCheck, AqHBCI (requires Gwenhywfar then AqBanking), and also see libchipcard

Installation of GnuCash

Install GnuCash by running the following commands:

```
./configure --prefix=/opt/gnome-1.4 \
  --sysconfdir=/etc --disable-guppi &&
make
```

To test the results, issue **make check** as the `root` user as the test suite will attempt to update the SLIB catalog in `/usr/share/guile`.

Now, as the `root` user:

```
make install &&
chown -v -R root:root /opt/gnome-1.4/share/gnucash/doc/html/html
```

If you want to install the Help documentation (requires ScrollKeeper-0.3.14 to be installed), unpack the additional tarball, change into the `gnucash-docs-1.8.5` source directory and issue the following commands as an unprivileged user:

```
./configure --prefix=/opt/gnome-1.4 \
  --localstatedir=/var/lib &&
make
```

Now, as the `root` user:

```
make install
```

Command Explanations

`--prefix=/opt/gnome-1.4`: GnuCash-1.8.11 is a GNOME-1.4 application.

`--sysconfdir=/etc`: This installs configuration files in `/etc/gnucash` instead of `/opt/gnome-1.4/etc/gnucash`.

`--disable-guppi`: This compiles GnuCash without support for creating GUI graphs and plots. Remove this option if you have Guppi installed.

`--enable-sql`: This parameter is required if you want to build in SQL support using PostgreSQL.

`--enable-ofx`: This parameter is required if you want to build in on-line banking support using LibOFX.

`--enable-hbci`: This parameter is required if you want to build in on-line banking support using AqBanking/AqHBCI. See `doc/README.HBCI` in the GnuCash source tree for complete information.

Configuring GnuCash

Configuration Information

If you wish to use GnuCash to retrieve stock price quotes and stock historical information, you'll need to install the following Perl modules: `LWP`, `Date::Manip`, `HTML::Parser`, `Finance::Quote` and `Finance::QuoteHist`.



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 update scheme catalogs before it is used.

Contents

Installed Programs: `dump-finance-quote`, `gnc-prices`, `gnc-test-env`, `gnucash`, `gnucash-config`, `gnucash-env`, `gnucash-make-guids`, `gnucash-run-script` and `update-finance-quote`

Installed Libraries: `libcore-utils.so`, `libgnc-app-file-gnome.so`, `libgncgnome.so`, `libgncmodule.so`, `libgw-core-utils.so`, `libgw-gnc.so` and numerous support libraries installed in `/opt/gnome-1.4/lib/gnucash`

Installed Directories: /etc/gnucash, /opt/gnome-1.4/include/gnucash, /opt/gnome-1.4/lib/gnucash,
/opt/gnome-1.4/libexec/gnucash, /opt/gnome-1.4/share/gnome/apps/Applications,
/opt/gnome-1.4/share/gnome/help/gnucash, /opt/gnome-1.4/share/gnucash,
/opt/gnome-1.4/share/omf/gnucash-docs and /opt/gnome-1.4/share/pixmaps/gnucash

Short Descriptions

gnucash is a personal finance manager.

GIMP-2.2.8

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): <http://ftp.gwdg.de/pub/misc/grafik/gimp/gimp/v2.2/gimp-2.2.8.tar.bz2>
- Download (FTP): <ftp://ftp.gimp.org/pub/gimp/v2.2/gimp-2.2.8.tar.bz2>
- Download MD5 sum: 0db3fca2f741d6dd51eb61dc85778b16
- Download size: 14 MB
- Estimated disk space required: 381 MB (includes installing the help system)
- Estimated build time: 4.2 SBU (additional 0.9 SBU to run test suite)

Additional Downloads

- Optional help files: <ftp://ftp.gimp.org/pub/gimp/help/testing/gimp-help-2-0.8.tar.gz>
- Download MD5 sum: 2058eb88fe7a9d230bf3284546445c65
- Download size: 19 MB

GIMP Dependencies

Required

GTK+-2.6.7, libart_lgpl-2.3.17 and XML::Parser

Recommended

libjpeg-6b and libtiff-3.7.3

Optional

Gimp-Print-4.2.7, libmng-1.0.9, librsvg-2.9.5, AALib-1.4rc5, lcms-1.14, libexif-0.6.12, libgtkhtml-2.6.3 (used by the internal help system), libxslt-1.1.14, Python-2.4.1 (and PyGTK), GTK-Doc-1.3, MTA, ALSA-1.0.9 and libwmf

Installation of GIMP

Install GIMP by running the following commands:

```
./configure --prefix=/usr --sysconfdir=/etc --disable-print \
  --without-libjpeg --without-libtiff &&
make
```

To test the results, issue: **make check**.

Now, as the root user:

```
make install &&
```

```
install -v -m755 -d /usr/share/doc/gimp-2.2.8 &&
install -v -m644 docs/{Wilber*,keybindings.txt,quick_reference.ps} \
  /usr/share/doc/gimp-2.2.8
```

The `gimp-help` tarball contains a help system designed for use with the internal GIMP help browser, external web browsers and HTML renderers. If you downloaded the `gimp-help` tarball, change directories out of the GIMP source tree to the root of your build directory. Then, unpack the `gimp-help` tarball and change directories to the root of the newly created source tree (as an unprivileged user). Issue the following commands to install the help files:

```
./configure &&
make
```

Now, as the `root` user:

```
make install
```

Command Explanations

`--disable-print`: This option will disable print support and is necessary if Gimp-Print is not installed. If you have Gimp-Print installed, remove this option.

`--without-libjpeg`: This option is necessary if libjpeg is not installed. Remove it if libjpeg is installed.

`--without-libtiff`: This option is necessary if libtiff is not installed. Remove it if libtiff is installed.

Configuring GIMP

Config Files

`/etc/gimp/2.0/*` and `~/.gimp-2.0/gimprc`

Configuration Information

GIMP executes a configuration wizard for each user upon their initial use of the program.

Contents

Installed Programs: `gimp`, `gimp-2.2`, `gimp-remote`, `gimp-remote-2.2`, and `gimptool-2.0`

Installed Libraries: `libgimp-2.0.so`, `libgimpbase-2.0.so`, `libgimpcolor-2.0.so`, `libgimpmath-2.0.so`, `libgimpmodule-2.0.so`, `libgimpthumb-2.0.so`, `libgimpui-2.0.so`, `libgimpwidgets-2.0.so`, and many other modules and plugin libraries

Installed Directories: `/etc/gimp`, `/usr/include/gimp-2.0`, `/usr/lib/gimp`, `/usr/share/doc/gimp-2.2.8`, `/usr/share/gimp` and `/usr/share/gtk-doc/html/libgimp{,base,color,math,module,thumb,widgets}`

Short Descriptions

gimp	is a symbolic link to gimp-2.2 .
gimp-2.2	is an image manipulation program. It works with a variety of image formats and provides a large selection of tools.
gimp-remote	is a symbolic link to gimp-remote-2.2 .
gimp-remote-2.2	is a small utility that tells a running GIMP to open a local or remote image file.
gimptool-2.0	is a tool that can build plug-ins or scripts and install them if they are distributed in one source file. gimptool-2.0 can also be used by programs that need to know what libraries and include-paths GIMP was compiled with.
<code>libgimp-2.0.so</code>	provides C bindings for GIMP's Procedural Database (PDB) which offers an interface to core functions and to functionality provided by plug-ins.
<code>libgimpbase-2.0.so</code>	provides the C functions for basic GIMP functionality such as determining enumeration data types, gettext translation, determining GIMP's version number and capabilities, handling data files and accessing the environment.
<code>libgimpcolor-2.0.so</code>	provides the C functions relating to RGB, HSV and CMYK colors as well as converting colors between different color models and performing adaptive supersampling on an area.
<code>libgimpmath-2.0.so</code>	contains C functions which provide mathematical definitions and macros, manipulate 3x3 transformation matrices, set up and manipulate vectors and the MD5 message-digest algorithm.
<code>libgimpmodule-2.0.so</code>	provides the C functions which implements module loading using GModule and keeps a list of GimpModule's found in a given searchpath.
<code>libgimpthumb-2.0.so</code>	provides the C functions for handling GIMP's thumbnail objects.
<code>libgimpui-2.0.so</code>	contains the GIMP common user interface functions.
<code>libgimpwidgets-2.0.so</code>	contains GIMP and GTK widget creation and manipulation functions.

Evolution-2.2.2

Introduction to Evolution

The Evolution package contains an integrated mail, calendar and address book suite designed for the GNOME-2 environment.

Package Information

- Download (HTTP): <http://ftp.gnome.org/pub/GNOME/sources/evolution/2.2/evolution-2.2.2.tar.bz2>
- Download (FTP): <ftp://ftp.gnome.org/pub/GNOME/sources/evolution/2.2/evolution-2.2.2.tar.bz2>
- Download MD5 sum: 9b49942c8bdd1dc21f2d28792b12f400
- Download size: 13.8 MB
- Estimated disk space required: 198 MB
- Estimated build time: 4.1 SBU

Evolution Dependencies

Required

GtkHTML-3.6.2, Evolution Data Server-1.2.2

Recommended

Mozilla-1.7.8 or Firefox-1.0.6 or Thunderbird-1.0.6 (NSS and NSPR libs and headers required for SSL and S/MIME support)

Optional

GStreamer-0.8.10, OpenLDAP-2.2.24, Sendmail-8.13.4 (or other MTA that links to `/usr/sbin/sendmail`), Heimdal-0.7 or MIT krb5-1.4.1, krb4, GNOME Pilot conduits (requires pilot-link-0.11.8 then GNOME Pilot), GNOME Spell, D-BUS, kdebase-3.4.1, GTK-Doc-1.3 and DocBook-utils-0.6.14

Installation of Evolution

Install Evolution by running the following commands:

```
./configure --prefix=`pkg-config --variable=prefix ORBit-2.0` \
  --libexecdir=`pkg-config --variable=prefix ORBit-2.0`/lib \
  --localstatedir=/var/lib --sysconfdir=/etc/gnome \
  --disable-gtk-doc &&
make
```

This package does not come with a test suite.

Now, as the `root` user:

```
make install &&
ln -v -s evolution-2.2 \
  `pkg-config --variable=prefix ORBit-2.0`/bin/evolution
```

Command Explanations

`--disable-gtk-doc`: This parameter disables building the API documentation if you have GTK-Doc installed. Remove this parameter if you wish to build and install the documentation.

`--with-openldap`: This parameter will compile LDAP support into Evolution.

`--with-krb5`: This parameter will compile Kerberos5 support into Evolution.

`--with-pilot-conduits`: This parameter will build the GNOME Pilot conduits allowing you to synchronize Evolution data on a Palm device.

In `-v -s evolution-2.2 `pkg-config --variable=prefix ORBit-2.0`/bin/evolution`: This optional command creates a convenience symlink to the `evolution-2.2` binary.

Contents

Installed Programs:	evolution and evolution-2.2
Installed Libraries:	/usr/lib/evolution/2.2/* (contains support libraries, conduits, and other components)
Installed Directories:	/etc/gnome/gconf/gconf.xml.defaults/schemas/apps/evolution, /etc/gnome/gconf/gconf.xml.defaults/apps/evolution, \$GNOME_PREFIX/include/evolution-2.2, \$GNOME_PREFIX/lib/evolution, \$GNOME_PREFIX/share/idl/evolution-2.2, \$GNOME_PREFIX/share/gnome/help/evolution-2.2, \$GNOME_PREFIX/share/omf/evolution, and \$GNOME_PREFIX/share/evolution

Short Descriptions

evolution	is a symlink to the evolution-2.2 program.
evolution-2.2	is 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-1.4.0b

Introduction to KOffice

KOffice is the integrated office suite for KDE.

Package Information

- Download (HTTP): <http://mirrors.isc.org/pub/kde/stable/koffice-1.4/src/koffice-1.4.0a.tar.bz2>
- Download (FTP): <ftp://ftp.kde.org/pub/kde/stable/koffice-1.4/src/koffice-1.4.0a.tar.bz2>
- Download MD5 sum: 9a8494144962ea5434397289ed326385
- Download size: 18.8 MB
- Estimated disk space required: 303 MB (additional 55 MB for API docs)
- Estimated build time: 28.2 SBU (additional 0.5 SBU for API docs)

Additional Downloads

The following patch brings koffice up to version 1.4.0b.

- Download mirrors: http://www.koffice.org/bugfixes/koffice_1.4.0_patchset_1b.diff.bz2

KOffice has many localization packages in the form of: `koffice-l10n-[xx]-1.4.0.tar.bz2`. The `[xx]` is a two to seven character code for the country covered. The sizes of these files range from about 0.4 MB to 4.6 MB.

- KOffice l10n package listing: <http://download.kde.org/stable/koffice-1.4/src/koffice-l10n/>
- Download MD5 sums: <http://mirrors.isc.org/pub/kde/stable/koffice-1.4/src/MD5SUMS>

KOffice Dependencies

Required

kdebase-3.4.1

Recommended

libjpeg-6b, libart_lgpl-2.3.17, libxml2-2.6.20, libxslt-1.1.14

Optional

Aspell-0.60.3, Python-2.4.1, PostgreSQL-8.0.3, ImageMagick-6.2.3-5, libwv2, libwpd, libpaper, GraphViz, and Doxygen-1.4.3

Installation of KOffice

Install KOffice with the following commands:

```
patch -Np0 -i ../koffice_1.4.0_patchset_1b.diff &&
./configure --prefix=$KDE_PREFIX --disable-debug \
  --disable-dependency-tracking &&
make
```

Now, as the root user:

```
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**.

Contents

Installed Programs:	karbon, kchart, kformula, kivio, koconverter, koscript, koshell, kprconverter.pl, kpresenter, kspread, kthesaurus, kudesigner, kugar, and kword
Installed Libraries:	Numerous libraries (about 50) in \$KDE_PREFIX/lib
Installed Directory:	Numerous directories in \$KDE_PREFIX/share

Short Descriptions

kchart	is a chart drawing application.
kformula	is a formula editor.
kivio	is a flowchart program.
kpresenter	is a presentation builder/display program.
kspread	is a scriptable spreadsheet program.
kugar	is a tool for creating reports.
kword	is a framemaker-like word processing and desktop publishing program.

OpenOffice-1.1.4

Introduction to OpenOffice

OpenOffice is an office suite, the open source sibling of StarOffice.

Package Information

- Download (HTTP): <http://download.openoffice.org/1.1.4/source.html>
- Download (FTP): ftp://ftp.ussg.iu.edu/pub/openoffice/stable/1.1.4/OOo_1.1.4_source.tar.gz
- Download MD5 sum: 20c10db97865ae4c51dc827d668b8939
- Download size: 214 MB
- Estimated disk space required: 2.8 GB
- Estimated build time: 75 SBU

Additional Downloads

- Required security patch: http://www.linuxfromscratch.org/blfs/downloads/6.1/OOo_1.1.4-security-1.patch
- Required patch for gcc-3.4.3:
http://www.linuxfromscratch.org/blfs/downloads/6.1/OOo_1.1.4-gcc_3.4.2+_fixes-2.patch
- Required patch for use with NPTL:
http://www.linuxfromscratch.org/blfs/downloads/6.1/OOo_1.1.4-nptl-1.patch
- Required patch if compiling with JDK-1.5.0:
http://www.linuxfromscratch.org/blfs/downloads/6.1/OOo_1.1.4-jdk_1.5.0_fix-1.patch
- Required patch (Executable `test` is in `/bin`, not in `/usr/bin`):
http://www.linuxfromscratch.org/blfs/downloads/6.1/OOo_1.1.4-test_bin_loc-1.patch
- Required patch for STLport-4.6.2:
http://www.linuxfromscratch.org/blfs/downloads/6.1/OOo_1.1.4-STLport_4.6.2-1.patch
- Required patch for use with glibc-2.3.4:
http://www.linuxfromscratch.org/blfs/downloads/6.1/OOo_1.1.4-doublefree-1.patch
- Optional patch if you wish to use the system freetype:
http://www.linuxfromscratch.org/blfs/downloads/6.1/OOo_1.1.4-freetype-1.patch
- Optional patch if Linux-PAM-0.80 is not installed:
http://www.linuxfromscratch.org/blfs/downloads/6.1/OOo_1.1.4-no_pam-1.patch
- STLport-4.6.2: <http://www.stlport.org/archive/STLport-4.6.2.tar.gz>
- 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/>

OpenOffice Dependencies

Required

X (XFree86-4.5.0 or X.org-6.8.2), Zip-2.31, UnZip-5.52, Tesh-6.14.00, and which-2.16.

Recommended

JDK-1.5.0, FreeType-2.1.10, pkg-config-0.19, startup-notification-0.8, desktop-file-utils-0.10, Apache Ant-1.6.2, libart_lgpl-2.3.17, and cURL-7.14.0.

Optional

Linux-PAM-0.80 and NAS-1.7.

Installation of OpenOffice

OpenOffice does not create a directory when you extract the TAR ball. Create a build directory and extract the source with the following commands:

```
mkdir OOo-build &&
cd OOo-build &&
tar -zxf ../OOo_1.1.4_source.tar.gz
```

Apply all of the downloaded patches:

```
for PATCH in ../OOo_1.1.4-*.patch
do patch -Np1 -i ${PATCH}
done
```

Copy the STLport TAR ball into the source tree:

```
cp ../STLport-4.6.2.tar.gz stlport/download/
```

STLport looks for the c++ headers in the wrong location. Put a temporary symlink in place to satisfy STLport:

Now, as the root user:

```
ln -sf /usr/include/c++/3.4.3 /usr/g++-v3
```

Create a temporary symlink to the JRE's motif libraries:

Again, as the root user:

```
ln -sf ${JAVA_HOME}/jre/lib/i?86/motif21/libmawt.so /usr/lib
```

If you want to optimize the build, edit `solenv/inc/unxlngi4.mk` and add the desired optimization flags to the `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:

Now, as an unprivileged user:

```
sed -i "s:\-mcpu=pentiumpro::" \
solenv/inc/unxlngi4.mk
```

Configure OpenOffice using the following commands. You may build install sets for specific languages based on your preferences. Supply a comma separated list to the `--with-lang=` switch. If a particular component is not available in the language of your choice, the default will be US English. If you need other languages, be sure to add `ENUS` to the list; otherwise the build will fail:

```
cd config_office/ &&
./configure --with-lang=ENUS \
--with-dict=ENUS --without-fonts \
--enable-libsnsn --with-system-zlib \
--with-system-freetype \
```

```

--with-system-curl --disable-fonttoo \
--enable-libart &&
cd ..

```

OpenOffice fails to compile if **umask** is set to something exotic. The build can also fail if the `LANG` or `LC_ALL` environment variables are set. Use the following commands to change your environment accordingly:

```

umask 0022 &&
unset LANG LC_ALL

```

Compile OpenOffice using the following commands:

```

./bootstrap &&
bash -c "source LinuxIntelEnv.Set.sh; dmake"

```

If you have downloaded localized help content `tgz` files, you will need to untar them to the appropriate directory as shown below and then recreate the installation set:

```

for i in ../helpcontent_*_unix.tgz
do tar -C solver/645/unxlngi4.pro/pck -zxf $i
done &&
rm -rf instsetoo/unxlngi4.pro &&
bash -c "source LinuxIntelEnv.Set.sh ; dmake"

```

Install OpenOffice using the following commands to install the US English language set. To install a localized version, replace the `01` with the international telephone country code for your country:

```

cd instsetoo/unxlngi4.pro/01/normal &&
sed -i "s:^oo_home=.*:oo_home=openoffice:" install

```

Now, as the `root` user:

```

./install --prefix=/opt &&
for appl in sagenda scalc sdraw sfax simpres slabel sletter \
smaster smath smemo soffice spadmin svcard sweb swriter
do ln -v -sf /opt/openoffice/program/$appl /usr/bin/$appl
done

```

If you have installed `desktop-file-utils-0.10` and use KDE, there is no further configuration necessary. If you use Gnome, you should copy the `*.desktop` files to `/usr/share/applications` with the following commands as the `root` user:

```

install -v -d /usr/share/applications -m 755 &&
cp -v /opt/openoffice/share/gnome/net/ooo645*.desktop \
/usr/share/applications/ &&
rename -v ooo645 ooo /usr/share/applications/ooo645*.desktop

```

Finally, as the `root` user: remove the temporary symlinks:

```

rm /usr/g++-v3 &&
rm /usr/lib/libmawt.so

```

Command Explanations

`--with-lang=ENUS`: Make install set for the US English language.

`--with-dict=ENUS`: Install dictionaries for the US English language.

`--enable-libart`: Use libart instead of gpc for polygon clipping.

`--enable-libsnd`: Use startup-notification.

`--without-fonts`: Do not install Bitstream Vera fonts since they are already bundled with X.

`--with-system-curl`: Use the system installed curl.

`--disable-java`: Do not build components that need java.

`--without-gpc`: Do not use gpc. Removes polygon clipping capability.

`./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 sagenda scalc sdraw sfax ...; do ...:` Create links so that the package can be started from the command-line without changes to the existing path.

Contents

Installed Programs: sagenda, scalc, sdraw, sfax, simpres, slabel, sletter, smaster, smath, smemo, soffice, spadadmin, svcards, swab, swriter, and support utilities

Installed Libraries: OpenOffice libraries

Installed Directory: /opt/openoffice

Short Descriptions

sagenda create an agenda template and start **swriter**.

scalc spreadsheet application.

sdraw drawing application.

sfax create a fax template and start **swriter**.

simpres presentation application.

slabel create a label template and start **swriter**.

sletter create a letter template and start **swriter**.

smaster creates a new master document.

smath mathematical formula editor.

smemo create a memo template and start **swriter**.

- soffice** opens a base window with access to all OpenOffice applications.
- spadmin** OpenOffice Printer Configuration. You may need to run this if you are having any printing problems.
- svcard** business card application.
- sweb** an HTML editor.
- swriter** word processing application.

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-1.7.8

Introduction to Mozilla

Mozilla is a browser suite, the Open Source sibling of Netscape. It includes the browser, composer, mail and news clients, a calendar client and an IRC client.

The Mozilla project also hosts two subprojects that aim to satisfy the needs of users who don't need the complete browser suite or prefer 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:

- Firefox-1.0.6
- Thunderbird-1.0.6

Package Information

- Download (HTTP):
<http://ftp.mozilla.org/pub/mozilla.org/mozilla/releases/mozilla1.7.8/source/mozilla-1.7.8-source.tar.bz2>
- Download (FTP):
<ftp://ftp.mozilla.org/pub/mozilla.org/mozilla/releases/mozilla1.7.8/source/mozilla-1.7.8-source.tar.bz2>
- Download MD5 sum: a6fa13d0c9243060bac6821fcff4b973
- Download size: 29 MB
- Estimated disk space required: 636 MB
- Estimated build time: 12.9 SBU

Additional Downloads

To enable the Enigmail extension to the Mozilla mail client, you'll need to download the two tarballs below. The Enigmail extension allows users to access the authentication and encryption features provided by the GnuPG package.

- <http://downloads.mozdev.org/enigmail/src/enigmail-0.91.0.tar.gz>
- Download MD5 sum (Enigmail): 4ab46132f41b4f1718cd4141742f824b
- <http://downloads.mozdev.org/enigmail/src/ipc-1.1.2.tar.gz>
- Download MD5 sum (IPC): 4aa272b46c8cbf167dcd49a6d74cf526

Mozilla Dependencies

Required

Zip-2.31, GTK+-2.6.7, libIDL-0.8.5

Recommended

GnuPG-1.4.1 (for the Enigmail extension)

Optional

libjpeg-6b, UnZip-5.52, GNOME Virtual File System-2.10.1 (to build the gnomevfs extension), libart_lgpl-2.3.17, Heimdal-0.7 or MIT krb5-1.4.1 (for the GSSAPI libraries to build the negotiateauth extension), Doxygen-1.4.3, Xprint, Electric Fence and Cairo

Installation of Mozilla

Compile Mozilla by running the following commands:

```
export MOZILLA_OFFICIAL="1" &&
export BUILD_OFFICIAL="1" &&
export MOZ_CO_PROJECT="suite" &&
./configure --prefix=/usr \
    --with-default-mozilla-five-home=/usr/lib/mozilla \
    --with-system-zlib \
    --with-system-png \
    --enable-application=suite \
    --enable-default-toolkit=gtk2 \
    --enable-extensions=all \
    --enable-crypto \
    --enable-xft \
    --enable-xinerama \
    --enable-optimize \
    --enable-reorder \
    --enable-strip \
    --enable-cpp-rtti \
    --enable-calendar \
    --disable-freetype2 \
    --disable-accessibility \
    --disable-debug \
    --disable-tests \
    --disable-logging \
    --disable-pedantic \
    --disable-installer &&
make
```

You should add the `--with-system-jpeg` switch to the `configure` script if you have libjpeg installed.

If you're building the Mozilla mail and news clients and plan to install the Enigmail extension, execute the following steps:

```
tar -zxf ../enigmail-0.91.0.tar.gz -C extensions &&
tar -zxf ../ipc-1.1.2.tar.gz -C extensions &&
build/autoconf/make-makefile extensions/ipc extensions/enigmail &&
make -C extensions/ipc &&
make -C extensions/enigmail
```

Install Mozilla (as the `root` user) as follows:

```
make install &&
install -v -d -m755 /usr/include/mozilla-1.7.8/nss &&
cp -v -Lf dist/private/nss/*.h dist/public/nss/*.h \
  /usr/include/mozilla-1.7.8/nss &&
ln -v -nsf mozilla-1.7.8 /usr/include/mozilla &&
if [ -d /usr/lib/mozilla/plugins ]; then
    mv -v /usr/lib/mozilla/plugins/* /usr/lib/mozilla-1.7.8/plugins
    rm -v -rf /usr/lib/mozilla
fi &&
ln -v -nsf mozilla-1.7.8 /usr/lib/mozilla
```

If you're installing the Enigmail extension, issue the following commands as the `root` user:

```
make -C extensions/ipc install &&
make -C extensions/enigmail install
```

Some libraries, including the Netscape Portable Runtime (NSPR) and Network Security Services (NSS) libraries, installed by Mozilla are also needed by other packages. These libraries should be in `/usr/lib` so that other packages can link against them. As the `root` user, move them as follows:

```
for i in \
    lib{nspr4,plc4,plds4,nss3,smime3,softokn3,ssl3}.so libsoftokn3.chk
do
    mv -v /usr/lib/mozilla-1.7.8/$i /usr/lib/
    ln -v -sf ../$i /usr/lib/mozilla-1.7.8/
done
```

Create the required component registries to enable multi-user installs. These steps should be performed by the `root` user each time a Mozilla add-on is installed. This will allow unprivileged users to run **mozilla**. Enable multi-user operation by executing the following:

```
cd /usr/lib/mozilla-1.7.8 &&
export LD_LIBRARY_PATH="$PWD" &&
export MOZILLA_FIVE_HOME="$PWD" &&
./regxpcom &&
./regchrome &&
touch `find . -name *.rdf`
```



Note

You should run `/usr/bin/mozilla` once as the `root` user (or any user with write privileges) to create some necessary additional files in the `/usr` hierarchy.

Lastly, unset the build variables from the unprivileged user's environment:

```
unset MOZILLA_OFFICIAL &&
unset BUILD_OFFICIAL &&
unset MOZ_CO_PROJECT
```

Optional Extra Switches

You may wish to run `./configure --help` and review each of the listed options to discover what affect they have on the build. Feel free to add or remove options to tailor the build to your desires. Listed below are some common options not listed above but can be added to the `configure` command in order to have the described effect on the Mozilla compile.

`--with-system-jpeg`: Uses the system-installed copy of libjpeg instead of the bundled copy.

`--enable-elf-dynstr-gc`: Removes un-referenced strings from ELF shared objects generated during the build. Note that this option breaks the build on alpha.

`--disable-mailnews`: Disables the mail and news clients.

`--disable-ldap`: Disables LDAP support, recommended if mail is disabled.

`--enable-xterm-updates`: Displays the current command in the `xterm` window title during the compilation.

`--enable-plaintext-editor-only`: Disables 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 the package is built. These two exports specify a distribution is being built.

`--with-default-mozilla-five-home=/usr/lib/mozilla`: Sets the default value for `MOZILLA_FIVE_HOME`.

`--with-system-zlib --with-system-png` : Use the system-installed versions of these packages.

`--enable-application=suite`: Identifies the build as a Mozilla suite build.

`--enable-default-toolkit=gtk2`: Use the GTK2 toolkit for graphics rendering.

`--enable-extensions=all`: Enables all available extensions. If you want, you can disable any or all extensions other than the browser by changing this switch to `--enable-extensions="default,-venkman,-inspector,..."`. For a short description of the various extensions available with the Mozilla source, see <http://linuxfromscratch.org/~tushar/downloads/mozilla-extensions.txt>.

`--enable-crypto`: Enable the Personal Security Manager to enable SSL connections.

`--enable-calendar`: Builds the calendar application. Removed this parameter if you don't wish to build it.

`--enable-xft; --disable-freetype2`: Enable Xft support which automatically pulls in the FreeType libraries.

`--enable-xinerama; --enable-optimize; --enable-reorder; --enable-strip;`
`--enable-cpp-rtti --disable-accessibility; --disable-debug;`
`--disable-tests; --disable-logging; --disable-pedantic;`

`--disable-installer`: Various options that affect what components are built and some optimization options. You can pick and choose from these options. More information on them, and many other available options, can be found by running `./configure --help`.

install -d /usr/include/mozilla-1.7.8/nss; cp -Lf ...: Copy the NSS interface headers that are not copied by **make install**.

if [-d /usr/lib/mozilla/plugins] ... fi: Some applications may have already installed Mozilla plugins. This set of commands move any existing plugins to the newly created plugin directory, then removes the existing `/usr/lib/mozilla` directory.

ln -nsf mozilla-1.7.8 ...: Mozilla installs headers and libraries in version specific directories. These commands makes symbolic links so that applications depending on Mozilla (such as OpenOffice, Galeon, etc.) don't need to know which version of Mozilla is installed.

Configuring Mozilla

No specific configuration is required as long as the **mozilla** script is in the user's path. If Mozilla is installed in a non-standard location, then make a symlink to the **mozilla** script from `/usr/bin`.

Many applications look for **netscape** when they need to open a browser. You may make the following symlink for convenience (as the `root` user).

```
ln -v -sf mozilla /usr/bin/netscape
```

For installing various Mozilla plugins, refer to Mozdev's PluginDoc Project. If you have JDK-1.5.0 already installed, create the following link as the `root` user to utilize the JAVA plugin:

```
ln -v -s $JAVA_HOME/jre/plugin/i386/ns7/libjavaplugin_oji.so \
    /usr/lib/mozilla-1.7.8/plugins
```

Contents

Installed Program:	mozilla
Installed Libraries:	Numerous libraries, browser, and email/newsgroup components, plugins, extensions, and helper modules installed in <code>/usr/lib/mozilla-1.7.8</code>
Installed Directories:	<code>/usr/include/mozilla-1.7.8</code> , <code>/usr/lib/mozilla-1.7.8</code> , and <code>/usr/share/idl/mozilla-1.7.8</code>

Short Descriptions

mozilla is a browser/email/newsgroup/calendar/chat client suite. The various components such as the Composer, mail-news client, calendar, IRC chat client and address book can be accessed from the menu after **mozilla** starts or via command-line switches to the **mozilla** script. Issue **man mozilla** for additional information.

Firefox-1.0.6

Introduction to Firefox

Firefox is a stand-alone browser based on the Mozilla codebase.

Package Information

- Download (HTTP):
<http://ftp.mozilla.org/pub/mozilla.org/firefox/releases/1.0.6/source/firefox-1.0.6-source.tar.bz2>
- Download (FTP):
<ftp://ftp.mozilla.org/pub/mozilla.org/firefox/releases/1.0.6/source/firefox-1.0.6-source.tar.bz2>
- Download MD5 sum: 7b4c1d10d478dcb4c52fbbe3e41745d9
- Download size: 32.0 MB
- Estimated disk space required: 545 MB
- Estimated build time: 10.3 SBU

Firefox Dependencies

Required

GTK+-2.6.7, libIDL-0.8.5 and Zip-2.31

Optional

libjpeg-6b, UnZip-5.52, GNOME Virtual File System-2.10.1 and libgnome-2.10.0 (to build the gnomevfs extension), MIT krb5-1.4.1 or Heimdal-0.7 (for the GSSAPI libraries to build the negotiateauth extension), Doxygen-1.4.3, Xprint, Electric Fence and Cairo

Installation of Firefox

The configuration of Firefox is very similar to Mozilla-1.7.8 and hence the options are not discussed. Refer to the Mozilla-1.7.8 instructions for explanations and additional configuration information.

Compile and install Firefox by running the following commands:

```
export MOZILLA_OFFICIAL="1" &&
export BUILD_OFFICIAL="1" &&
export MOZ_PHOENIX="1" &&
./configure --prefix=/usr \
    --with-default-mozilla-five-home=/usr/lib/firefox-1.0 \
    --with-user-appdir=.firefox \
    --with-system-zlib \
    --with-system-png \
    --enable-application=browser \
    --enable-default-toolkit=gtk2 \
    --enable-extensions=cookie,xml-rpc,xmlextras,pref,\
transformiix,universalchardet,webservices,inspector,\
gnomevfs,negotiateauth \
    --enable-crypto \
    --enable-xft \
```

```

--enable-xinerama \
--enable-optimize \
--enable-reorder \
--enable-strip \
--enable-cpp-rtti \
--enable-single-profile \
--disable-freetype2 \
--disable-accessibility \
--disable-debug \
--disable-tests \
--disable-logging \
--disable-pedantic \
--disable-installer \
--disable-mailnews \
--disable-ldap \
--disable-composer \
--disable-profilesharing &&

```

```
make
```

You should add the `--with-system-jpeg` switch to the **configure** script if you have libjpeg installed.

This package does not come with a test suite.

Now, as the root user:

```

make install &&
install -d /usr/include/firefox-1.0.6/nss &&
cp -Lf dist/private/nss/*.h dist/public/nss/*.h \
  /usr/include/firefox-1.0.6/nss

```

To enable multi-user operation, execute the following as the root user:

```

cd /usr/lib/firefox-1.0.6 &&
export LD_LIBRARY_PATH="$PWD" &&
export MOZILLA_FIVE_HOME="$PWD" &&
./regxpcom &&
./regchrome &&
touch `find . -name *.rdf`

```



Note

You should run `/usr/bin/firefox` once as the root user (or any user with write privileges) to create some necessary additional files in the `/usr` hierarchy.

Lastly, unset the build variables from the unprivileged user's environment:

```

unset MOZILLA_OFFICIAL &&
unset BUILD_OFFICIAL &&
unset MOZ_PHOENIX

```

Configuring Firefox

No specific configuration is required as long as the **firefox** script is in the user's path. If Firefox is installed in a non-standard location, then make a symlink to the **firefox** script from `/usr/bin`.

Many applications look for **netscape** when they need to open a browser. You may make the following symlink for convenience (as the `root` user).

```
ln -v -sf firefox /usr/bin/netscape
```

For installing various Firefox plugins, refer to Mozdev's PluginDoc Project. If you have JDK-1.5.0 already installed, create the following link as the `root` user to utilize the JAVA plugin:

```
ln -v -s $JAVA_HOME/jre/plugin/i386/ns7/libjavaplugin_oji.so \
/usr/lib/firefox-1.0.6/plugins
```

Contents

Installed Programs:	firefox and firefox-config
Installed Libraries:	Numerous libraries, browser components, plugins, extensions, and helper modules installed in <code>/usr/lib/firefox-1.0.6</code>
Installed Directories:	<code>/usr/bin/defaults</code> , <code>/usr/include/firefox-1.0.6</code> , <code>/usr/lib/firefox-1.0.6</code> , and <code>/usr/share/idl/firefox-1.0.6</code>

Short Descriptions

firefox	is the next-generation browser from Mozilla.
firefox-config	determines the compile and linker flags that should be used to compile and link programs that use Firefox libraries and browser components.

Galeon-1.3.21

Introduction to Galeon

The Galeon package contains a GNOME-2 browser that utilizes the Mozilla gecko rendering engine and presents the simplest interface possible for a browser.

Package Information

- Download (HTTP): <http://prdownloads.sourceforge.net/galeon/galeon-1.3.21.tar.bz2>
- Download (FTP):
- Download MD5 sum: 5106e037bb52bdb234b3fc09c1e0a3f3
- Download size: 4.0 MB
- Estimated disk space required: 73 MB
- Estimated build time: 1.1 SBU

Galeon Dependencies

Required

GNOME Desktop-2.10.1 and Mozilla-1.7.8 or Firefox-1.0.6 or Thunderbird-1.0.6

Optional

Nautilus-2.10.1 and libgtkhtml-2.6.3

Installation of Galeon

Compiling must be done with the same compiler version and the same optimization settings that were used to compile Mozilla.

Install Galeon by running the following commands:

```
./configure --prefix=`pkg-config --variable=prefix ORBit-2.0` \
  --sysconfdir=/etc/gnome --localstatedir=/var/lib &&
make
```

This package does not come with a test suite.

Now, as the root user:

```
make install &&
install -v -m755 -d \
  `pkg-config --variable=prefix ORBit-2.0`/share/doc/galeon-1.3.21 &&
install -v -m644 FAQ README{, .ExtraPrefs} doc/{intro,bookmarks}.txt \
  `pkg-config --variable=prefix ORBit-2.0`/share/doc/galeon-1.3.21
```

Contents

Installed Programs: galeon and galeon-config-tool

Installed Libraries: None

Installed Directories: /etc/gnome/gconf/gconf.xml.defaults/apps/galeon,
/etc/gnome/gconf/gconf.xml.defaults/schemas/apps/galeon,
\$GNOME_PREFIX/share/doc/galeon-1.3.21, \$GNOME_PREFIX/share/galeon,
\$GNOME_PREFIX/share/gnome/help/galeon,
\$GNOME_PREFIX/share/omf/galeon and \$GNOME_PREFIX/share/sounds/galeon

Short Descriptions

galeon is a GNOME-2 web browser using the Mozilla rendering and networking engines.

galeon-config-tool clears settings, installs schemas, removes schemas and fixes permissions in the GConf database.

Konqueror-3.4.1

konqueror is the default graphical web browser for the KDE desktop environment. It is packaged and installed with `kdebase-3.4.1`.

Dillo-0.8.5

Introduction to Dillo

Dillo is a fast, small footprint graphical browser. Version 0.8.5 is now considered a very stable beta. Dillo does not support Java, JavaScript or CSS, 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-0.8.5.tar.bz2>
- Download (FTP):
- Download MD5 sum: d0ab7fa1d40b310deb891388604188f8
- Download size: 415 KB
- Estimated disk space required: 9.5 MB
- Estimated build time: 0.2 SBU

Dillo Dependencies

Required

GTK+-1.2.10

Optional

OpenSSL-0.9.7g, Wget-1.9.1 (for downloading via FTP) and Electric Fence

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/dillo &&
make
```

Now, as the root user:

```
make install &&
install -d -v -m755 /usr/share/doc/dillo-0.8.5 &&
install -v -m644 doc/{README,*.txt} /usr/share/doc/dillo-0.8.5
```

Configuring Dillo

Config Files

`/etc/dillo/dillorc`, `/etc/dillo/dpidrc`, and `~/.dillo/*`

Configuration Information

Dillo stores its configuration in the system wide `/etc/dillo/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

Installed Programs: dillo, dpid, and dpide

Installed Libraries: None

Installed Directories: `~/.dillo`, `/etc/dillo`, `/usr/share/doc/dillo-0.8.5`, and `/usr/lib/dillo`

Short Descriptions

dillo is a GTK+ graphical WWW browser with limited facilities, but a small footprint and runs fast on slower machines.

dpid is a Dillo plugin daemon.

dpide 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.

Thunderbird-1.0.6

Introduction to Thunderbird

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/1.0.6/source/thunderbird-1.0.6-source.tar.bz2>
- Download (FTP):
<ftp://ftp.mozilla.org/pub/mozilla.org/thunderbird/releases/1.0.6/source/thunderbird-1.0.6-source.tar.bz2>
- Download MD5 sum: a0ddcc8bd5ee2c9be724b6963ad27111
- Download size: 33.3 MB
- Estimated disk space required: 560 MB
- Estimated build time: 10.3 SBU

Additional Downloads

To enable the Enigmail extension to the Thunderbird mail client, you'll need to download the two tarballs below. The Enigmail extension allows users to access the authentication and encryption features provided by the GnuPG package.

- <http://downloads.mozdev.org/enigmail/src/enigmail-0.92.0.tar.gz>
- Download MD5 sum (Enigmail): 50c369ce6d6fcb2d275cd30319a601ff
- <http://downloads.mozdev.org/enigmail/src/ipc-1.1.3.tar.gz>
- Download MD5 sum (IPC): 64ba4c6e3b52568468c4f6680ec7e679

Thunderbird Dependencies

Required

Zip-2.31, GTK+-2.6.7 and libIDL-0.8.5

Recommended

GnuPG-1.4.1 (for the Enigmail extension)

Optional

libjpeg-6b, UnZip-5.52, GNOME Virtual File System-2.10.1, libgnome-2.10.0, MIT krb5-1.4.1 or Heimdal-0.7 (for the GSSAPI libraries), Doxygen-1.4.3, Xprint, Electric Fence and Cairo

Installation of Thunderbird

The configuration of Thunderbird is very similar to Mozilla-1.7.8 and hence the options will not be discussed. Refer to the Mozilla-1.7.8 instructions for explanations and additional configuration information.

Compile Thunderbird by running the following commands:

```
export MOZILLA_OFFICIAL="1" &&
export BUILD_OFFICIAL="1" &&
export MOZ_THUNDERBIRD="1" &&

sed -i -e 's/${destdir}${bindir}/${DESTDIR}${mozappdir}/' \
    mail/app/Makefile.in &&

./configure --prefix=/usr \
    --with-default-mozilla-five-home=/usr/lib/thunderbird-1.0.6 \
    --with-system-zlib \
    --with-system-png \
    --enable-application=mail \
    --enable-default-toolkit=gtk2 \
    --enable-extensions=wallet,spellcheck,xmlextras,webservices \
    --enable-crypto \
    --enable-xft \
    --enable-xinerama \
    --enable-optimize \
    --enable-reorder \
    --enable-strip \
    --enable-cpp-rtti \
    --enable-single-profile \
    --enable-necko-protocols=http,file,jar,viewsource,res,data \
    --enable-image-decoders=default,-xbm \
    --disable-freetype2 \
    --disable-accessibility \
    --disable-debug \
    --disable-tests \
    --disable-logging \
    --disable-pedantic \
    --disable-installer \
    --disable-profilesharing \
    --disable-mathml \
    --disable-oji \
    --disable-plugins \
    --disable-necko-disk-cache &&

make
```

You should add the `--with-system-jpeg` switch to the `configure` script if you have `libjpeg` installed.

If you're building the Enigmail extension, execute the following steps:

```
tar -zxf ../enigmail-0.92.0.tar.gz -C extensions &&
tar -zxf ../ipc-1.1.3.tar.gz -C extensions &&
build/autoconf/make-makefile extensions/ipc extensions/enigmail &&
make -C extensions/ipc &&
make -C extensions/enigmail
```

Install Thunderbird by running the following commands as the `root` user:

```
make install &&
install -d /usr/include/thunderbird-1.0.6/nss &&
cp -Lf dist/private/nss/*.h dist/public/nss/*.h \
  /usr/include/thunderbird-1.0.6/nss
```

If you're installing the Enigmail extension, issue the following commands as the `root` user:

```
make -C extensions/ipc install &&
make -C extensions/enigmail install
```

To enable multi-user operation, execute the following as the `root` user:

```
cd /usr/lib/thunderbird-1.0.6 &&
export LD_LIBRARY_PATH="$PWD" &&
export MOZILLA_FIVE_HOME="$PWD" &&
./regxpcom &&
./regchrome &&
touch `find . -name *.rdf`
```



Note

You should run `/usr/bin/thunderbird` once as the `root` user (or any user with write privileges) to create some necessary additional files in the `/usr` hierarchy.

Finally, unset the build variables from the unprivileged user's environment:

```
unset MOZILLA_OFFICIAL &&
unset BUILD_OFFICIAL &&
unset MOZ_THUNDERBIRD
```

Command Explanations

`sed -i -e 's/$(destdir)$(bindir)/$(DESTDIR)$(mozappdir)/' mail/app/Makefile.in`: Correct the installation location of the `defaults` directory.

Contents

Installed Program:	thunderbird and thunderbird-config
Installed Libraries:	Numerous libraries, email/newsgroups components, plugins, extensions, and helper modules installed in <code>/usr/lib/thunderbird-1.0.6</code>
Installed Directories:	<code>/usr/include/thunderbird-1.0.6</code> , <code>/usr/lib/thunderbird-1.0.6</code> , and <code>/usr/share/idl/thunderbird-1.0.6</code>

Short Descriptions

thunderbird is Mozilla's next-generation email and newsgroup client.

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 MD5 sum: ed3188e7059bb6d6c209ee5d46ac1852
- Download size: 1.8 MB
- Estimated disk space required: 67.8 MB
- Estimated build time: 0.72 SBU

Pan Dependencies

Required

GTK+-2.6.7, GNet-2.0.7, intltool-0.33 and libxml2-2.6.20

Optional

gtkspell-2.0.4

Installation of Pan

Install Pan by running the following commands:

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

This package does not come with a test suite.

Now, as the `root` user:

```
make install
```

Contents

Installed Program:	pan
Installed Libraries:	None
Installed Directories:	/usr/share/gnome/apps/Internet

Short Descriptions

`pan` is a graphical newsreader.

Balsa-2.2.6

Introduction to Balsa

The Balsa package contains a GNOME 2 based mail client.

Package Information

- Download (HTTP): <http://balsa.gnome.org/balsa-2.2.6.tar.bz2>
- Download (FTP):
- Download MD5 sum: 6179fadbf5cca642dac081519acef25
- Download size: 2.9 MB
- Estimated disk space required: 45.9 MB
- Estimated build time: 0.67 SBU

Balsa Dependencies

Required

libgnomeprintui-2.10.2, ScrollKeeper-0.3.14, Aspell-0.60.3, libesmtp-1.0.3r1 and GMime >= 2.1.9

Optional

libgtkhtml-2.6.3, OpenSSL-0.9.7g, OpenLDAP-2.2.24, PCRE-6.1, Procmail-3.22, Sendmail-8.13.4 (or other MTA that links to `/usr/sbin/sendmail`), Heimdal-0.7 or MIT krb5-1.4.1, SQLite, GPGME and GnuPG-1.9.x

Installation of Balsa

Install Balsa by running the following commands:

```
./configure --prefix=`pkg-config --variable=prefix ORBit-2.0` \
  --localstatedir=/var/lib --sysconfdir=/etc/gnome &&
make
```

This package does not come with a test suite.

Now, as the root user:

```
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`.

`--with-ssl`: Use this option to enable SSL support if OpenSSL is installed.

`--with-ldap`: Use this option to enable LDAP address book support if OpenLDAP is installed.

`--with-gpgme`: Use this option to enable GPG support if “GnuPG Made Easy” (GPGME) is installed.

`--enable-smime`: Use this option to enable S/MIME support if GnuPG-1.9.x 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

Installed Program: balsa

Installed Libraries: None

Installed Directories: /usr/share/balsa, /usr/share/sounds/balsa and /usr/share/gnome/help/balsa

Short Descriptions

balsa is a GNOME 2 based mail client.

Part XI. 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-1.0.9

The Linux kernel now provides ALSA support by default. However, applications need to interface to that capability. The following five sections of the book deal with the five separate components of ALSA: the libraries, the utilities, the tools, the firmware and the OSS compatibility libraries.

ALSA Library-1.0.9

Introduction to ALSA Library

The ALSA Library package contains the ALSA library. This is used by programs (including ALSA Utilities) requiring access to the ALSA sound interface.

Package Information

- Download (HTTP): <http://gd.tuwien.ac.at/opsys/linux/alsa/lib/alsa-lib-1.0.9.tar.bz2>
- Download (FTP): <ftp://ftp.alsa-project.org/pub/lib/alsa-lib-1.0.9.tar.bz2>
- Download MD5 sum: 114af3304619920ffe2b147b760700b9
- Download size: 682 KB
- Estimated disk space required: 27.3 MB (additional 14.4 MB to build and install docs)
- Estimated build time: 0.6 SBU

ALSA Library Dependencies

Optional

Doxygen-1.4.3

Kernel Configuration

In the “Sound” section of the kernel configuration, edit **Advanced Linux Sound Architecture** options to match your audio hardware and disable deprecated **Open Sound System**. Recompile and install your new kernel.

Installation of ALSA Library

Install ALSA Library by running the following commands:

```
./configure --enable-static &&
make
```

This package does not come with a test suite.

Now, as the `root` user:

```
make install
```

If you have Doxygen installed and you wish to build the library API documentation, run the following commands from the top-level directory of the source tree:

```
make doc
```

Now, as the `root` user:

```
install -v -d -m755 /usr/share/alsa/doc/html &&
install -v -m644 doc/doxygen/html/* /usr/share/alsa/doc/html
```

Command Explanations

`--enable-static`: This switch is used to enable building the static library as some programs link against it.

Configuring ALSA Library

Config Files

`~/.asoundrc`, `/etc/asound.conf`, `/usr/share/alsa/alsa.conf`, and `/usr/share/alsa/{cards,pcm}/*.conf`

Configuration Information

The default `alsa.conf` is adequate for most installations. For extra functionality and/or advanced control of your sound device, you may need to create additional configuration files. For information on the available configuration parameters, visit <http://www.alsa-project.org/alsa-doc/doc-php/asoundrc.php>.

Contents

Installed Programs: `alsalisp` and `aserver`
Installed Libraries: `libasound.[so,a]`
Installed Directories: `/usr/include/alsa` and `/usr/share/alsa`

Short Descriptions

`libasound.[so,a]` provides ALSA functions for application programs.

ALSA Plugins-1.0.9

Introduction to ALSA Plugins

The ALSA Plugins package contains plugins for OSS and JACK.

Package Information

- Download (HTTP): <http://gd.tuwien.ac.at/opsys/linux/alsa/plugins/alsa-plugins-1.0.9.tar.bz2>
- Download (FTP): <ftp://ftp.alsa-project.org/pub/plugins/alsa-plugins-1.0.9.tar.bz2>
- Download MD5 sum: 15a3fbbea779736b6425f43bbd051a32
- Download size: 187 KB
- Estimated disk space required: 1.8
- Estimated build time: 0.1 SBU

Additional Downloads

- Optional patch: http://www.linuxfromscratch.org/blfs/downloads/6.1/alsa-plugins-1.0.9-no_jack-1.patch

ALSA Plugins Dependencies

Optional

JACK

Installation of ALSA Plugins

If you choose not to install JACK, apply the patch by running the following commands:

```
patch -Np1 -i \
  ../alsa-plugins-1.0.9-no_jack-1.patch
```

Install ALSA Plugins by running the following commands:

```
./configure &&
make
```

This package does not come with a test suite.

Now, as the root user:

```
make install
```

Contents

Installed Programs:	None
Installed Libraries:	libasound_module_pcm_oss.so and optionally libasound_module_pcm_jack.so
Installed Directory:	/usr/lib/alsa-lib

Short Descriptions

`libasound_module_pcm_oss.so` Allows native ALSA applications to run on OSS.
`libasound_module_pcm_jack.so` Allows native ALSA applications to work with **jackd**.

ALSA Utilities-1.0.9a

Introduction to ALSA Utilities

The ALSA Utilities package contains various utilities which are useful for controlling your sound card.

Package Information

- Download (HTTP): <http://gd.tuwien.ac.at/opsys/linux/alsa/utls/alsa-utils-1.0.9a.tar.bz2>
- Download (FTP): <ftp://ftp.alsa-project.org/pub/utls/alsa-utils-1.0.9a.tar.bz2>
- Download MD5 sum: d4b77e9fe0311772293e402fdd634ad2
- Download size: 935 KB
- Estimated disk space required: 5.9 MB
- Estimated build time: 0.1 SBU

ALSA Utilities Dependencies

Required

ALSA Library-1.0.9

Installation of ALSA Utilities

Install ALSA Utilities by running the following commands:

```
./configure &&  
make
```

This package does not come with a test suite.

Now, as the root user:

```
make install
```

Configuring ALSA Utilities

Config Files

`/etc/asound.state`

Configuration Information

Use a bootscript to store the values at shutdown.

As the root user, install the init script `/etc/rc.d/init.d/alsa` included in the `blfs-bootscripts-6.1` package.

```
make install-alsa
```

**Note**

All channels of your sound card are muted by default. You can use the **alsamixer** program from the ALSA Utilities to change this.

The first time the `dev.d` script below is run, it will complain that there is no state in `/etc/asound.state`. You can prevent this by running the following commands as the `root` user:

```
touch /etc/asound.state &&
alsactl store
```

The volume settings will be restored from the saved state using a `/etc/dev.d/` handler script that will execute when the device is detected during boot (or when plugged in for USB devices).

While still the `root` user, create the `dev.d` script with the following commands:

```
install -v -d -m755 /etc/dev.d/snd &&
cat > /etc/dev.d/snd/alsa.dev << "EOF"
#!/bin/sh -e
# This script is called by udevd when a change in a device is
# detected, including initial detection upon bootup.
# udevd sets the environment variables ACTION and DEVNAME.

[ "$ACTION" = "add" ] || exit 0
DEV_BASENAME="${DEVNAME###*/}"
N="${DEV_BASENAME#controlC}"
case "$DEV_BASENAME" in
    controlC[0-7])
        x=0
        while [ $x -lt 20 ]; do
            # Wait up to 20 seconds for /usr to be mounted if necessary
            if [ -f /usr/sbin/alsactl ]; then
                /usr/sbin/alsactl restore $N
                exit 0
            fi
            sleep 1
            x=`expr $x + 1`
        done & # Put the while command in the background and continue
    ;;
esac
exit 0
EOF
chmod -v 755 /etc/dev.d/snd/alsa.dev
```

Contents

Installed Programs: aconnect, alsaconf, alsactl, alsamixer, amidi, amixer, aplay, aplaymidi, arecord, arecordmidi, aseqnet, aseqdump, iecset, and speaker-test

Installed Libraries: None

Installed Directories: None

Short Descriptions

aconnect	is a utility for connecting and disconnecting two existing ports in the ALSA sequencer system.
alsaconf	is a configuration tool which tries to detect the sound cards on your system and write a suitable configuration file for ALSA.
alsactl	is used to control advanced settings for the ALSA sound card drivers.
alsamixer	is an ncurses-based mixer program for use with the ALSA sound card drivers.
amidi	is used to read from and write to ALSA RawMIDI ports.
amixer	allows command-line control of the mixers for the ALSA sound card drivers.
aplay	is a command-line soundfile player for the ALSA sound card drivers.
aplaymidi	is a command-line utility that plays the specified MIDI file(s) to one or more ALSA sequencer ports.
arecord	is a command-line soundfile recorder for the ALSA sound card drivers.
arecordmidi	is a command-line utility that records a standard MIDI file from one or more ALSA sequencer ports.
aseqdump	is a command-line utility that prints the sequencer events it receives as text.
aseqnet	is an ALSA sequencer client which sends and receives event packets over a network.
iecset	is a small utility to set or dump the IEC958 (or so-called “S/PDIF”) status bits of the specified sound card via the ALSA control API.
speaker-test	is a command-line speaker test tone generator for ALSA.

ALSA Tools-1.0.9

Introduction to ALSA Tools

The ALSA Tools package contains advanced tools for certain sound cards.

Package Information

- Download (HTTP): <http://gd.tuwien.ac.at/opsys/linux/alsa/tools/alsa-tools-1.0.9.tar.bz2>
- Download (FTP): <ftp://ftp.alsa-project.org/pub/tools/alsa-tools-1.0.9.tar.bz2>
- Download MD5 sum: 3139b9d6c10e14acbb926f23b488e745
- Download size: 1.4 MB
- Estimated disk space required: 14-17 MB depending on the tool being built
- Estimated build time: 0.1-0.5 SBU depending on the tool being built

ALSA Tools Dependencies

Required

ALSA Library-1.0.9

Optional

GTK+-1.2.10 (to build **echomixer**, **envy24control** and **rmedigicontrol**), FLTK (to build **hdspconf** and **hdspmixer**), and Qt-3.3.4 to build **qlo10k1**.

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
```

Now, as the **root** user:

```
make install
```

Contents

Installed Programs:	ac3dec, extract_ac3, as10k1, echomixer, envy24control, hdspconf, hdsploder, hdspmixer, lo10k1, ld10k1, mixartloader, pcxhrloader, qlo10k1, rmedigicontrol, cspctl, sbiload, sscape_ctl, us428control, usx2yloader, and vxloader
Installed Library:	liblo10k1.so
Installed Directories:	/usr/share/applications, /usr/share/pixmaps, /usr/include/lo10k1, /usr/share/ld10k1, and /usr/share/sounds

Short Descriptions

ac3dec	is a free AC-3 stream decoder.
extract_ac3	will take an MPEG-2 stream and produce AC-3 audio to stdout if it exists.
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.
echomixer	is the Linux equivalent of the Echoaudio console application from Echoaudio. It is a tool to control all the features of any Echoaudio soundcard. This includes clock sources, input and output gains, mixers, etc.
envy24control	is a control tool for Envy24 (ice1712) based sound cards.
hdspconf	is a GUI to control the Hammerfall HDSP Alsa Settings. Up to four hdsp cards are supported.
hdsploader	is used to load the firmware required by the Hammerfall HDSP sound cards.
hdspmixer	is the Linux equivalent of the Totalmix application from RME. It is a tool to control the advanced routing features of the RME Hammerfall DSP soundcard series.
ld10k1	is the server of a EMU10K[1,2] patch loader for ALSA.
lo10k1	is the client of a EMU10K[1,2] patch loader for ALSA.
qlo10k1	is a Qt GUI for the ld10k1 patch loader.
mixartloader	is a helper program to load the firmware binaries onto the Digigram's miXart board sound drivers. The following modules require this program: snd-mixart. These drivers don't work properly at all until the certain firmwares are loaded, i.e. no PCM nor mixer devices will appear.
pcxhrloader	is a helper program to load the firmware binaries onto Digigram's pcxhr compatible board sound drivers. The following modules require this program: snd-pcxhr. These drivers don't work properly at all until the certain firmwares are loaded, i.e. no PCM nor mixer devices will appear.
rmedigicontrol	is a control tool for RME Digi32 and RME Digi96 sound cards. It provides a graphical frontend for all the sound card controls and switches.
csptcl	is an SB16/AWE32 Creative Signal Processor (ASP/CSP) control program.
sbiload	is an OPL2/3 FM instrument loader for the ALSA sequencer.
sscape_ctl	is an ALSA SoundScape control utility.
us428control	is a Tascam US-428 control program.
usx2yloader	is a helper program to load the 2nd Phase firmware binaries onto the Tascam USX2Y USB sound cards. It has proven to work so far for the US122, US224 and US428. The snd-usb-usx2y module requires this program.
vxloader	is a helper program to load the firmware binaries onto the Digigram's VX-board sound drivers. The following modules require this program: snd-vx222, snd-vxpocket,

snd-vxp440. These drivers don't work properly at all until the certain firmwares are loaded, i.e. no PCM nor mixer devices will appear.

ALSA Firmware-1.0.9

Introduction to ALSA Firmware

The ALSA Firmware package contains firmware for certain sound cards.

Package Information

- Download (HTTP): <http://gd.tuwien.ac.at/opsys/linux/alsa/firmware/alsa-firmware-1.0.9.tar.bz2>
- Download (FTP): <ftp://ftp.alsa-project.org/pub/firmware/alsa-firmware-1.0.9.tar.bz2>
- Download MD5 sum: f7ce6a31691d6eb35fc155f306abc77b
- Download size: 1.5 MB
- Estimated disk space required: 18.4 MB
- Estimated build time: 0.1 SBU

ALSA Firmware Dependencies

Required

ALSA Tools-1.0.9

Installation of ALSA Firmware

The ALSA Firmware package is only needed by those with advanced requirements for their sound card. See the README for configure options.

Install ALSA Firmware by running the following commands:

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

This package does not come with a test suite.

Now, as the `root` user:

```
make install
```

Contents

Installed Programs:	None
Installed Libraries:	None
Installed Directory:	<code>/usr/lib/hotplug/firmware</code> and/or <code>/usr/share/alsa/firmware</code>

ALSA OSS-1.0.9

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://gd.tuwien.ac.at/opsys/linux/alsa/oss-lib/alsa-oss-1.0.9.tar.bz2>
- Download (FTP): <ftp://ftp.alsa-project.org/pub/oss-lib/alsa-oss-1.0.9.tar.bz2>
- Download MD5 sum: 3c0411e54fd2e5c6083fd3c2ac9db509
- Download size: 219 KB
- Estimated disk space required: 2.5 MB
- Estimated build time: 0.1 SBU

ALSA OSS Dependencies

Required

ALSA Library-1.0.9

Installation of ALSA OSS

Install ALSA OSS by running the following commands:

```
./configure &&
make
```

This package does not come with a test suite.

Now, as the `root` user:

```
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

Installed Program:	aoss
Installed Libraries:	libalsatoss.[so,a], libaoss.[so,a], and libossredir.a
Installed Directories:	None

Short Descriptions

aoss is a simple wrapper script which facilitates the use of the ALSA OSS compatibility library. It just sets the appropriate `LD_PRELOAD` path and then runs the command.

aRts-1.4.1

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-1.4.1 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 MD5 sum: 9c1049876cd51c0f1b12c2886cce4d42
- Download size: 374 KB
- Estimated disk space required: 8.5 MB
- Estimated build time: 0.23 SBU

Installation of Audio File

Install Audio File by running the following commands:

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

To test the results, issue: **make check**.

Now, as the `root` user:

```
make install
```

Contents

Installed Programs: audiofile-config, sfinfo, and sfconvert

Installed Library: libaudiofile.[so,a]

Installed Directories: None

Short Descriptions

audiofile-config	is used during the compile process by programs linking to this library.
sfinfo	displays the sound file format, audio encoding, sampling rate and duration for audio formats supported by this library.
sfconvert	converts sound file formats where the original format and destination format are supported by this library.
libaudiofile.[so,a]	contains functions used by programs to support AIFF, AIFF-compressed, Sun/NeXT, WAV and BIC audio formats.

Esound-0.2.35

Introduction to Esound

The Esound package contains the 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-0.2.35.tar.bz2>
- Download (FTP): <ftp://ftp.gnome.org/pub/GNOME/sources/esound/0.2/esound-0.2.35.tar.bz2>
- Download MD5 sum: 1566344f80a8909b5e6e4d6b6520c2c1
- Download size: 376 KB
- Estimated disk space required: 4.9 MB
- Estimated build time: 0.13 SBU

Esound Dependencies

Required

Audio File-0.2.6

Optional

ALSA-1.0.9, tcpwrappers-7.6 and DocBook-utils-0.6.14

Installation of Esound

Install Esound by running the following commands:

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

Now, as the root user:

```
make install &&
install -v -m755 -d /usr/share/doc/esound-0.2.35 &&
install -v -m644 docs/esound.ps /usr/share/doc/esound-0.2.35 &&
cp -v -R docs/html /usr/share/doc/esound-0.2.35
```

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

Installed Programs:	esd, esdcat, esdctl, esd-config, esddsp, esdfilt, esdloop, esdmon, esdplay, esdrec, and esdsample
Installed Libraries:	libesd.[so,a] and libesddsp.[so,a]
Installed Directory:	/usr/share/doc/esound-0.2.35

Short Descriptions

esd	is the Enlightened Sound Daemon.
esd-config	is used by configure to determine the compiler and linker flags that should be used to compile and link programs that use EsoundD.
esdcat	plays a RAW audio stream through the daemon.
esdctl	controls certain aspects of the sound daemon.
esdfilt	is an EsoundD filter.
esdloop	is test scaffolding for sample cache, loop and free.
esdmon	outputs the mixed stream from the daemon.
esdplay	plays the named file on EsoundD.
esdrec	outputs from the sound device's current input.
esdsample	is test scaffolding for sample cache, playback, and free.
libesd.[so,a]	contains functions used by the EsoundD programs as well as other programs to read, write and play various sound format files.

SDL-1.2.8

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-1.2.8.tar.gz>
- Download (FTP):
- Download MD5 sum: 37aaf9f069f9c2c18856022f35de9f8c
- Download size: 2.6 MB
- Estimated disk space required: 36 MB
- Estimated build time: 0.8 SBU

SDL Dependencies

Optional

ALSA-1.0.9, Esound-0.2.35, aRts-1.4.1, NAS-1.7, NASM-0.98.39, X (XFree86-4.5.0 or X.org-6.8.2), AALib-1.4rc5, DirectFB, SVGAlib, GNU Pth, Qtopia and PicoGUI

Installation of SDL

Install SDL by running the following commands:

```
./configure --prefix=/usr --disable-debug &&  
make
```

Now, as the root user:

```
make install &&  
install -v -m755 -d /usr/share/doc/SDL-1.2.8/html &&  
install -v -m644 docs/html/*.html /usr/share/doc/SDL-1.2.8/html
```

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.

Testing SDL

It is advisable to test the installation of SDL using the included test programs. It is not required to install any of the resulting binaries to validate the installation. Issue the following commands to build the test programs:

```
cd test &&  
./configure &&  
make
```

You'll need to manually run all the test programs.

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

Installed Program: `sdl-config`
Installed Libraries: `libSDL*.[so,a]`
Installed Directories: `/usr/include/SDL` and `/usr/share/doc/SDL-1.2.8`

Short Descriptions

sdl-config determines the compile and linker flags that should be used to compile and link programs that use `libSDL`.

`libSDL*.[so,a]` libraries provide low level access to audio, keyboard, mouse, joystick, 3D hardware via OpenGL, and 2D frame buffer across multiple platforms.

Libao-0.8.6

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), ALSA (Advanced Linux Sound Architecture), NAS (Network Audio system) and Polypaudio (next generation GNOME sound architecture).

Package Information

- Download (HTTP): <http://downloads.xiph.org/releases/ao/libao-0.8.6.tar.gz>
- Download (FTP): <ftp://ftp.fu-berlin.de/unix/linux/mirrors/gentoo/distfiles/libao-0.8.6.tar.gz>
- Download MD5 sum: 12e136a4c0995068ff134997c84421ed
- Download size: 387 KB
- Estimated disk space required: 3.8 MB
- Estimated build time: less than 0.1 SBU

Libao Dependencies

Optional

X (XFree86-4.5.0 or X.org-6.8.2), Esound-0.2.35, ALSA-1.0.9, aRts-1.4.1, NAS-1.7 and Polypaudio

Installation of Libao

Install libao by running the following commands:

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

This package does not come with a test suite.

Now, as the `root` user:

```
make install
```

Configuring Libao

Config Files

`/etc/libao.conf` and `~/.libao`

Configuration Information

Currently, the only configuration option available is setting the default output device. Issue **man libao.conf** for details.

Contents

Installed Programs: None
Installed Libraries: libao.[so,a] and plugins
Installed Directories: /usr/include/ao, /usr/lib/ao and /usr/share/doc/libao-0.8.6

Short Descriptions

libao.[so,a] provide functions for programs wishing to output sound over supported platforms.

Libogg-1.1.2

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://downloads.xiph.org/releases/ogg/libogg-1.1.2.tar.gz>
- Download (FTP):
- Download MD5 sum: 4d82996517bf33bb912c97e9d0b635c4
- Download size: 414 KB
- Estimated disk space required: 4.1 MB
- Estimated build time: 0.07 SBU

Installation of Libogg

Install libogg by running the following commands:

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

To test the results, issue: **make check**.

Now, as the root user:

```
make install
```

Contents

Installed Programs:	None
Installed Library:	libogg.[so,a]
Installed Directories:	/usr/include/ogg and /usr/share/doc/libogg-1.1.2

Short Descriptions

`libogg.[so,a]` libraries provide the functions for programs wishing to read or write Ogg formatted bit streams.

Libvorbis-1.1.1

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://downloads.xiph.org/releases/vorbis/libvorbis-1.1.1.tar.gz>
- Download (FTP):
- Download MD5 sum: b77270c24840af4de54bea5ad1c0b252
- Download size: 1.3 MB
- Estimated disk space required: 17.1 MB
- Estimated build time: 0.2 SBU

Libvorbis Dependencies

Required

libogg-1.1.2

Optional

pkg-config-0.19, and libxslt-1.1.14 and PassiveTeX (to build the PDF documentation)

Installation of Libvorbis

Install libvorbis by running the following commands:

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

libvorbis is known to cause compiler errors on certain machines. If you get errors, insert this command after running the configure script:

```
sed -i.bak -e 's/-mno-ieee-fp//' lib/Makefile
```

This package does not come with a test suite.

Now, as the root user:

```
make install
```

Command Explanations

`--enable-docs`: This switch enables building the documentation.

Contents

Installed Programs: None
Installed Libraries: libvorbis.[so,a], libvorbisenc.[so,a], and libvorbisfile.[so,a]
Installed Directories: /usr/include/vorbis and /usr/share/doc/libvorbis-1.1.1

Short Descriptions

`libvorbis*.[so,a]` libraries provide the functions to read and write sound files.

NAS-1.7

Introduction to NAS

The Network Audio System is a network transparent, client/server audio transport system used to read , write and play audio files in many formats including .au, .snd, .voc, .wav, .aiff, .aif and .iff. It can be described as the audio equivalent of an X server.

Package Information

- Download (HTTP): <http://nas.codebrilliance.com/nas/nas-1.7.src.tar.gz>
- Download (FTP): <ftp://ftp.us.xemacs.org/pub/xemacs/aux/nas-1.7.src.tar.gz>
- Download MD5 sum: c9918e9c9c95d587a95b455bbabe3b49
- Download size: 1.2 MB
- Estimated disk space required: 17.1 MB
- Estimated build time: 0.31 SBU

NAS Dependencies

Required

X (XFree86-4.5.0 or X.org-6.8.2)

Installation of NAS

Install NAS by running the following commands:

```
xmkmf &&
make World
```

Now, as the root user:

```
make install install.man
```

Command Explanations

xmkmf; **make World**: These commands use the standard for compiling X based applications.

Configuring NAS

Config Files

`/etc/nas/nasd.conf`

Configuration Information

Create the NAS configuration file using the following command:

```
install -v -m644 /etc/nas/nasd.conf.eg /etc/nas/nasd.conf
```

Edit the new configuration file to suit your network and system needs.

Boot Script

Install the `/etc/rc.d/init.d/nas` init script included in the `blfs-bootscripts-6.1` package.

```
make install-nas
```

The init script uses a default parameter to allow access to all hosts on the network. Review the **nasd** man page for other available parameters if you need to modify the script.

Contents

Installed Programs:	<code>auconvert</code> , <code>auctl</code> , <code>audemo</code> , <code>audial</code> , <code>audit</code> , <code>auinfo</code> , <code>aupanel</code> , <code>auphone</code> , <code>auplay</code> , <code>aurecord</code> , <code>auscope</code> , <code>autool</code> , <code>auwave</code> , <code>checkmail</code> , <code>issndfile</code> , <code>nasd</code> , <code>playbucket</code> , and <code>soundtoh</code>
Installed Library:	<code>libaudio.[so,a]</code>
Installed Directory:	<code>/etc/nas</code> and <code>/usr/X11R6/include/audio</code>

Short Descriptions

au[utilities]	are a collection of tools to convert, play, edit, record, and manipulate sound files. See the respective man page for each utility for a full description of each one.
checkmail	plays a sound file when the user receives mail.
issndfile	checks if a file is in a recognized audio file format.
nasd	is the Network Audio System server daemon.
playbucket	plays, or creates, the bucket corresponding to the specified file.
soundtoh	converts a sound file to a C language header file.
libaudio.[so,a]	contains API functions to read and write audio files.

Libmpeg3-1.5.4

Introduction to Libmpeg3

Libmpeg3 supports advanced editing and manipulation of MPEG streams.

Package Information

- Download (HTTP): <http://prdownloads.sourceforge.net/heroines/libmpeg3-1.5.4-src.tar.bz2>
- Download (FTP):
- Download MD5 sum: 7adfc9c0beea2134575137f2e0d2ef11
- Download size: 612 KB
- Estimated disk space required: 5.7 MB
- Estimated build time: 0.12 SBU

Additional Downloads

- Required Patch: <http://www.linuxfromscratch.org/blfs/downloads/6.1/libmpeg3-1.5.4-gcc34-1.patch>

Libmpeg3 Dependencies

Required

NASM-0.98.39

Installation of Libmpeg3

Install libmpeg3 by running the following commands:

```
patch -Np1 -i ../libmpeg3-1.5.4-gcc34-1.patch &&
make
```

This package does not come with a test suite.

Now, as the `root` user:

```
make install &&
cp -v i686/libmpeg3.a /usr/lib &&
cp -v {libmpeg3,mpeg3private,mpeg3protos}.h /usr/include
```

Command Explanations

`cp -v i686/libmpeg3.a /usr/lib && cp -v {libmpeg3,mpeg3private,mpeg3protos}.h /usr/include`: Since `make install` doesn't copy the library and header files to proper locations, it is done manually.

Contents

Installed Programs: mpeg3cat, mpeg3dump, and mpeg3toc

Installed Library: libmpeg3.[so,a]

Installed Directories: None

Short Descriptions

mpeg3cat concatenates elementary streams or demultiplexes a program stream (separates components of the stream).

mpeg3dump dumps information or extracts audio to a 24 bit PCM file.

mpeg3toc creates a table of contents for a DVD or MPEG stream.

libmpeg3.[so,a] decodes several MPEG standards into uncompressed data suitable for editing and playback.

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://prdownloads.sourceforge.net/mad/libmad-0.15.1b.tar.gz>
- Download (FTP): <ftp://ftp.mars.org/pub/mpeg/libmad-0.15.1b.tar.gz>
- Download MD5 sum: 1be543bc30c56fb6bea1d7bf6a64e66c
- 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
```

This package does not come with a test suite.

Now, as the `root` user:

```
make install
```

Installed Programs:	None
Installed Libraries:	libmad.[so,a]
Installed Directories:	None

Short Descriptions

`libmad.[so,a]` 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://prdownloads.sourceforge.net/openquicktime/openquicktime-1.0-src.tgz>
- Download (FTP):
- Download MD5 sum: f90bc78b8632c6c254cddf70b4726644
- Download size: 313 KB
- Estimated disk space required: 8.6 MB
- Estimated build time: 0.11 SBU

Additional Downloads

- Required patch: <http://www.linuxfromscratch.org/blfs/downloads/6.1/openquicktime-1.0-gcc34-1.patch>
- Optional CODEC: <http://www.openquicktime.org/codecs.php>

OpenQuicktime Dependencies

Required

GLib-1.2.10

Optional

libjpeg-6b

Installation of OpenQuicktime

Install OpenQuicktime by running the following commands:

```
patch -Np1 -i ../openquicktime-1.0-gcc34-1.patch &&
./configure --prefix=/usr &&
make
```

This package does not come with a test suite.

Now, as the root user:

```
make install
```

Contents

Installed Programs: dechunk, make_streamable, qt dump, qtinfo, and recover

Installed Library: libopenquicktime.so, quicktime_codec_ms.so, quicktime_codec_jpeg.so and

quicktime_codec_.mp3.so

Installed Directories: /usr/include/openquicktime

Short Descriptions

dechunk	extracts RGB frames from a movie and writes them as PPM images.
make_streamable	this program makes the Quicktime file streamable.
qtdump	dumps all tables in a movie.
qtinfo	reads all the information about the file.
recover	this program recovers JPEG and PCM audio from a corrupted movie.
<code>libopenquicktime.[so,a]</code>	this is the core library.

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://prdownloads.sourceforge.net/fame/libfame-0.9.1.tar.gz>
- Download (FTP):
- Download MD5 sum: 880085761e17a3b4fc41f4f6f198fd3b
- Download size: 290 KB
- Estimated disk space required: 4.9 MB
- Estimated build time: 0.19 SBU

Additional Downloads

- Required Patch: <http://www.linuxfromscratch.org/blfs/downloads/6.1/libfame-0.9.1-gcc34-1.patch>

Installation of libFAME

Install libFAME by running the following commands:

```
patch -Np1 -i ../libfame-0.9.1-gcc34-1.patch &&
./configure --prefix=/usr &&
make
```

This package does not come with a test suite.

Now, as the `root` user:

```
make install
```

Contents

Installed Programs:	libfame-config
Installed Libraries:	libfame.[so,a]
Installed Directories:	None

Short Descriptions

libfame-config	provides configuration information for <code>libfame</code> .
<code>libfame.[so,a]</code>	provides functions for the video encoding programs.

Speex-1.0.5

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-1.0.5.tar.gz>
- Download (FTP):
- Download MD5 sum: 01d6a2de0a88a861304bf517615dea79
- Download size: 535 KB
- Estimated disk space required: 4.2 MB
- Estimated build time: 0.12 SBU

Speex Dependencies

Optional

libogg-1.1.2

Installation of Speex

Install Speex by running the following commands:

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

This package does not come with a test suite.

Now, as the `root` user:

```
make install
```

Contents

Installed Programs:	speexdec and speexenc
Installed Libraries:	libspeex.[so,a]
Installed Directories:	/usr/share/doc/speex-1.0.4

Short Descriptions

speexdec	decodes a Speex file and produces a WAV or raw file.
speexenc	encodes a WAV or raw files using Speex.
libspeex.[so,a]	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://prdownloads.sourceforge.net/id3lib/id3lib-3.8.3.tar.gz>
- Download (FTP):
- Download MD5 sum: 19f27ddd2dda4b2d26a559a4f0f402a7
- Download size: 950 KB
- Estimated disk space required: 25 MB
- Estimated build time: 0.6 SBU

Installation of Id3lib

Install id3lib by running the following commands:

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

Now, as the root user:

```
make install &&
install -v -m755 -d /usr/share/doc/id3lib-3.8.3 &&
install -v -m644 doc/*.{gif,jpg,png,ico,css,txt,php,html} \
  /usr/share/doc/id3lib-3.8.3
```

Contents

Installed Programs: id3convert, id3cp, id3info, and id3tag
Installed Library: libid3.[so,a]
Installed Directories: /usr/include/id3 and /usr/share/doc/id3lib-3.8.3

Short Descriptions

id3convert converts between ID3v1/v2 tagging formats.
id3cp extracts ID3v1/v2 tags from digital audio files.
id3info prints ID3v1/v2 tag contents.
id3tag is an utility for editing ID3v1/v2 tags.
libid3.[so,a] provides functions for the ID3v1/v2 tag editing programs as well as other external programs and libraries.

FLAC-1.1.2

Introduction to FLAC

FLAC is an audio CODEC similar to MP3, but lossless, meaning that audio is compressed without losing any information.

Package Information

- Download (HTTP): <http://prdownloads.sourceforge.net/flac/flac-1.1.2.tar.gz>
- Download (FTP):
- Download MD5 sum: 2bfc127cdda02834d0491ab531a20960
- Download size: 1.5 MB
- Estimated disk space required: 49 MB
- Estimated build time: 0.7 SBU

FLAC Dependencies

Optional

libogg-1.1.2, XMMS-1.2.10, NASM-0.98.39, DocBook-utils-0.6.14, Doxygen-1.4.3 and Valgrind

Installation of FLAC

Install FLAC by running the following commands:

```
LIBS=-lm ./configure --prefix=/usr &&
make
```

Now, as the root user:

```
make install
```



Note

If you passed the `--enable-exhaustive-tests` and `--enable-valgrind-testing` parameters to **configure** and then run the **make check** tests, it will take a *very* long time (about 150 SBUs) and use about 375 MB of disk space.

Command Explanations

`LIBS=-lm ./configure --prefix=/usr`: `libFLAC` uses a function from the math library but is not linked with `libm`. Passing the environment variable to **configure** satisfies this dependency.

Contents

Installed Programs: flac and metaflac

Installed Libraries: libFLAC.[so,a], libFLAC++. [so,a], libOggFLAC.[so,a], libOggFLAC++. [so,a], and libxmms-flac.[so,a]

Installed Directories: /usr/share/doc/flac-1.1.2

Short Descriptions

flac	is a command-line utility for encoding, decoding and converting FLAC files.
metaflac	is a program for listing, adding, removing, or editing metadata in one or more FLAC files.
lib[,Ogg]FLAC[,++]. [so,a]	these libraries provide native FLAC and Ogg FLAC C/C++ APIs for programs utilizing FLAC.
libxmms-flac.[so,a]	is a plugin for XMMS.

Libdvdcss-1.2.8

Introduction to Libdvdcss

libdvdcss is a simple library designed for accessing DVDs as 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.fu-berlin.de/unix/linux/mirrors/gentoo/distfiles/libdvdcss-1.2.8.tar.bz2>
- Download MD5 sum: 0749d05f4cc14daaf20af9e40fd6a2f0
- Download size: 205 KB
- Estimated disk space required: 2.5 MB
- Estimated build time: less than 0.1 SBU

Libdvdcss Dependencies

Optional

Doxygen-1.4.3

Installation of Libdvdcss

Install libdvdcss by running the following commands:

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

If you have Doxygen installed and wish to build the HTML documentation, issue the following command:

```
make -C doc doc
```

Now, as the `root` user:

```
make install
```

If you built the HTML documentation, install it using the following commands as the `root` user:

```
install -v -m755 -d /usr/share/doc/libdvdcss-1.2.8 &&  
install -v -m644 doc/html/* /usr/share/doc/libdvdcss-1.2.8
```

Contents

Installed Programs:	None
Installed Library:	libdvdcss.[so,a]
Installed Directories:	/usr/include/dvdcss and /usr/share/doc/libdvdcss-1.2.8

Short Descriptions

`libdvdcss.[so,a]` provides the functionality that is required for transparent DVD access with CSS decryption.

Libdvddread-0.9.4

Introduction to Libdvddread

libdvddread is a library which provides a simple foundation for reading DVDs.

Package Information

- Download (HTTP): <http://www.dtek.chalmers.se/groups/dvd/dist/libdvddread-0.9.4.tar.gz>
- Download (FTP):
- Download MD5 sum: 06353d7b14541ff8b431e69ad404db84
- Download size: 251 KB
- Estimated disk space required: 4.0 MB
- Estimated build time: 0.12 SBU

Libdvddread Dependencies

Optional

libdvdcss-1.2.8

Installation of Libdvddread

Install libdvddread by running the following commands:

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

This package does not come with a test suite.

Now, as the root user:

```
make install
```

Command Explanations

`--with-libdvdcss`: This switch is needed if you want libdvddread to be able to read CSS encrypted DVDs.

Contents

Installed Programs: None

Installed Libraries: libdvddread.[so,a]

Installed Directories: /usr/include/dvddread

Short Descriptions

libdvddread.[so,a] provides the functionality that is required to access DVDs.

Libdv-0.104

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://prdownloads.sourceforge.net/libdv/libdv-0.104.tar.gz>
- Download (FTP):
- Download MD5 sum: f6b08efce7472daa20685e6e8431f542
- Download size: 554 KB
- Estimated disk space required: 6.2 MB
- Estimated build time: 0.2 SBU

Libdv Dependencies

Optional

popt-1.7-5, pkg-config-0.19, SDL-1.2.8, GTK+-1.2.10 and X (XFree86-4.5.0 or X.org-6.8.2)

Installation of Libdv

Install libdv by running the following commands:

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

Now, as the root user:

```
make install
```



Note

The **configure** check for GTK+ is broken. If GTK+ is not installed, also pass `--disable-gtk` to the **configure** script.

Contents

Installed Programs: dubdv, dvconnect, encodedv, and playdv

Installed Library: libdv.[so,a]

Installed Directory: /usr/include/libdv

Short Descriptions

dubdv inserts audio into a digital video stream.

dvconnect is a small utility to send or capture raw data from and to the camcorder.
encodedv encodes a series of images to a digital video stream.
playdv displays digital video streams on the screen.
`libdv.[so,a]` provides functions for programs interacting 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 MD5 sum: caa9f5bc44232dc8aeea773fea56be80
- Download size: 236 KB
- Estimated disk space required: 2.5 MB
- Estimated build time: less than 0.1 SBU

Installation of Liba52

Install liba52 by running the following commands:

```
./configure --prefix=/usr --enable-shared &&
make
```

Now, as the root user:

```
make install &&
install -v -m644 -D doc/liba52.txt \
  /usr/share/doc/liba52-0.7.4/liba52.txt
```

Contents

Installed Programs: a52dec and extract_a52
Installed Library: liba52.[so,a]
Installed Directories: /usr/include/a52dec and /usr/share/doc/liba52-0.7.4

Short Descriptions

a52dec plays ATSC A/52 audio streams.
extract_a52 extracts ATSC A/52 audio from an MPEG stream.
liba52.[so,a] provides functions for the programs dealing with ATSC A/52 streams.

XviD-1.0.3

Introduction to XviD

XviD is an MPEG-4 compliant video CODEC.

Package Information

- Download (HTTP): <http://ed.gomez.free.fr/releases/xvid-1.0.3/xvidcore-1.0.3.tar.bz2>
- Download (FTP):
- Download MD5 sum: 1487c4dd4449aedeb695807467e69054
- Download size: 541 KB
- Estimated disk space required: 7.2 MB
- Estimated build time: 0.2 SBU

XviD Dependencies

Optional

NASM-0.98.39

Installation of XviD

Install XviD by running the following commands:

```
cd build/generic &&
./configure --prefix=/usr &&
make
```

This package does not come with a test suite.

Now, as the `root` user:

```
make install &&
chmod -v 644 /usr/lib/libxvidcore.a &&
ln -v -sf libxvidcore.so.4.0 /usr/lib/libxvidcore.so.4 &&
ln -v -sf libxvidcore.so.4 /usr/lib/libxvidcore.so
```

Command Explanations

ln -v -sf libxvidcore.so.4 /usr/lib/libxvidcore.so: This command makes applications linked against `.so` names, link 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

Installed Programs: None

Installed Library: libxvidcore.[so,a]

Installed Directories: None

Short Descriptions

`libxvidcore.[so,a]` provides functions to encode and decode most MPEG-4 video data.

Xine Libraries-1.0.1

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://prdownloads.sourceforge.net/xine/xine-lib-1.0.1.tar.gz>
- Download (FTP):
- Download MD5 sum: 9be804b337c6c3a2e202c5a7237cb0f8
- Download size: 7.7 MB
- Estimated disk space required: 74 MB
- Estimated build time: 2.7 SBU

Xine Libraries Dependencies

Required

X (XFree86-4.5.0 or X.org-6.8.2) and Esound-0.2.35 or OSS or ALSA-1.0.9 or aRts-1.4.1

Optional

pkg-config-0.19, FFmpeg-0.4.9-pre1, AAlib-1.4rc5, libmng-1.0.9, SDL-1.2.8, FLAC-1.1.2, libFAME-0.9.1, libogg-1.1.2, libvorbis-1.1.1, Speex-1.0.5, freeglut-2.4.0, GNOME Virtual File System-2.10.1, Samba-3.0.14a, DirectFB, Theora, FAAD2, LibSTK, polypaudio, libcasa, libdvdnav, sgmltools-lite and Transfig

Installation of Xine Libraries

Install xine Libraries by running the following commands:

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

Now, as the root user:

```
make install
```

Contents

Installed Program:	xine-config
Installed Libraries:	libxine.so and numerous plugin modules and video extensions
Installed Fonts:	Output display engine fonts located in /usr/share/xine/libxine1/fonts
Installed Directories:	/usr/include/xine, /usr/lib/xine, /usr/share/xine, and /usr/share/doc/xine

Short Descriptions

xine-config provides information to programs trying to link with the xine libraries.
`libxine.so` provides the API for processing audio/video files.

Libmikmod-3.1.11

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://mikmod.raphnet.net/files/libmikmod-3.1.11.tar.gz>
- Download (FTP): <ftp://ftp.raphnet.net/pub/libmikmod/libmikmod-3.1.11.tar.gz>
- Download MD5 sum: 705106da305e8de191549f1e7393185c
- Download size: 604 KB
- Estimated disk space required: 9.9 MB
- Estimated build time: 0.3 SBU

Additional Downloads

- Recommended Patch: <http://mikmod.raphnet.net/files/libmikmod-3.1.11-a.diff>

Libmikmod Dependencies

Optional

ALSA-1.0.9, Esound-0.2.35, libGUS, AFlib and SAM9407 driver

Installation of Libmikmod

Install libmikmod by running the following commands:

```
patch -Np1 -i ../libmikmod-3.1.11-a.diff &&
sed -i -e "s/VERSION=10/VERSION=11/" \
    -e "s/sys_asoundlib/alsa_asoundlib/" \
    -e "s/snd_cards/snd_card_load/g" \
    -e "s|sys/asoundlib.h|alsa/asoundlib.h|g" \
    -e "s/^LIBOBSJS/#LIBOBSJS/" \
    configure.in &&
autoconf &&
./configure --prefix=/usr &&
make
```

Now, as the root user:

```
make install &&
chmod 755 /usr/lib/libmikmod.so.2.0.4 &&
install -v -m644 -D docs/mikmod.html \
    /usr/share/doc/libmikmod-3.1.11/mikmod.html
```

Command Explanations

sed -i -e ...: This increments the package micro version and also modifies the ALSA header search routine so that the package properly discovers the ALSA library. It also fixes a problem which makes `autoconf` fail.

autoconf: This generates a new **configure** script, required because of the changes to `configure.in`.

Contents

Installed Program: libmikmod-config
Installed Library: libmikmod.[so,a]
Installed Directory: /usr/share/doc/libmikmod-3.1.11

Short Descriptions

libmikmod-config provides version information, compiler, and linker flags to programs that utilize libmikmod.

libmikmod.[so,a] contains functions that are required to play various tracker module files.

GStreamer-0.8.10

Introduction to GStreamer

The GStreamer package contains a streaming media framework that enables applications to share a common set of plugins for things like video decoding and encoding, audio encoding and decoding, audio and video filters, audio visualisation, Web streaming and anything else that streams in real-time or otherwise. It is modelled after research software worked on at the Oregon Graduate Institute.

Package Information

- Download (HTTP): <http://gstreamer.freedesktop.org/src/gstreamer/gstreamer-0.8.10.tar.bz2>
- Download (FTP): <ftp://ftp.gnome.org/pub/GNOME/sources/gstreamer/0.8/gstreamer-0.8.10.tar.bz2>
- Download MD5 sum: 3de474d993e23c901e9dfdd1fea486e0
- Download size: 1.4 MB
- Estimated disk space required: 78 MB
- Estimated build time: 3.0 SBU (includes building docs, additional 1.0 SBU to run the test suite)

GStreamer Dependencies

Required

GLib-2.6.4, libxml2-2.6.20, popl-1.7-5

Optional

libgnomeui-2.10.0, Python-2.4.1 and Valgrind

Optional (to Build Documentation)

libxslt-1.1.14, GTK-Doc-1.3, TeX-3.0, AFPL Ghostscript-8.51 or ESP Ghostscript-7.07.1, DocBook-utils-0.6.14, Transfig and Netpbm

Installation of GStreamer

Install GStreamer by running the following commands:

```
./configure --prefix=/usr --sysconfdir=/etc \
  --localstatedir=/var &&
make
```

Now, as the root user:

```
make install &&
chown -v -R root:root /usr/share/doc/gstreamer-0.8.10/*/html &&
gst-register
```

Command Explanations

`--localstatedir=/var`: This switch puts **gst-register**'s cache in `/var/cache/gstreamer-0.8`

instead of `/usr/cache/gstreamer-0.8`.

`--sysconfdir=/etc`: This switch puts configuration files in `/etc` instead of `/usr/etc`.

`chown -v -R root:root ...`: The documentation is installed with ownerships of the user who untarred and built the package. This command changes the ownerships of the installed documentation files to `root:root`.

Contents

Installed Programs:	<code>gst-complete</code> , <code>gst-complete-0.8</code> , <code>gst-compprep</code> , <code>gst-compprep-0.8</code> , <code>gst-feedback</code> , <code>gst-feedback-0.8</code> , <code>gst-inspect</code> , <code>gst-inspect-0.8</code> , <code>gst-launch</code> , <code>gst-launch-0.8</code> , <code>gst-md5sum</code> , <code>gst-md5sum-0.8</code> , <code>gst-register</code> , <code>gst-register-0.8</code> , <code>gst-typefind</code> , <code>gst-typefind-0.8</code> , <code>gst-xmllaunch</code> , <code>gst-xmllaunch-0.8</code> , <code>gst-xmlinspect</code> , and <code>gst-xmlinspect-0.8</code>
Installed Libraries:	<code>libgstcontrol-0.8.[so,a]</code> , <code>libgstreamer-0.8.[so,a]</code> , and <code>libgst*.[so,a]</code> plugin modules
Installed Directories:	<code>/usr/include/gstreamer-0.8</code> , <code>/usr/lib/gstreamer-0.8</code> , <code>/usr/share/doc/gstreamer-0.8.10</code> , <code>/usr/share/gtk-doc/html/gstreamer-0.8</code> , <code>/usr/share/gtk-doc/html/gstreamer-libs-0.8</code> , and <code>/var/cache/gstreamer-0.8</code>

Short Descriptions

gst-complete-0.8	is a utility enabling bash to provide context sensitive tab completion for gst-launch command lines.
gst-compprep-0.8	builds a registry of GStreamer elements and their features that is used by gst-complete .
gst-feedback-0.8	generates debug info for GStreamer bug reports.
gst-inspect-0.8	prints information about a GStreamer plugin or element.
gst-launch-0.8	is a tool that builds and runs basic GStreamer pipelines.
gst-md5sum-0.8	generates MD5 checksums of the data generated by a GStreamer pipeline.
gst-register-0.8	is used to register all the GStreamer plugins on the system. It creates a listing of their properties so that when a GStreamer based application is started, it does not need to load plugins until it needs them.
gst-typefind-0.8	uses the GStreamer type finding system to determine the relevant GStreamer plugin to parse or decode a file, and determine the corresponding MIME type.
gst-xmlinspect-0.8	prints information about a GStreamer plugin or element in XML document format.
gst-xmllaunch-0.8	is used to build and run a basic GStreamer pipeline, loading it from an XML description.

Gst-plugins-0.8.10

Introduction to Gst-plugins

The `gst-plugins` package builds graphics and multimedia CODEC interface modules for the GStreamer package. There are over 160 different modules that can be built, providing GStreamer the capability to create a pipeline for almost every known media stream.

Package Information

- Download (HTTP): <http://gstreamer.freedesktop.org/src/gst-plugins/gst-plugins-0.8.10.tar.bz2>
- Download (FTP): <ftp://ftp.gnome.org/pub/GNOME/sources/gst-plugins/0.8/gst-plugins-0.8.10.tar.bz2>
- Download MD5 sum: 99f36ba2b91015a23d3c20a8f424b232
- Download size: 2.3 MB
- Estimated disk space required: up to 100 MB (depends on what dependencies are installed)
- Estimated build time: up to 3.5 SBU

Gst-plugins Dependencies

Required

GStreamer-0.8.10

Optional Utilities (Graphics, Compression, Misc.)

AAlib-1.4rc5, Cairo, CDParanoia-III-9.8, FreeType-2.1.10, GConf-2.10.0, GTK+-2.6.7, GNOME Virtual File System-2.10.1, Hermes, libcacca, libcolorspace, libjpeg-6b or MMX Jpeg, libmmx, libmng-1.0.9, liboil, libpng-1.2.8, NASM-0.98.39, Pango-1.8.1, X (XFree86-4.5.0 or X.org-6.8.2)

Optional Audio Libraries/Drivers/CODECs

ALSA-1.0.9, aRts-1.4.1, Audio File-0.2.6, audiosample, Esound-0.2.35, FAAC, FAAD2, FLAC-1.1.2, GSM, JACK, LAME-3.96.1, liba52-0.7.4, libcdaudio, libdts, libmad-0.15.1b (and libid3tag), libmikmod-3.1.11, libmusepack (now known as libmpcdec), libmusicbrainz, libogg-1.1.2, libraw1394 (and libavc1394), libshout, libsidplay, libsndfile, libvorbis-1.1.1, LADSPA, NAS-1.7, Polypaudio, Speex >= 1.1.6, Theora, Tremor

Optional Video Libraries/Drivers/CODECs

Dirac, DirectFB, DivX4Linux, DXR3, libdv-0.104, libdvdnav, libdvdread-0.9.4, libFAME-0.9.1, libmpeg2, librff, MJPEG Tools, V4L2, XviD-1.0.3

Optional Multimedia Utilities

libmms, libvisual, SDL-1.2.8, swfdec and xine Libraries-1.0.1

Installation of Gst-plugins

Install `gst-plugins` by running the following commands:

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

This package does not come with a test suite.

Now, as the root user:

```
make install &&
gst-register
```

Command Explanations

`--with-gconf-schema-file-dir=/etc/gnome/gconf/schemas`: Use this option if you have the GNOME-2 GConf package installed.

`--enable-gdk-pixbuf-loader`: Use this option to build the GDK pixbuf loader module if you have GTK+-2 installed.

`-enable-xine`: Using this option to build the Xine wrapper module will break the build if you have xine-libs-1.0.1 installed.

`--disable-musepack`: Use this option if you have libmusepack-1.1.1 installed, as this version of libmusepack breaks the build.

Note: all other modules are built if the **configure** script discovers the required package. To prevent a module from being built, pass `--disable-[module]` to **configure**. Run **configure --help** for all the available module names.

Contents

Installed Programs:	gst-launch-ext-0.8 and gst-visualise-0.8
Installed Libraries:	libgst*.[so,a], numerous GStreamer plugins, and a GStreamer GDK pixbuf loader module
Installed Directories:	None

Short Descriptions

gst-launch-ext-0.8	is used to run a basic predefined GStreamer pipeline as a quick test to ensure proper working of codecs and GStreamer.
gst-visualise-0.8	is used to run a basic GStreamer pipeline to display a graphical visualisation of an audio stream.

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. It also includes a package used to render text to speech using your system's audio hardware. To use much of this software, you will need to have the kernel sound drivers installed.

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 MD5 sum: 95df59ad1651dd2346d49fafc83747e7
- Download size: 155 KB
- Estimated disk space required: 1.3 MB
- Estimated build time: 0.08 SBU

Additional Downloads

- Required patch: <http://www.linuxfromscratch.org/blfs/downloads/6.1/mpg123-0.59r-security-1.patch>

Mpg123 Dependencies

Required

ALSA OSS-1.0.9

Installation of Mpg123

Install mpg123 by running the following commands:

```
patch -Np1 -i ../mpg123-0.59r-security-1.patch &&
make PREFIX=/usr linux
```

This package does not come with a test suite.

Now, as the root user:

```
make PREFIX=/usr install
```

Contents

Installed Program: mpg123

Installed Libraries: None

Installed Directories: None

Short Descriptions

mpg123 is used for playing MP3 files via the console.

Vorbis Tools-1.1.1

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://downloads.xiph.org/releases/vorbis/vorbis-tools-1.1.1.tar.gz>
- Download (FTP):
- Download MD5 sum: 47845fd76f5f2354a3619c4097575487
- Download size: 701 KB
- Estimated disk space required: 6.9 MB
- Estimated build time: 0.13 SBU

Vorbis Tools Dependencies

Required

libvorbis-1.1.1

Recommended (Required to Build the 'ogg123' Program)

cURL-7.14.0 and libao-0.8.6

Optional

FLAC-1.1.2 and Speex-1.0.5

Installation of Vorbis Tools

Install Vorbis Tools by running the following commands:

```
./configure --prefix=/usr --enable-vcut &&  
make
```

This package does not come with a test suite.

Now, as the `root` user:

```
make install
```

Configuring Vorbis Tools

Config Files

`/etc/libao.conf`, `~/.libao`, and `~/.ogg123rc`

Configuration Information

Issue `man libao.conf` for information about setting the default output device. Also see `/usr/share/doc/vorbis-tools-1.1.1/ogg123rc-example`.

Contents

Installed Programs: ogg123, oggdec, oggenc, ogginfo, vcut, and vorbiscomment
Installed Libraries: None
Installed Directory: /usr/share/doc/vorbis-tools-1.1.1

Short Descriptions

ogg123 is a command-line audio player for Ogg Vorbis streams.
oggdec is a simple decoder which converts Ogg Vorbis files into PCM audio files (WAV or raw).
oggenc is an encoder that turns raw, WAV or AIFF files into an Ogg Vorbis stream.
ogginfo prints information stored in an audio file.
vcut will split a file into two files at a designated cut point.
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):
- Download MD5 sum: 03a85cfc5e1877a2e1f7be4fa1d3f63c
- Download size: 2.4 MB
- Estimated disk space required: 55 MB
- Estimated build time: 0.84 SBU

XMMS Dependencies

Required

GTK+-1.2.10

Optional

ALSA-1.0.9, Esound-0.2.35, libogg-1.1.2, libvorbis-1.1.1 and libmikmod-3.1.11

Installation of XMMS

Install XMMS by running the following commands:

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

This package does not come with a test suite.

Now, as the `root` user:

```
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

Installed Programs: xmms, xmms-config, and wmxmms
Installed Libraries: libxmms.[so,a] and numerous input, output, effects, and general plugins
Installed Directories: /usr/include/xmms, /usr/lib/xmms, and /usr/share/xmms

Short Descriptions

xmms (an acronym 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 is used by other programs which need to link with **xmms** to retrieve the library and include paths.

wmxmms is a dock applet for the Window Maker window manager. From the applet you can start and control **xmms**.

`libxmms.[so,a]` contains graphics and playback functions used by **xmms**. These functions can also be utilized by other packages.

LAME-3.96.1

Introduction to LAME

The LAME package contains an MP3 encoder and optionally, an MP3 frame analyzer. This is useful for creating and analyzing compressed audio files.

Package Information

- Download (HTTP): <http://prdownloads.sourceforge.net/lame/lame-3.96.1.tar.gz>
- Download (FTP):
- Download MD5 sum: e1206c46a5e276fecal1a7149e2fc6ac
- Download size: 1.3 MB
- Estimated disk space required: 15 MB
- Estimated build time: 0.39 SBU

LAME Dependencies

Optional

GTK+-1.2.10, NASM-0.98.39, libsndfile, Electric Fence and Dmalloc

Installation of LAME

Install LAME by running the following commands:

```
./configure --prefix=/usr --enable-mp3rtp &&  
make
```

To test the results, issue: **make test**.

Now, as the `root` user:

```
make install
```

Command Explanations

`--enable-mp3rtp`: Builds the encode-to-RTP program.

Contents

Installed Programs:	lame, mp3rtp, and optionally, mp3x
Installed Library:	libmp3lame.[so,a]
Installed Directories:	/usr/include/lame and /usr/share/doc/lame

Short Descriptions

lame	creates MP3 audio files from raw PCM or .wav data.
mp3rtp	is used to encode MP3 with RTP streaming of the output.
mp3x	is a GTK based graphical MP3 frame analyzer used for debugging, development and studying MP3 frames produced by any encoder.
<code>libmp3lame.[so,a]</code>	libraries provide the functions necessary to convert raw PCM and 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 .wav files from audio CDs. 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 MD5 sum: 7218e778b5970a86c958e597f952f193
- Download size: 114 KB
- Estimated disk space required: 1.3 MB
- Estimated build time: 0.12 SBU

Additional Downloads

- Required Patch: <http://www.linuxfromscratch.org/blfs/downloads/6.1/cdparanoia-III-alpha9.8-includes-1.patch>
- Required Patch: <http://www.linuxfromscratch.org/blfs/downloads/6.1/cdparanoia-III-alpha9.8-gcc34-1.patch>

Installation of CDParanoia

Install CDParanoia by running the following commands:

```
patch -Np1 -i ../cdparanoia-III-alpha9.8-includes-1.patch &&
patch -Np1 -i ../cdparanoia-III-alpha9.8-gcc34-1.patch &&
./configure --prefix=/usr &&
make
```

This package does not come with a test suite.

Now, as the root user:

```
make install &&
chmod -v 755 /usr/lib/libcdda_*.so.0.9.8
```

Configuring CDParanoia

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

Installed Program: cdparanoia
Installed Libraries: libcdda_interface.[so,a] and libcdda_paranoia.[so,a]
Installed Directories: None

Short Descriptions

cdparanoia is used for 'ripping' an audio-cd. Ripping is the process of digitally extracting music from an audio-cd.

libcdda_interface.[so,a] contains functions used by **cdparanoia**, as well as other packages, which can automatically identify if a CD device is CDDA compatible.

libcdda_paranoia.[so,a] contains functions used by **cdparanoia**, as well as other packages, which provide data verification, synchronization, error handling and scratch reconstruction capability.

FreeTTS-1.2.1

Introduction to FreeTTS

The FreeTTS package contains a speech synthesis system written entirely in the Java programming language. It is based upon Flite: a small run-time speech synthesis engine developed at Carnegie Mellon University. Flite is derived from the Festival Speech Synthesis System from the University of Edinburgh and the FestVox project from Carnegie Mellon University. The FreeTTS package is used to convert text to audible speech through the system audio hardware.

Package Information

- Download (HTTP): <http://prdownloads.sourceforge.net/freetts/freetts-1.2.1-src.zip>
- Download (FTP):
- Download MD5 sum: f3e3ceae5b8cb5e175b50931f2e350e8
- Download size: 14.1 MB
- Estimated disk space required: 112 MB
- Estimated build time: 0.4 SBU

Additional Downloads

- Test suite: <http://prdownloads.sourceforge.net/freetts/freetts-1.2.1-tst.zip>
- Download MD5 sum: 8e461701ee94b3942cc37783f6de4128
- Download size: 3.9 MB

FreeTTS Dependencies

Required

Apache Ant-1.6.2 (and JUnit to run the test suite), UnZip-5.52 and working audio hardware/software.

Installation of FreeTTS

The FreeTTS package is distributed in ZIP format and the **unzip** command will default to creating an unused source directory. Additionally, unzipping the test suite file will prompt for questions about overwriting existing files. Use the following commands to **unzip** the source files:

```
unzip -q freetts-1.2.1-src.zip -x META-INF/* &&
unzip -q freetts-1.2.1-tst.zip \
  -x {META-INF/*,freetts-1.2.1/{acknowledgments.txt,license.terms}}
```

Install FreeTTS by running the following commands:

```
cd lib &&
yes | sh jsapi.sh &&
cd .. &&
ant
```

To test the results, issue:

```
ant junit &&
sh regression.sh
```

Now, as the root user:

```
install -v -m755 -d /opt/freetts-1.2.1/{lib,docs/{audio,images}} &&
install -v -m644 lib/*.jar /opt/freetts-1.2.1/lib &&
install -v -m644 *.txt RELEASE_NOTES license.terms \
    docs/*.{pdf,html,txt,sx{w,d}} \
    /opt/freetts-1.2.1/docs &&
install -v -m644 docs/audio/* /opt/freetts-1.2.1/docs/audio &&
install -v -m644 docs/images/* /opt/freetts-1.2.1/docs/images &&
cp -v -R javadoc /opt/freetts-1.2.1 &&
ln -v -s freetts-1.2.1 /opt/freetts
```

Optionally, install any or all of the additional FreeTTS components using the following commands as the root user (see the Command Explanations section for details):

```
cp -v -R bin /opt/freetts-1.2.1 &&
install -v -m644 speech.properties /opt/jdk/jdk/jre/lib &&
cp -v -R tools /opt/freetts-1.2.1 &&
cp -v -R mbrola /opt/freetts-1.2.1 &&
cp -v -R demo /opt/freetts-1.2.1
```

Command Explanations

yes | sh jsapi.sh: This command installs the Java Speech API into the FreeTTS source tree. **yes** is piped so that this command can be scripted and will automatically agree to the JSAPI license terms. You can view the license you are agreeing to at <http://linuxfromscratch.org/~randy/jsapi-license.txt>.

ant: FreeTTS uses the Apache Ant build system instead of the GNU autotools. This commands builds everything, including the class libraries, tools and demos.

cp -v -R bin ...; install -v -m644 speech.properties: These two commands install the demonstration programs. Optionally copy the `speech.properties` file to `~/speech.properties` if you don't want to make it available system-wide.

cp -v -R tools ...: This installs the voice data import utilities. See the `README.html` files in the `tools/` subdirectories for information and instructions about using the tools.

cp -v -R mbrola ...: This installs the `mbrola.jar` file, required if you use the MBROLA voices.

cp -v -R demo ...: This installs the sources and documentation for the demonstration programs.

For additional information and documentation about the FreeTTS project, visit the main web page at <http://freetts.sourceforge.net>.

Testing the Installation

Test the installation using the following command:

```
java -jar /opt/freetts/lib/freetts.jar \
    -text "This is a test of the FreeTTS speech synthesis system"
```

Depending on the setup of your audio drivers and software, you may have to add the `-streaming` switch to the command as shown below:

```
java -jar /opt/freetts/lib/freetts.jar -streaming \  
-text "This is a test of the FreeTTS speech synthesis system"
```

Contents

Installed Programs:	None
Installed Libraries:	/opt/freetts-1.2.1/lib/*.jar
Installed Directory:	/opt/freetts-1.2.1

Short Descriptions

* `.jar` contains the class libraries which make up the FreeTTS speech synthesis system.

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 those libraries, all the configurations and your reward is that you finally get to watch a movie. Not to worry though, there is always one more CODEC to install.

FFmpeg-0.4.9-pre1

Introduction to FFmpeg

FFmpeg is a solution to record, convert and stream audio and video. It is a very fast video and audio converter and it can also acquire from a live audio/video source. Designed to be intuitive, the command-line interface (**ffmpeg**) tries to figure out all the parameters, when possible. FFmpeg can also convert from any sample rate to any other, and resize video on the fly with a high quality polyphase filter. FFmpeg can use a video4linux compatible video source and any Open Sound System audio source.

Package Information

- Download (HTTP): <http://prdownloads.sourceforge.net/ffmpeg/ffmpeg-0.4.9-pre1.tar.gz>
- Download (FTP):
- Download MD5 sum: ea5587e3c66d50b1503b82ac4179c303
- Download size: 1.6 MB
- Estimated disk space required: 50 MB
- Estimated build time: 0.9 SBU

FFmpeg Dependencies

Optional

libvorbis-1.1.1, LAME-3.96.1, Imlib2-1.2.1, X (XFree86-4.5.0 or X.org-6.8.2), SDL-1.2.8, FreeType-2.1.10, MPlayer-1.0pre7 (for the shared post-processing library), FAAC, FAAD2 and TeX-3.0 (to build HTML documentation)

Installation of FFmpeg

Install FFmpeg by running the following commands:



Note

Review the `doc/optimization.txt` file in the source tree for information about optimizing the build.

```
sed -i -e "s/static uint64/const uint64/" \
  libavcodec/liba52/resample_mmx.c &&
./configure --prefix=/usr --enable-shared \
  --enable-pthreads --disable-ffplay &&
make
```

If you have TeX installed, the man pages and documentation were built during the **make** process. Skip to the root user installation steps. If you do not have TeX installed, use the following command to build the man pages:

```
make -C doc {ffmpeg,ffserver,ffplay}.1
```

Now, as the root user:

```
make install
```

If you have TeX installed (which caused the HTML documentation to be built earlier), install the documentation by issuing the following commands as the root user:

```
install -v -m755 -d /usr/share/doc/ffmpeg-0.4.9-pre1 &&
install -v -m644 doc/*.html /usr/share/doc/ffmpeg-0.4.9-pre1
```

Command Explanations

sed -i -e "s/static uint64/const uint64/" libavcodec/liba52/resample_mmx.c: This command fixes an issue on machines with MMX capability and use GCC-3.4.x to compile in A52 support using the `--enable-a52` parameter passed to the **configure** script.

--enable-shared: This switch is needed to build the `libavcodec` and `libavformat` shared libraries.

--enable-pthreads: This switch enables the build to link against the Posix threads library.

--disable-ffplay: Only installs the server part. **ffplay** requires X for building. Remove this option if X is installed.

--enable-[codec]: Review the available options and codecs using the `./configure --help` command.

Configuring FFmpeg

Config Files

`/etc/ffserver.conf` and `~/ffmpeg/ffserver-config`

You'll find a sample `ffserver` configuration file at <http://ffmpeg.sourceforge.net/sample.html> (also `doc/ffserver.conf` in the source tree).

Contents

Installed Programs: `ffmpeg`, `ffserver`, and optionally, `ffplay`

Installed Libraries: `libavcodec.so`, `libavformat.so`, and video hook modules

Installed Directories: `/usr/include/ffmpeg`, `/usr/lib/vhook`, and `/usr/share/doc/ffmpeg-0.4.9-pre1`

Short Descriptions

ffmpeg is a command-line tool to convert video files, network streams and input from a TV card to several video formats.

- ffplay** is a very simple and portable media player using the `ffmpeg` libraries and the SDL library.
- ffserver** is a streaming server for everything that **ffmpeg** could use as input (files, streams, TV card input, webcam, etc.).
- `libavcodec.so` is a library containing the FFmpeg codecs (both encoding and decoding).
- `libavformat.so` is a library containing the file formats handling (mux and demux code for several formats) used by **ffplay** as well as allowing the generation of audio or video streams.

Avifile-0.7.43

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://prdownloads.sourceforge.net/avifile/avifile-0.7-0.7.43.tar.bz2>
- Download (FTP):
- Download MD5 sum: 821adfba2606773764aa29fcf14eb51f
- Download size: 2.9 MB
- Estimated disk space required: 50.4 MB
- Estimated build time: 2.4 SBU

Additional Downloads

- Required CODEC: <http://prdownloads.sourceforge.net/avifile/binaries-011002.tgz>
- Download MD5 sum: 4db4edeeceefb9353b15b047207fa6d3
- Download size: 4.3 MB
- Estimated disk space required: 13 MB

Avifile Dependencies

Required

Qt-3.3.4 and SDL-1.2.8

Optional

pkg-config-0.19, libjpeg-6b, libogg-1.1.2, libvorbis-1.1.1, liba52-0.7.4, LAME-3.96.1, libmad-0.15.1b, XviD-1.0.3, FAAD2, DivX4Linux and Dmalloc

Installation of Avifile

Install the required CODEC as the root user using the following commands:

```
install -v -d -m755 /usr/lib/avifile-0.7/win32 &&
tar -zxf ../binaries-011002.tgz -C /usr/lib/avifile-0.7
```

Install Avifile by running the following commands:

```
./configure --prefix=/usr \
  --with-win32-path=/usr/lib/avifile-0.7/win32 &&
make
```

Now, as the root user:

```
make install
```

Contents

Installed Programs:	avibench, avicap, avicat, avifile-config, avimake, aviplay, avirec, avirecompress, avitype, kv41setup, and mmxnow-config
Installed Libraries:	libaviplay.so, libaviplayavcodec.so, libaviplayavformat.so, libaviplaydha.so, libaviplayvidix, and numerous CODEC plugins and video extensions.
Installed Directories:	/usr/include/avifile-0.7, /usr/lib/avifile-0.7, and /usr/share/avifile-0.7

Short Descriptions

avibench	performs a measurement of the AVI file support library's performance for a file.
avicap	is a widget that displays acquired video from a Video For Windows (VFW) compatible device, like a webcam or a TV-tuner.
avicat	takes a set of AVI files and combines them into a single file.
avifile-config	is run by configure for programs wishing to link to the Avifile libraries.
avimake	takes a set of JPG images and creates a movie.
aviplay	manages the input formats, the CODECs and the output formats to display AVI video files on your screen.
avirec	is a command-line video recording tool.
avirecompress	is a widget that takes an input file of one CODEC type and converts it into a video file of another CODEC.
avitype	will read and display AVI file header information.
kv41setup	is a small tool which tells video4linux about the current video mode.
mmxnow-config	is run by configure for programs wishing to link to the mmxnow library.
libaviplay*.so	libraries contain the functions required by the various Avifile programs for encoding, decoding and to interface with the various plugins and video extensions.

MPlayer-1.0pre7

Introduction to MPlayer

The MPlayer package contains an audio/video player controlled via the command line or a graphical interface which is able to play almost every popular audio and video file format and CODEC (COder/DECoder, also COmpressor/DECompressor). With supported video hardware and additional drivers, MPlayer can play video files without an X Window System installed.

For MPlayer general information and available features, including a full list of file formats, CODECs and output devices supported by MPlayer, visit the MPlayer web site.

Package Information

- Download (HTTP): <http://www1.mplayerhq.hu/MPlayer/releases/MPlayer-1.0pre7.tar.bz2>
- Download (FTP): <ftp://ftp1.mplayerhq.hu/MPlayer/releases/MPlayer-1.0pre7.tar.bz2>
- Download MD5 sum: 5fadd6957d3aab989cd760ff38fb8fdf
- Download size: 6.8 MB
- Estimated disk space required: 97 MB (additional 22 MB for essential CODECs)
- Estimated build time: 2.0 SBU

Additional Downloads

Patches

- Required Patch (for fbdev driver support):
http://www.linuxfromscratch.org/blfs/downloads/6.1/MPlayer-1.0pre7-kernel_2.6-1.patch

CODECs

- Proprietary CODECs: <http://www.mplayerhq.hu/MPlayer/releases/codecs/essential-20050412.tar.bz2>
- Download MD5 sum: 5fe89bb095bdf9b4f9cda5479dbde906
- Download size: 9.3 MB
- Additional CODECs: <http://www.mplayerhq.hu/MPlayer/releases/codecs/>

Skins

- Default GUI skin: <http://www1.mplayerhq.hu/MPlayer/Skin/Blue-1.4.tar.bz2>
- Download MD5 sum: 05dd8e4f11a715c9e5d2abf1cdeb907c
- Download size: 221 KB
- Additional skins: <http://www1.mplayerhq.hu/MPlayer/Skin/>

Fonts

- Prerendered fonts: <http://www1.mplayerhq.hu/MPlayer/releases/fonts/font-arial-iso-8859-1.tar.bz2>
- Download MD5 sum: 1ecd31d17b51f16332b1fcc7da36b312
- Download size: 234 KB
- Additional fonts: <http://www1.mplayerhq.hu/MPlayer/releases/fonts/>

**Note**

The CODECs, skins and fonts are not required to build and use MPlayer.

MPlayer Dependencies**Optional Input Drivers and Libraries**

CDParanoia-III-9.8, libdv-0.104, libdvdread-0.9.4, Samba-3.0.14a, LIVE.COM Streaming Media, libmatroska (requires libebml), DVB drivers and DVB

Optional Audio Output Drivers and Libraries

ALSA-1.0.9, aRts-1.4.1, Esound-0.2.35, NAS-1.7, SDL-1.2.8 (also used for video output), XMMS-1.2.10, Polypaudio, bio2jack (requires JACK)

Optional Video Output Drivers and Libraries

X (XFree86-4.5.0 or X.org-6.8.2), libpng-1.2.8, libjpeg-6b, libungif-4.1.3 or giflib-4.1.3, GTK+-1.2.10, FreeType-2.1.10, Fontconfig-2.3.2, AALib-1.4rc5, FriBidi-0.10.5, DirectFB, SVGAlib, GGI, libcaca, LADSPA, Dxr2, libdxx3, MP1E and Enca

Optional CODECs

libvorbis-1.1.1, XviD-1.0.3, LZO-2.01, libmad-0.15.1b, LAME-3.96.1, libFAME-0.9.1, Theora, Tremor, FAAD2, DivX4Linux, TooLAME, lirccd and LIRC

Installation of MPlayer**CODEC Installation (Optional)**

If you downloaded any proprietary CODECs (which can provide support for additional audio and video formats such as Real, Indeo and QuickTime), extract them to `/usr/lib/mplayer/codecs` using the following commands as the `root` user (substitute and/or add different CODEC filenames, if necessary):

```
install -v -d -m755 /usr/lib/mplayer/codecs &&
tar -jvxf ../essential-20050412.tar.bz2 \
  -C /usr/lib/mplayer/codecs --strip-components=1 &&
chown -v -R root:root /usr/lib/mplayer/codecs
```

If you installed any CODECs, ensure you add `--with-codecsdir=/usr/lib/mplayer/codecs` to the `configure` script.

GUI Installation (Optional)

To enable building the GUI version of MPlayer (requires GTK+-1.2.10), add `--enable-gui` to the `configure` script. You'll also need to extract at least one skin. Extract the desired skin and create the default location (as the `root` user):

```
install -v -d -m755 /usr/share/mplayer/Skin &&
tar -jvxf ../Blue-1.4.tar.bz2 \
  -C /usr/share/mplayer/Skin &&
```

```
chown -v -R root:root /usr/share/mplayer/Skin/Blue &&
chmod -v 0755 /usr/share/mplayer/Skin/Blue{,/icons} &&
ln -sfv Blue /usr/share/mplayer/Skin/default
```

Installing OSD and Subtitles Support (Optional)

To enable OSD (On Screen Display) and subtitles support, add `--enable-menu` to the `configure` script. You'll also need to set up at least one font (see font installation instructions a little later).

Main MPlayer Installation



Note

The package maintainers recommend building without any optimizations.

MPlayer can build a shared post-processing library from the internal FFmpeg package which other packages can link to. This requires MPlayer to link dynamically to this library instead of the default statically linked method. If you desire to build the shared library, add `--enable-shared-pp` and `--disable-fastmemcpy` to the `configure` script. The `--disable-fastmemcpy` parameter is required to avoid undefined reference errors when other packages link to the shared library.

You may wish to examine the output from `./configure --help` to find out what additional parameters to `configure` are needed to include the dependencies you have installed on your system.

Install MPlayer by running the following commands:

```
patch -Np1 -i ../MPlayer-1.0pre7-kernel_2.6-1.patch &&
./configure --prefix=/usr --confdir=/etc/mplayer \
--enable-largefiles &&
make
```

This package does not come with a test suite.

Now, as the `root` user:

```
make install &&
install -v -m755 -d /usr/share/doc/mplayer-1.0pre7 &&
cp -v -R DOCS/* /usr/share/doc/mplayer-1.0pre7
```

Passing parameters to `configure` may result in the creation of `libdha.so.1.0`. If so, you may wish to create a symlink to this library in case other packages link to `libdha.so`. Use the following command as the `root` user to create the symlink:

```
ln -v -s libdha.so.1.0 /usr/lib/libdha.so
```

You will need `codecs.conf` only if you want to change its properties, as the main binary contains an internal copy of it. Ensure any changes you make to `codecs.conf` achieve the desired results, as incorrect entries in this file have been known to cause errors and render the player unusable. If necessary, create the file using the following command.

```
install -m644 etc/codecs.conf /etc/mplayer
```

You may also want to copy all the default configuration files to `/etc/mplayer` for future reference or more customization ability.

```
install -m644 etc/*.conf /etc/mplayer
```

MPlayer requires that the RTC run at a frequency of 1024 Hz. Make this setting change at boot-time by adding a line to `/etc/sysctl.conf`:

```
echo "dev.rtc.max-user-freq=1024" >> /etc/sysctl.conf
```

OSD and Subtitles Font Installation (Required if '--enable-menu' Was Passed to 'configure')

The recommended method to set up a font for MPlayer is to link a TTF file to your `~/mplayer` directory. A link should be created in each user's home directory who may use MPlayer. For example:

```
install -v -m750 -d ~/mplayer &&
ln -v -sf /usr/X11R6/lib/X11/fonts/TTF/luxisri.ttf \
    ~/mplayer/subfont.ttf
```

There are several other ways to set up a font package. To use a prerendered MPlayer font package, extract and link one of the font tarballs using the following commands:

```
tar -jvxf ../font-arial-iso-8859-1.tar.bz2 \
    -C /usr/share/mplayer/font &&
chown -v -R root:root /usr/share/mplayer/font &&
cd /usr/share/mplayer/font &&
ln -v -sf font-arial-iso-8859-1/font-arial-[font size]-iso-8859-1/* .
```

Available font sizes are 14, 18, 24 or 28.

Additional information as well as additional methods to set up an MPlayer font package can be found at <http://www.mplayerhq.hu/DOCS/HTML/en/subosd.html#mpsub-install>.

Installation for DVD Playback (Optional)

If you want DVD playback with MPlayer, you need to ensure a link exists from your DVD drive to `/dev/dvd`. If necessary, create the link using the following commands:

```
cat >> /etc/udev/rules.d/24-dvd.rules << "EOF"
# Create a /dev/dvd symlink

KERNEL="[dvd drive]", SYMLINK="dvd"

EOF
udevstart
```

Replace `[dvd drive]` with whatever device is appropriate, for example `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
```

Configuring MPlayer

Config Files

`/etc/mplayer/*` and `~/.mplayer/*`

Configuration Information

Typically, there's no configuration required for the system-wide files in `/etc/mplayer` (in fact, this directory is empty unless you copied the default files as mentioned above). Configuration can be accomplished by choosing the configuration button located on the MPlayer GUI. Any configuration changes made here will be copied to the user's `~/.mplayer` directory.

Contents

Installed Programs: `gmplayer`, `mplayer`, and `mencoder`

Installed Libraries: `libdha.so` and optionally, `libpostproc.so`

Installed Directories: `~/.mplayer`, `/etc/mplayer`, `/usr/include/postproc`, `/usr/lib/mplayer`, `/usr/share/mplayer`, and `/usr/share/doc/mplayer-1.0pre7`

Short Descriptions

gmplayer is a symlink to **mplayer** which brings up the graphical user interface component of 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, look at the very good documentation included with the package in the source tree subdirectory DOCS (also installed at `/usr/share/doc/mplayer`).

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>

```

libdha.so contains functions used by the MPlayer programs.

libpostproc.so is a post-processing filter library used by the MPlayer programs and other packages.

Xine User Interface-0.99.3

Introduction to Xine User Interface

The xine User Interface package contains a multimedia player. It plays back CDs, DVDs and VCDs. It also decodes multimedia files like AVI, MOV, WMV, MPEG and MP3 from local disk drives, and displays multimedia streamed over the Internet.

Package Information

- Download (HTTP): <http://prdownloads.sourceforge.net/xine/xine-ui-0.99.3.tar.gz>
- Download (FTP):
- Download MD5 sum: aa7805a93e511e3d67dc1bf09a71fcdd
- Download size: 2.6 MB
- Estimated disk space required: 18.5 MB
- Estimated build time: 0.54 SBU

Xine User Interface Dependencies

Required

xine Libraries-1.0.1

Optional

pkg-config-0.19, cURL-7.14.0, AAlib-1.4rc5, LIRC and libcaca

Installation of Xine User Interface

Install xine User Interface by running the following commands:

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

Now, as the root user:

```
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

Installed Programs: aaxine, cacaxine, fbxine, xine, xine-bugreport, xine-check, and xine-remote

Installed Directories: /usr/share/xine/[desktop,skins,visuals] and /usr/share/doc/[xine-ui,xitk]

Short Descriptions

aaxine	is an ASCII art video player which utilizes AALib as the frontend for the xine Libraries.
cacaxine	is a color ASCII art video player which utilizes CACA as the frontend for the xine Libraries.
fbxine	is a frame buffer interface to the xine Libraries.
xine	is a multimedia player designed to play MPEG streams (audio and video), MPEG elementary streams (MP3), MPEG transport streams, Ogg files, AVI files, ASF files, some Quicktime files, VCDs and DVDs (non-encrypted).
xine-bugreport	produces a terse system description and guides you through the process of reporting a bug.
xine-check	tests the xine video player installation for common problems. It tests the operating system settings, installation of plugins, CD/DVD drive settings and video support parameters.
xine-remote	is a tool to connect to a xine remote control server.

Transcode-0.6.14

Introduction to Transcode

Transcode is a fast, versatile and command-line based audio/video everything to everything converter. For a rundown of the features and capabilities, along with usage examples, visit the Transcode Wiki at <http://www.transcoding.org/>.

Package Information

- Download (HTTP): <http://www.jakemsr.com/transcode/transcode-0.6.14.tar.gz>
- Download (FTP): <ftp://ftp.fu-berlin.de/unix/linux/mirrors/gentoo/distfiles/transcode-0.6.14.tar.gz>
- Download MD5 sum: 9bfef83b7e0fe2c27d25d871fef75a92
- Download size: 2.6 MB
- Estimated disk space required: 60 MB
- Estimated build time: 1.69 SBU

Transcode Dependencies

Required

FFmpeg-0.4.9-pre1

Recommended

NASM-0.98.39 and LAME-3.96.1

Optional

X (XFree86-4.5.0 or X.org-6.8.2), FreeType-2.1.10, GTK+-1.2.10, SDL-1.2.8, libxml2-2.6.20, ImageMagick-6.2.3-5, libjpeg-6b or MMX Jpeg, libdv-0.104, libdvdread-0.9.4, Avifile-0.7.43, libFAME-0.9.1, libmpeg3-1.5.4, XviD-1.0.3, LZO-2.01, liba52-0.7.4, libogg-1.1.2, libvorbis-1.1.1, MJPEG Tools, libquicktime, Theora, LVE, PVM3 and LoRS/IBP

Though Transcode has no compile-time requirement for MPlayer-1.0pre7's shared post-processing library, Transcode can use it at run-time.

Installation of Transcode

Install Transcode by running the following commands:

```
./configure --prefix=/usr --without-x &&  
make
```

Now, as the root user:

```
make install
```

Command Explanations

`--without-x`: Omit this parameter if you have an X Window System installed and you want to compile X11 dependent filter plugins.

`--enable-netstream`: This parameter enables network streaming support.

Building support for most of the dependency packages requires using options passed to the **configure** script. View the `INSTALL` file and the output from `./configure --help` for complete information about enabling dependency packages.

Contents

Installed Programs:	avicodec, avidump, avifix, aviindex, avimerge, avisplit, avisync, tccat, tcdecode, tcdemux, tcextract, tcframe, tcmodinfo, tcmp3cut, tcplex, tcprobe, tcrequant, tcscan, tcxmlcheck, tcxpm2rgb, and transcode
Installed Libraries:	a52_decore.so, af6_decore.so, export*.so, filter*.so, and import*.so output/filter/input modules
Installed Directories:	/usr/lib/transcode and /usr/share/doc/transcode

Short Descriptions

avicodec	indicates or changes the FOURCC CODEC flag in an AVI file.
avidump	dumps audio or video stream of a given AVI file to stdout (for AVI conversion or extraction of audio streams).
avifix	fixes the header of an AVI file.
aviindex	writes a text file describing the index of an AVI file.
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	splits AVI files into multiple files.
avisync	can shift audio in AVI files for better synchronizing of the audio and video data signal.
tccat	concatenates input files using the input plugins of Transcode.
tcdecode	is used to decode input files to raw video and PCM audio streams.
tcdemux	demultiplexes (separates) audio/video input that contains multiple streams, e.g., VOB files.
tcextract	grabs single streams from a file containing multiple streams.
tcframe	processes single video frames for different color encodings (RGB >-< YUV or similar).
tcmodinfo	loads a supplied Transcode filter module and prints its parameters.
tcmp3cut	is a tool which can cut MP3 streams at milliseconds positions.

tcprobe	prints information about the input file format.
tcquant	is a tool which can requantize an MPEG-2 elementary stream.
tcscan	performs several measurements on the given input data.
tcxmlcheck	checks information in a SMIL input file.
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 both the homepage and the documentation included in the package.
<code>a52_decore.so</code>	is used to interface with the <code>liba52</code> library for decoding AC-3 streams.
<code>af6_decore.so</code>	is a support module used to decode <code>libaviplay</code> library supported codecs and file formats
<code>export/filter/import_*.so</code>	— 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 for complete information.

Chapter 40. CD-Writing Utilities

This chapter contains information on CD-writing utilities in Linux.

Additional sources of information include:

- CD-Writing HOWTO
- CD-Recordable FAQ

Cdrtools-2.01

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/utils/schilling/cdrtools/cdrtools-2.01.tar.bz2>
- Download (FTP): <ftp://ftp.berlios.de/pub/cdrecord/cdrtools-2.01.tar.bz2>
- Download MD5 sum: d44a81460e97ae02931c31188fe8d3fd
- Download size: 1.4 MB
- Estimated disk space required: 21 MB
- Estimated build time: 0.5 SBU

Installation of Cdrtools



Note

Installation of Cdrtools will fail if raw kernel headers are found in `/usr/src/linux` either as actual files or a symlink. As of the Linux 2.6 kernel series, this directory should no longer exist because appropriate headers were installed in the `linux-libc-headers` package during the base LFS installation.

Install Cdrtools by running the following commands:

```
make INS_BASE=/usr DEFINSUSR=root DEFINSGRP=root
```

This package does not come with a test suite.

Now, as the `root` user:

```
make INS_BASE=/usr DEFINSUSR=root DEFINSGRP=root install &&
install -v -m755 -d /usr/share/doc/cdrtools-2.01 &&
install -v -m644 README* ABOUT doc/*.ps \
  /usr/share/doc/cdrtools-2.01
```

Command Explanations

INS_BASE=/usr: This parameter moves the install directory from */opt/schily* to */usr*.

DEFINSUSR=root DEFINSGRP=root: These parameters install all programs with root:root ownership instead of the default bin:bin.

Contents

Installed Programs:	cdda2wav, cdrecord, devdump, isodebug, isodump, isoinfo, isovfy, mkhybrid, mkisofs, readcd, rscsi, scgcheck, and skel
Installed Libraries:	libdeflt.a, libedc_ecc.a, libfile.a, libhfs.a, libparanoia.a, librscg.a, libscg.a, libschily.a, and libunls.a
Installed Directories:	None

Short Descriptions

cdda2wav	converts Compact Disc audio into WAV sound files.
cdrecord	records audio or data Compact Discs.
devdump	is a diagnostic program used to dump an ISO-9660 device or file in hex.
isodebug	is used to display the command-line parameters used to create an ISO-9660 image.
isodump	is a diagnostic program used to dump a device or file based on ISO-9660.
isoinfo	is used to analyze or list an ISO-9660 image.
isovfy	is used to verify an ISO-9660 image.
mkhybrid	is a symbolic link to mkisofs used to create ISO-9660/HFS hybrid filesystem images.
mkisofs	is used to create ISO-9660/JOLIET/HFS filesystem images, optionally with Rock Ridge attributes.
readcd	reads or writes Compact Discs.
rscsi	is a remote SCSI manager.
scgcheck	is used to check and verify the Application Binary Interface of libscg .
libscg.a	is a highly portable SCSI transport library.

Cdrdao-1.2.0

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://prdownloads.sourceforge.net/cdrdao/cdrdao-1.2.0.tar.gz>
- Download (FTP):
- Download MD5 sum: dc2bdef7a7c8973e678ba4a4a2d9cc7e
- Download size: 2.0 MB
- Estimated disk space required: 64 MB
- Estimated build time: 1.5 SBU (includes building **gcdmaster**)

Cdrdao Dependencies

Recommended

libao-0.8.6, libvorbis-1.1.1, libmad-0.15.1b and LAME-3.96.1 (required to build **toc2mp3**)

Optional (Required to Build the gcdmaster Program)

Note: all the following packages must be built in the order listed.



Note

Changes in pkgconfig-0.17.x may cause linking errors in gtkmm applications. Either upgrade to pkgconfig-0.18, or after installing gtkmm-2.6.3, issue this command as the `root` user:

```
sed -i.bak \  
's:-lgtkmm-2.4:& -lgdkmm-2.4 -lpangomm-1.4 -latkmm-1.6:' \  
/usr/lib/pkgconfig/gtkmm-2.4.pc
```

A backup (`.bak`) is created, you can revert if desired.

libgnomeui-2.10.0, libsigc++-2.0.13, glibmm-2.6.1, gtkmm-2.6.3, libglademmm-2.6.0,
libgnomecanvasmm-2.10.0, gconfmm-2.10.0, libgnomemm-2.10.0, gnome-vfsmm-2.10.0 and
libgnomeuimm-2.10.0

Installation of Cdrdao

Install Cdrdao by running the following commands:

For MP3 support in the **gcdmaster** program, you will need a temporary `mad.pc`. If desired, it can be deleted after the build.

As the `root` user:

```
cat > /usr/lib/pkgconfig/mad.pc << "EOF"  
prefix=/usr
```

```
exec_prefix=${prefix}
libdir=${exec_prefix}/lib
includedir=${prefix}/include
```

```
Name: mad
Description: MPEG audio decoder
Requires:
Version: 0.15.1
Libs: -L${libdir} -lmad
Cflags: -I${includedir}
EOF
```

And, as an unprivileged user:

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

Now, as the root user:

```
make install
```

Contents

Installed Programs: cdrdao, cue2toc, toc2cddb, toc2cue and optionally, gcdmaster and toc2mp3
Installed Libraries: None
Installed Directory: /usr/share/cdrdao

Short Descriptions

cdrdao records audio or data CD-Rs in disk-at-once (DAO) mode based on a textual description of the CD contents.

cue2toc converts CUE to TOC format for audio CDs.

gcdmaster is a graphical front end to **cdrdao** for composing audio CDs.

toc2cddb converts a Cdrdao TOC file into a cddb file and prints it to stdout.

toc2cue converts TOC to CUE format for audio CDs.

toc2mp3 converts an audio CD disk image (.toc file) to MP3 files.

UDFtools-1.0.0b3

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://prdownloads.sourceforge.net/linux-udf/udftools-1.0.0b3.tar.gz>
- Download (FTP):
- Download MD5 sum: 2f491ddd63f31040797236fe18db9e60
- Download size: 287 KB
- Estimated disk space required: 3.5 MB
- Estimated build time: 0.10 SBU

Additional Downloads

- Required patch: <http://w1.894.telia.com/~u89404340/patches/packet/2.6/packet-2.6.8-2.patch.bz2>
- Required patch: <http://w1.894.telia.com/~u89404340/patches/packet/udftools-1.0.0b3.patch.bz2>

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:

```
bzcat ../packet-2.6.8-2.patch.bz2 | patch -Np1
```

In the kernel configuration, modify your settings to match those listed here:

```
Block devices
  Packet writing on CD/DVD media:      Y or M
CD-ROM/DVD Filesystems
  UDF file system support             Y or M
```

Recompile and install the new kernel.

Installation of UDFtools

Install UDFtools by running the following commands:

```
bzcat ../udftools-1.0.0b3.patch.bz2 | patch -Np1 &&
./configure --prefix=/usr &&
```

```
make
```

Now, as the root user:

```
make install
```

Contents

Installed Programs: cdrwtool, mkudffs, pktsetup, udffsck, and wrudf

Installed Library: libudffs.a

Installed Directories: None

Short Descriptions

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 is used to create new UDF file systems. It can be used on hard disks and CD-Rs as well as CD-RWs.

pktsetup is used to establish and break down associations between the kernel packet driver and a physical drive.

Example:

```
pktsetup /dev/pktcdvd0 /dev/scd0
mount /dev/pktcdvd0 /mnt/cdrom -t udf -o rw,noatime
```

associates the physical device `/dev/scd0` with the kernel packet driver `/dev/pktcdvd0`, then mounts a UDF formatted CD-RW for read/write access.

udffsck is used to check the integrity and correct errors on UDF filesystems.

wrudf is used to maintain a UDF filesystem.

`libudffs.a` contains functions used by the UDFtools programs.

Part XII. 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-1.1.23

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://ftp.easysw.com/pub/cups/1.1.23/cups-1.1.23-source.tar.bz2>
- Download (FTP): <ftp://ftp.easysw.com/pub/cups/1.1.23/cups-1.1.23-source.tar.bz2>
- Download MD5 sum: 4ce09b1dce09b6b9398af0daae9adf63
- Download size: 8.7 MB
- Estimated disk space required: 48 MB
- Estimated build time: 0.52 SBU (additional 69 SBU to run full test suite)

CUPS Dependencies

Recommended

libjpeg-6b, libpng-1.2.8, and libtiff-3.7.3

Optional

OpenSSL-0.9.7g or GnuTLS (which needs libgpg-error, libgcrypt and opencdk, in that order), Linux-PAM-0.80, PHP-5.0.4, Python-2.4.1, JDK-1.5.0, OpenSLP, libpaper and Valgrind (optionally used if running the test suites)

Installation of CUPS

Create an `lp` user, as CUPS will install the `lppasswd` command SUID to this user. Use the following command as the `root` user:

```
useradd -c "Print Service User" -d /dev/null -g lp -s /bin/false -u 9 lp
```

If you utilize Linux-PAM, you need to modify some files so CUPS can find needed headers. Make the appropriate modifications using the following command:

```
sed -i -e "s@pam/pam@security/pam@g" \
{config-scripts/cups-pam.m4,scheduler/auth.c,configure}
```

Install CUPS by running the following commands:

```
./configure &&
make
```

Now, as the `root` user:

```
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 to convert PostScript to raster images and a driver (e.g., from Gimp-Print-4.2.7) 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.

Boot Script

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-6.1` package:

```
make install-cups
```

Contents

Installed Programs:	<code>accept</code> , <code>cancel</code> , <code>cups-config</code> , <code>cupsaddsmb</code> , <code>cupsd</code> , <code>cupstestppd</code> , <code>disable</code> , <code>enable</code> , <code>lp</code> , <code>lpadmin</code> , <code>lpc</code> , <code>lpinfo</code> , <code>lpmove</code> , <code>lpoptions</code> , <code>lppasswd</code> , <code>lpq</code> , <code>lpr</code> , <code>lprm</code> , <code>lpstat</code> , and <code>reject</code>
Installed Libraries:	<code>libcups.[so,a]</code> , <code>libcupsimage.[so,a]</code> , and various filters and backend drivers
Installed Directories:	<code>/etc/cups</code> , <code>/usr/include/cups</code> , <code>/usr/lib/cups</code> , <code>/usr/share/doc/cups</code> , <code>/usr/share/cups</code> , <code>/var/log/cups</code> , and <code>/var/spool/cups</code>

Short Descriptions

accept	instructs the printing system to accept print jobs to the specified destinations.
cancel	cancels existing print jobs from the print queues.
cups-config	is a CUPS program configuration utility.
cupsaddsmb	exports printers to the Samba software for use with Windows clients.
cupsd	is the scheduler for the Common Unix Printing System.
cupstestppd	tests the conformance of PPD files.

disable	stops the named printers or classes.
enable	starts the named printers or classes.
lp	submits files for printing or alters a pending job.
lpadmin	configures printer and class queues provided by CUPS.
lpc	provides limited control over printer and class queues provided by CUPS.
lpinfo	lists the available devices or drivers known to the CUPS server.
lpmove	moves the specified job to a new destination.
lpoptions	displays or sets printer options and defaults.
lppasswd	adds, changes or deletes passwords in the CUPS digest password file <code>passwd.md5</code> .
lpq	shows the current print queue status on the named printer.
lpr	submits files for printing.
lprm	Cancels print jobs that have been queued for printing.
lpstat	displays status information about the current classes, jobs, and printers.
reject	instructs the printing system to reject print jobs to the specified destinations.

LPRng-3.8.28

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-3.8.28.tgz>
- Download (FTP): <ftp://ftp.lprng.com/pub/LPRng/LPRng/LPRng-3.8.28.tgz>
- Download MD5 sum: 1b3a0abd291b260eab6087ac0e61ed84
- Download size: 10.2 MB
- Estimated disk space required: 71.8 MB
- Estimated build time: 0.42 SBU

LPRng Dependencies

Optional

OpenSSL-0.9.7g, tcpwrappers-7.6, Heimdal-0.7 or MIT krb5-1.4.1, and krb4

Installation of LPRng

Install LPRng by running the following commands:

```
./configure --prefix=/usr --libexecdir=/usr/lib/lprng \
  --sysconfdir=/etc --enable-shared &&
make
```

Now, as the root user:

```
make install
install -v -d -m755 /usr/share/doc/lprng-3.8.28 &&
cp -v -R DOCS/* PrintingCookbook \
  /usr/share/doc/lprng-3.8.28
```

Configuring LPRng

Config Files

/etc/printcap and /etc/lpd/*

Configuration Information

There is no generic printcap for all printers. A sample printcap is loaded into the /etc directory which can be of some help. Information is also available at <http://www.lprng.org>, <http://www.linuxprinting.org> and the documentation installed in /usr/share/doc/lprng-3.8.28.

Boot Script

The init script installed by LPRng is not consistent with other BLFS scripts; therefore, install the `/etc/rc.d/init.d/lprng` init script included in the `blfs-bootscripts-6.1` package (as the root user):

```
make install-lprng
```



Note

You may also want to remove the **lpd** script that was installed in `/etc/rc.d/init.d`.

Contents

Installed Programs: cancel, checkpc, lp, lpc, lpd, lpq, lpr, lprm, lprng_certs, lprng_index_certs, and lpstat
Installed Library: liblpr.[so,a]
Installed Directories: /etc/lpd, /usr/lib/lprng, /usr/share/doc/3.8.28, /var/run/lpd, and /var/spool/lpd

Short Descriptions

cancel is a symlink to **lprm** used to send cancel requests to an LPRng print service.
checkpc checks out the printcap database.
lp is a symlink to **lpr** used to send requests to an LPRng print service.
lpc is a control program for the **lpd** daemon.
lpd is the print queueing daemon.
lpq is a status monitoring program.
lpr is a print job spooler program.
lprm is a print job removal program.
lprng_certs is a program used to manage SSL certificates for the LPRng software.
lprng_index_certs creates a set of index files in the LPRng signing certificate directory.
lpstat is a print job status reporting program.
liblpr.[so,a] contains the API functions used by the LPRng programs.

AFPL Ghostscript-8.51

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://prdownloads.sourceforge.net/ghostscript/ghostscript-8.51.tar.bz2>
- Download (FTP): <ftp://mirror.cs.wisc.edu/pub/mirrors/ghost/AFPL/g851/ghostscript-8.51.tar.bz2>
- Download MD5 sum: 8b328b47cce3b7f97f35296aae8e7b77
- Download size: 8.0 MB
- Estimated disk space required: 91 MB (includes installing libgs.so and both font tarballs)
- Estimated build time: 2.1 SBU (includes building and installing libgs.so)

Additional Downloads

Standard Fonts

- Download (FTP): <ftp://mirror.cs.wisc.edu/pub/mirrors/ghost/fonts/ghostscript-fonts-std-8.11.tar.gz>
- Download MD5 sum: 6865682b095f8c4500c54b285ff05ef6
- Download size: 3.7 MB

Other Fonts

- Download (HTTP): <http://ftp.gnu.org/pub/gnu/ghostscript/gnu-gs-fonts-other-6.0.tar.gz>
- Download MD5 sum: 33457d3f37de7ef03d2eea05a9e6aa4f
- Download size: 796 KB

Ghostscript Dependencies

Optional

libjpeg-6b, libpng-1.2.8, GTK+-1.2.10 and X (XFree86-4.5.0 or X.org-6.8.2)

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 instead if you have CUPS.

Installation of Ghostscript

Install Ghostscript by running the following commands:

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

This package does not come with a test suite.

Now, as the `root` user:

```
make install
```

To install the shared library `libgs.so`, run the following additional command as an unprivileged user:

```
make so
```

And again, as the `root` user:

```
make soinstall &&  
install -v -d -m755 /usr/include/ps &&  
install -v -m644 src/*.h /usr/include/ps
```



Note

The shared library depends on `GTK+-1.2.10`. It is only used in external programs like `GSview-4.7`.

To finish the installation, unpack all fonts you've downloaded to `/usr/share/ghostscript` and ensure the ownerships of the files are `root:root`. Substitute `[font-tarball]` appropriately in the command below for the fonts you wish to install:

```
tar -zxvf ../[font-tarball] -C /usr/share/ghostscript &&  
chown -v -R root:root /usr/share/ghostscript/fonts
```

Contents

Installed Programs: bdf tops, dumhint, ddivpdf, eps2eps, fixmswrd.pl, font2c, gs, gsbj, gsc, gsdj, gsdj500, gslj, gslp, gsnd, gsx, lprsetup.sh, pdf2dsc, pdf2ps, pdfopt, pf2afm, pfbtopfa, pj-gs.sh, printafm, ps2ascii, ps2epsi, ps2pdf, ps2pdf12, ps2pdf13, ps2pdf14, ps2pdfwr, ps2ps, pv.sh, unix-lpr.sh, and wftopfa

Installed Library: libgs.so

Installed Directories: /usr/include/ps and /usr/share/ghostscript

Short Descriptions

gs invokes Ghostscript, an interpreter of Adobe Systems' PostScript(tm) and Portable Document Format (PDF) languages.

AFPL Ghostscript provides many different scripts used to render PostScript/PDF files back and forth. Please refer to the HTML documentation or try **man gs** for information about the capabilities provided by the package.

ESP Ghostscript-7.07.1

Introduction to ESP Ghostscript

ESP 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://prdownloads.sourceforge.net/espgs/espgs-7.07.1-source.tar.bz2>
- Download (FTP):
<ftp://ftp.gtlib.cc.gatech.edu/pub/slackware/slackware-current/source/ap/espgs/espgs-7.07.1-source.tar.bz2>
- Download MD5 sum: d30bf5c09f2c7caa8291f6305cf03044
- Download size: 5.3 MB
- Estimated disk space required: 128 MB (includes installing libgs.so and both font tarballs)
- Estimated build time: 1.94 SBU (includes building and installing libgs.so)

Additional Downloads

Standard Fonts

- Download (FTP): <ftp://mirror.cs.wisc.edu/pub/mirrors/ghost/fonts/ghostscript-fonts-std-8.11.tar.gz>
- Download MD5 sum: 6865682b095f8c4500c54b285ff05ef6
- Download size: 3.7 MB

Other Fonts

- Download (HTTP): <http://ftp.gnu.org/pub/gnu/ghostscript/gnu-gs-fonts-other-6.0.tar.gz>
- Download MD5 sum: 33457d3f37de7ef03d2eea05a9e6aa4f
- Download size: 796 KB

ESP Ghostscript Dependencies

Optional

CUPS-1.1.23, libjpeg-6b, libpng-1.2.8, X (XFree86-4.5.0 or X.org-6.8.2), GLib-1.2.10, GTK+-1.2.10 and Gimp-Print-4.2.7

Installation of ESP Ghostscript

Install ESP Ghostscript by running the following commands:

```
./configure --prefix=/usr --without-gimp-print --without-omni &&  
make
```

Now, as the root user:

```
make install
```

To install the shared library `libgs.so` you will need `GTK+-1.2.10`.

Proceed with the following commands:

```
make CFLAGS_SO='-fPIC $(ACDEFS)' so
```

Now, as the `root` user:

```
make soinstall &&
install -v -d -m755 /usr/include/ps &&
install -v -m644 src/*.h /usr/include/ps
```



Note

The shared library is only used in external programs like `GSview-4.7`.

To finish the installation, unpack all fonts you've downloaded to `/usr/share/ghostscript` and ensure the ownerships of the files are `root:root`. Substitute `[font-tarball]` appropriately in the command below for the fonts you wish to install:

```
tar -zxvf ../[font-tarball] -C /usr/share/ghostscript &&
chown -v -R root:root /usr/share/ghostscript/fonts
```

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-omni`: This switch disables the omni driver support.

`--without-ijs`: This switch disables the IJS driver support.

`install ...`: Some packages (ImageMagick is one) need the Ghostscript headers in place to link to the shared library. These commands install the headers.

Contents

Installed Programs: `bdftops`, `dvipdf`, `eps2eps`, `fixmswrd.pl`, `font2c`, `gs`, `gsbj`, `gsc`, `gsdj`, `gsdj500`, `gslj`, `gslp`, `gsnd`, `gsx`, `lprsetup.sh`, `pdf2dsc`, `pdf2ps`, `pdfopt`, `pf2afm`, `pfktopfa`, `pj-gs.sh`, `printafm`, `ps2ascii`, `ps2epsi`, `ps2pdf`, `ps2pdf12`, `ps2pdf13`, `ps2pdf14`, `ps2pdfwr`, `ps2ps`, `pv.sh`, `sysvlp.sh`, `unix-lpr.sh`, and `wftopfa`

Installed Library: `libgs.so`

Installed Directories: `/usr/include/ps` and `/usr/share/ghostscript`

Short Descriptions

gs invokes Ghostscript, an interpreter of Adobe Systems' PostScript(tm) and Portable Document Format (PDF) languages.

`pstoraster` is a filter used by CUPS 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-4.2.7). It is built and installed only if CUPS-1.1.23 is found.

ESP Ghostscript provides many different scripts used to render PostScript/PDF files back and forth. Please refer to the HTML documentation or try **man gs** for information about the capabilities provided by the package.

Gimp-Print-4.2.7

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, CUPS-1.1.23, Foomatic, LPRng-3.8.28, **lpr** and the GIMP-1.2. See a list of supported printers at http://gimp-print.sourceforge.net/p_Supported_Printers.php3.

Package Information

- Download (HTTP): <http://prdownloads.sourceforge.net/gimp-print/gimp-print-4.2.7.tar.gz>
- Download (FTP):
- Download MD5 sum: 766be49f44a6a682d857e5aefec414d4
- Download size: 5.1 MB
- Estimated disk space required: 36 MB
- Estimated build time: 0.32 SBU (additional 4.37 SBUs to run the test suite)

Gimp-Print Dependencies

Optional

CUPS-1.1.23, Foomatic, IJS, TeX-3.0, DocBook-utils-0.6.14 and ESP Ghostscript-7.07.1 or AFPL Ghostscript-8.51

Installation of Gimp-Print

Install Gimp-Print by running the following commands:

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

Now, as the `root` user:

```
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 by not installing 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 (as the `root` user):

```
/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

Installed Programs:	cups-calibrate, escputil, gimpprint-config, ijsgimpprint, and testpattern
Installed Libraries:	libgimpprint.[so,a] and optionally, various CUPS filters and backend drivers
Installed Directories:	/usr/include/gimp-print, /usr/lib/gimp, /usr/share/cups/model/C, and /usr/share/gimp-print

Short Descriptions

cups-calibrate	calibrates the color output of printers using the Gimp-Print, CUPS or ESP Print Pro drivers.
escputil	is a command line utility to perform various maintenance tasks on Epson Stylus inkjet printers.
gimpprint-config	is a script to get information about the installed version of Gimp-Print.
ijsgimpprint	is a Ghostscript driver for Gimp-Print.

Chapter 42. Scanning

This chapter contains scanning applications which allow you to convert printed documents into formatted documents readable by other applications.

SANE-1.0.15

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, and 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 and cameras. The front ends are user interfaces to access the backends.

Back Ends Package Information

- Download (HTTP): <http://gd.tuwien.ac.at/api/sane/sane-backends-1.0.15/sane-backends-1.0.15.tar.gz>
- Download (FTP): <ftp://ftp.sane-project.org/pub/sane/sane-backends-1.0.15/sane-backends-1.0.15.tar.gz>
- Download MD5 sum: 3b804f35cdfbc5ad2d201ffe078bbac9
- Download size: 3.2 MB
- Estimated disk space required: 50 MB
- Estimated build time: 1.26 SBU

Front Ends Package Information

- Download (HTTP): <http://gd.tuwien.ac.at/api/sane/sane-frontends-1.0.13/sane-frontends-1.0.13.tar.gz>
- Download (FTP): <ftp://ftp.sane-project.org/pub/sane/sane-frontends-1.0.13/sane-frontends-1.0.13.tar.gz>
- Download MD5 sum: 2930626e627df49b45192a722cedc8a6
- Download size: 210 KB
- Estimated disk space required: 2.6 MB
- Estimated build time: 0.09 SBU

SANE Dependencies

Optional (Back Ends)

libjpeg-6b, libusb-0.1.10a, libieee1284, gPhoto2 (requires libgphoto2) and TeX-3.0

Optional (Front Ends)

X (XFree86-4.5.0 or X.org-6.8.2), GTK+-2.6.7 and GIMP-2.2.8

Kernel Configuration

To access your scanner, you will probably need the related kernel drivers or additional support packages (libusb-0.1.10a). A SCSI scanner will need SCSI drivers, a parallel port scanner needs parallel port support (you

should use enhanced EPP modes) and a USB scanner will need the `libusb` package and a SCSI system for emulation. Be sure that you have got the necessary drivers configured to access the devices.

Installation of SANE

Installation of SANE Back Ends

Install SANE-backends by running the following commands:

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

Now, as the `root` user:

```
make install
```

Installation of SANE Front Ends

The SANE-frontends package includes the graphical frontends `xscanimage` and `xcam`, and a command-line frontend `scanadf`. You don't need this package if you intend to use one of the more advanced graphical frontends like XSane-0.97. For a list of frontend packages, see <http://www.sane-project.org/sane-frontends.html>.

To install SANE-frontends, use the following commands:

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

Now, as the `root` user:

```
make install
```

If GIMP was linked into the build and you wish GIMP to use `xscanimage` as a scanning plugin, issue the following command as the `root` user:

```
ln -v -s /usr/bin/xscanimage /usr/lib/gimp/2.0/plugin-ins
```

Command Explanations

`--sysconfdir=/etc`: This switch installs the configuration files in `/etc/sane.d` instead of `/usr/etc/sane.d`.

Configuring SANE

Config Files

```
/etc/sane.d/*.conf
```

Configuration Information

Backend Configuration

The backend configuration files are located in `/etc/sane.d`. Information for configuring the various

backends can be found by using the man(5) page for the desired backend. Run **man sane-[backend]**, substituting the desired backend.

General Information

For general information about configuring and using SANE, see **man sane**. Linux-2.6.x brings some special issues into the picture. See <http://www.sane-project.org/README.linux> for information about using SANE with the Linux-2.6.x kernel. For information about USB scanning devices, run **man sane-usb**. For information about SCSI devices, run **man sane-scsi**.

Configuration and setup of the 'saned' daemon

The **saned** daemon is not meant to be used for untrusted clients. You should provide tcpwrappers-7.6 and/or Firewalling protection to insure only trusted clients access the daemon. Due to the complex security requirements to insure only trusted clients access the daemon, BLFS does not provide instructions to configure the **saned** daemon. If you desire to make the daemon available, ensure you provide adequate security, configure your `[x]inetd.conf` file and send a **SIGHUP** to the `[x]inetd` daemon. Some good information for setting up and securing the **saned** daemon can be found at <http://penguin-breeder.org/sane/saned/>.

Contents

Back Ends:

Installed Programs: gamma4scanimage, sane-config, saned, sane-find-scanner, and scanimage
Installed Libraries: libsane.so and numerous scanner backend modules
Installed Directories: /etc/sane.d, /usr/include/sane, /usr/lib/sane, /usr/share/sane, and /usr/share/doc/sane-1.0.15

Front Ends:

Installed Programs: scanadf, xcam, and xscanimage
Installed Library: GIMP plugin embedded in **xscanimage**
Installed Directory: /usr/share/sane

Short Descriptions

gamma4scanimage creates a gamma table in the format expected by **scanimage**.
sane-config is a tool used to determine the compiler and linker flags that should be used to compile and link SANE.
saned is the SANE daemon that allows remote clients to access image acquisition devices available on the local host.
sane-find-scanner is a command-line tool to find SCSI and USB scanners and determine their device files. Its primary aim is to make sure that scanners can be detected by SANE backends.

scanadf	is a command-line interface to control image acquisition devices which are equipped with an automatic document feeder (ADF).
scanimage	is a command line interface for scanning from image acquisition devices such as flatbed scanners or cameras. It is also used to list the available backend devices.
xcam	is a graphical camera front end for SANE.
xscanimage	is a graphical user interface for scanning.
<code>libsane.so</code>	is the application programming interface that is used to communicate between frontends and backends.
<code>libsane-*.so</code>	modules are backend scanning library plugins used to interface with scanning devices. See http://www.sane-project.org/sane-supported-devices.html for a list of supported backends.

XSane-0.97

Introduction to XSane

XSane is another front end for SANE-1.0.15. 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-0.97.tar.gz>
- Download (FTP): <ftp://ftp.sane-project.org/pub/sane/xsane/xsane-0.97.tar.gz>
- Download MD5 sum: 3d1f889d88c3462594febd53be58c561
- Download size: 3.1 MB
- Estimated disk space required: 21.3 MB
- Estimated build time: 0.22 SBU

XSane Dependencies

Required

GTK+-2.6.7 or GTK+-1.2.10 and SANE-1.0.15 (back ends)

Optional

libtiff-3.7.3, libjpeg-6b and GIMP-2.2.8

Installation of XSane

Install XSane by running the following commands:

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

Now, as the `root` user:

```
make install
```

If GIMP is installed, issue the following command as the `root` user:

```
ln -v -s /usr/bin/xsane /usr/lib/gimp/2.0/plugin-ins/
```

Command Explanations

ln -v -s /usr/bin/xsane /usr/lib/gimp/2.0/plugin-ins/: This creates a link in the system-wide GIMP `plugin-ins` directory so that users can access XSane directly from GIMP. GIMP must be available before building XSane for this to work. Alternatively, create the link in `~/.gimp-2.0/plugin-ins/` to provide individual user access. **man xsane** for additional information.

Contents

Installed Program: xsane
Installed Libraries: None
Installed Directory: /usr/share/sane/xsane

Short Descriptions

xsane is a graphical user-interface to control an image acquisition device such as a flatbed scanner.

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 MD5 sum: 103c9828f24820df86e55e7862e28974
- Download size: 75 KB
- Estimated disk space required: 1.5 MB
- Estimated build time: 0.03 SBU

Additional Downloads

- Required Patch: <http://www.linuxfromscratch.org/blfs/downloads/6.1/sgml-common-0.6.3-manpage-1.patch>

Installation of SGML Common

Instead of the normal convention of including the autotools files in the package, the maintainers included symlinks to the files in `/usr/share/automake`. For previous versions of Automake this convention is correct, but recent versions of Automake install the internal files in version specific directories. This causes the **configure** script to abort. To fix this error, the autotools are regenerated. Since the included `Makefile.am` file uses a syntax not supported by current versions of Automake, a patch is required to fix the syntax.

```
patch -Np1 -i ../sgml-common-0.6.3-manpage-1.patch &&
autoreconf -f -i
```

Install SGML Common by running the following commands:

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

Now, as the root user:

```
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 (as the `root` user) 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

Installed Programs:	<code>install-catalog</code> and <code>sgmlwhich</code>
Installed Libraries:	None
Installed Files:	SGML and XML DocBook entity files
Installed Directories:	<code>/etc/sgml</code> , <code>/usr/share/doc/sgml-common-0.6.3</code> , and <code>/usr/share/sgml</code>

Short Descriptions

install-catalog	creates a centralized catalog that maintains references to catalogs scattered throughout the <code>/usr/share/sgml</code> directory tree.
sgmlwhich	will print to standard output the name of the main configuration file.
SGML entities files	contain the basic character entities defined with SDATA entries.
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.kde.org/pub/kde/devel/docbook/SOURCES/docbk31.zip>
- Download MD5 sum: 432749c0c806dbae81c8bcb70da3b5d3
- Download size: 55 KB
- Estimated disk space required: 676 KB
- Estimated build time: 0.01 SBU

DocBook SGML DTD Dependencies

Required

SGML Common-0.6.3 and UnZip-5.52

Installation of DocBook SGML DTD



Note

The package source is distributed in zip format and requires **unzip**. You should create a directory and change to that directory before unzipping the file to ease the removal of the source files after the package has been installed.

Install DocBook SGML DTD by running the following commands:

```
sed -i -e '/ISO 8879/d' \  
-e 's|DTDDECL "-//OASIS//DTD DocBook V3.1//EN"|SGMLDECL|g' \  
docbook.cat
```

Now, as the root user:

```
install -v -d -m755 /usr/share/sgml/docbook/sgml-dtd-3.1 &&  
chown -R root:root . &&  
install -v docbook.cat /usr/share/sgml/docbook/sgml-dtd-3.1/catalog &&  
cp -v -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

sed -i -e '/ISO 8879/d' docbook.cat: This command removes the ENT definitions from the catalog file.

sed -i -e 's|DTDDECL "-//OASIS//DTD Docbook V3.1//EN"|SGMLDECL|g' 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 (perform as the root user):

```
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

Installed Programs:	None
Installed Libraries:	None
Installed Files:	SGML DTD and MOD files
Installed Directory:	/usr/share/sgml/docbook/sgml-dtd-3.1

Short Descriptions

SGML 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.

SGML MOD files contain components of the document type definition that are sourced into the DTD files.

DocBook SGML DTD-4.4

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/4.4/docbook-4.4.zip>
- Download (FTP):
- Download MD5 sum: f89e1bd0b2c7a361e3f1f739e16b5d0d
- Download size: 66 KB
- Estimated disk space required: 784 KB
- Estimated build time: 0.01 SBU

DocBook SGML DTD Dependencies

Required

SGML Common-0.6.3 and UnZip-5.52

Installation of DocBook SGML DTD



Note

The package source is distributed in zip format and requires **unzip**. You should create a directory and change to that directory before unzipping the file to ease the removal of the source files after the package has been installed.

Install DocBook SGML DTD by running the following commands:

```
sed -i -e '/ISO 8879/d' \  
-e '/gml/d' docbook.cat
```

Now, as the root user:

```
install -v -d /usr/share/sgml/docbook/sgml-dtd-4.4 &&  
chown -R root:root . &&  
install -v docbook.cat /usr/share/sgml/docbook/sgml-dtd-4.4/catalog &&  
cp -v -af *.dtd *.mod *.dcl /usr/share/sgml/docbook/sgml-dtd-4.4 &&  
install-catalog --add /etc/sgml/sgml-docbook-dtd-4.4.cat \  
/usr/share/sgml/docbook/sgml-dtd-4.4/catalog &&  
install-catalog --add /etc/sgml/sgml-docbook-dtd-4.4.cat \  
/etc/sgml/sgml-docbook.cat
```

Command Explanations

`sed -i -e '/ISO 8879/d' -e '/gml/d' docbook.cat`: This command removes 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 (perform as the root user):

```
cat >> /usr/share/sgml/docbook/sgml-dtd-4.4/catalog << "EOF"
-- Begin Single Major Version catalog changes --

PUBLIC "-//OASIS//DTD DocBook V4.3//EN" "docbook.dtd"
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

Installed Programs:	None
Installed Libraries:	None
Installed Files:	SGML DTD and MOD files
Installed Directory:	<code>/usr/share/sgml/docbook/sgml-dtd-4.4</code>

Short Descriptions

SGML 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.

SGML 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): <ftp://ftp.fu-berlin.de/unix/linux/mirrors/gentoo/distfiles/OpenSP-1.5.1.tar.gz>
- Download MD5 sum: f46fe0a04b76a4454ec27b7fcc84ec54
- Download size: 1.4 MB
- Estimated disk space required: 43 MB
- Estimated build time: 0.97 SBU

Additional Downloads

- Required Patch (removes some annoying messages that can appear while running **openjade**): <http://www.linuxfromscratch.org/blfs/downloads/6.1/OpenSP-1.5.1-LITLEN-1.patch>
- Required Patch: <http://www.linuxfromscratch.org/blfs/downloads/6.1/OpenSP-1.5.1-gcc34-1.patch>

OpenSP Dependencies

Required

SGML Common-0.6.3

Installation of OpenSP

Install OpenSP by running the following commands:

```
patch -Np1 -i ../OpenSP-1.5.1-LITLEN-1.patch &&
patch -Np1 -i ../OpenSP-1.5.1-gcc34-1.patch &&
./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
```

Now, as the root user:

```
make pkgdatadir=/usr/share/sgml/OpenSP-1.5.1 install &&
ln -v -sf onsgmls /usr/bin/nsgmls &&
ln -v -sf osgmlnorm /usr/bin/sgmlnorm &&
ln -v -sf ospam /usr/bin/spam &&
ln -v -sf ospcat /usr/bin/spcat &&
ln -v -sf ospent /usr/bin/spent &&
ln -v -sf osx /usr/bin/sx &&
ln -v -sf osx /usr/bin/sgml2xml &&
ln -v -sf libosp.so /usr/lib/libosp.so
```

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 the 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-1.5.1`.

`ln -v -sf ...`: These commands create the SP equivalents of OpenSP executables and libraries.

Contents

Installed Programs: `onsgmls`, `osgmlnorm`, `ospam`, `ospcat`, `ospent`, `osx`, and the SP equivalent symlinks: `nsgmls`, `sgml2xml`, `sgmlnorm`, `spam`, `spcat`, `spent`, and `sx`

Installed Library: `libosp.so` and the SP equivalent symlink: `libsp.so`

Installed Directories: `/usr/include/OpenSP`, `/usr/share/doc/OpenSP`, and `/usr/share/sgml/OpenSP-1.5.1`

Short Descriptions

onsgmls is used to process SGML files.

osgmlnorm prints on the standard output a normalized document instance for the SGML document contained in the concatenation of the entities with system identifiers `.nf` and `.fi`.

ospam is a markup stream editor.

ospcat prints effective system identifiers found in the catalogs.

ospent provides access to OpenSP's entity manager.

osx is an SGML normalizer or used to convert SGML files to XML files.

nsgmls is a symlink to **onsgmls**.

sgml2xml is a symlink to **osx**.

sgmlnorm is a symlink to **osgmlnorm**.

spam is a symlink to **ospam**.

spcat is a symlink to **ospcat**.

spent is a symlink to **ospent**.

sx is a symlink to **osx**.

`libosp.so` contains functions required by the OpenSP programs to parse, validate and manipulate SGML and XML files.

`libsp.so` is a symlink to `libosp.so`.

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://prdownloads.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 MD5 sum: 7df692e3186109cc00db6825b777201e
- Download size: 880 KB
- Estimated disk space required: 19.2 MB
- Estimated build time: 0.73 SBU

OpenJade Dependencies

Required

OpenSP-1.5.1

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
```

Now, as the root user:

```
make install &&
make install-man &&
ln -v -sf openjade /usr/bin/jade &&
ln -v -sf libogrove.so /usr/lib/libogrove.so &&
ln -v -sf libospgrove.so /usr/lib/libospgrove.so &&
ln -v -sf libostyle.so /usr/lib/libostyle.so &&
install -v -m644 dsssl/catalog /usr/share/sgml/openjade-1.3.2/ &&
install -v -m644 dsssl/*.{dtd,dsl,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

make install-man: This command installs the **openjade** man page.

--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 the 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 -v -sf ...: These commands create the Jade equivalents of OpenJade executables and libraries.

Configuring OpenJade

Configuration Information

```
echo "SYSTEM \"http://www.oasis-open.org/docbook/xml/4.4/docbookx.dtd\" \" \
  \"/usr/share/xml/docbook/xml-dtd-4.4/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

Installed Programs: openjade and the Jade equivalent symlink, jade

Installed Libraries: libogrove.so, libospgrove.so, libostyle.so, and the Jade equivalent symlinks: libgrove.so, libspgrove.so, and libstyle.so

Installed Directory: /usr/share/sgml/openjade-1.3.2

Short Descriptions

openjade is a DSSSL engine used for transformations.

jade is a symlink to **openjade**.

DocBook DSSSL Stylesheets-1.79

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://prdownloads.sourceforge.net/docbook/docbook-dsssl-1.79.tar.bz2>
- Download (FTP):
- Download MD5 sum: bc192d23266b9a664ca0aba4a7794c7c
- Download size: 277 KB
- Estimated disk space required: 14 MB
- Estimated build time: 0.01 SBU

Additional Downloads

- Documentation and test data: <http://prdownloads.sourceforge.net/docbook/docbook-dsssl-doc-1.79.tar.bz2>
- Download MD5 sum: 9a7b809a21ab7d2749bb328334c380f2
- Download size: 142 KB

DocBook DSSSL Stylesheets Dependencies

Required

SGML Common-0.6.3

Required (to Test the DocBook SGML Toolchain)

DocBook SGML DTD-4.4, OpenSP-1.5.1 and OpenJade-1.3.2

Installation of DocBook DSSSL Stylesheets

Ensure you unpack both the source and documentation tarballs before beginning the build.

Install DocBook DSSSL Stylesheets by running the following commands as the root user:

```
install -v -m755 bin/collateindex.pl /usr/bin &&
install -v -m644 bin/collateindex.pl.1 /usr/share/man/man1 &&
install -v -d -m755 /usr/share/sgml/docbook/dsssl-stylesheets-1.79 &&
cp -v -R * /usr/share/sgml/docbook/dsssl-stylesheets-1.79 &&
install-catalog --add /etc/sgml/dsssl-docbook-stylesheets.cat \
  /usr/share/sgml/docbook/dsssl-stylesheets-1.79/catalog &&
install-catalog --add /etc/sgml/dsssl-docbook-stylesheets.cat \
  /usr/share/sgml/docbook/dsssl-stylesheets-1.79/common/catalog &&
install-catalog --add /etc/sgml/sgml-docbook.cat \
  /etc/sgml/dsssl-docbook-stylesheets.cat
```

Command Explanations

The above commands create a **make install** script for this package.

Testing the DocBook SGML Toolchain (Optional)

The following commands will perform the necessary tests to confirm that your installed DocBook SGML toolchain will produce desired results. You must have the DocBook SGML DTD-4.4, OpenSP-1.5.1 and OpenJade-1.3.2 packages installed and perform the tests as the root user.

All tests will be performed from the `/usr/share/sgml/docbook/dsssl-stylesheets-1.79/doc/testdata` directory:

```
cd /usr/share/sgml/docbook/dsssl-stylesheets-1.79/doc/testdata
```

The first test should produce no output to stdout (your screen) and create a file named `jtest.rtf` in the current directory:

```
openjade -t rtf -d jtest.dsl jtest.sgm
```

The next test should return only the following line to stdout: `onsgmls:I: "OpenSP" version "1.5.1"`

```
onsgmls -sv test.sgm
```

The next test should produce no output to stdout and create a file named `test.rtf` in the current directory:

```
openjade -t rtf \
  -d /usr/share/sgml/docbook/dsssl-stylesheets-1.79/print/docbook.dsl \
  test.sgm
```

The last test should produce no output to stdout and create a file named `c1.htm` in the current directory:

```
openjade -t sgml \
  -d /usr/share/sgml/docbook/dsssl-stylesheets-1.79/html/docbook.dsl \
  test.sgm
```

Contents

Installed Program:	<code>collateindex.pl</code>
Installed Libraries:	None
Installed Files:	DSSSL stylesheets
Installed Directory:	<code>/usr/share/sgml/docbook/dsssl-stylesheets-1.79</code>

Short Descriptions

collateindex.pl is a Perl script that creates a DocBook index from raw index data.

DocBook-utils-0.6.14

Introduction to DocBook-utils

The DocBook-utils package is a collection of utility scripts used to convert and analyze SGML documents in general, and DocBook files in particular. The scripts are used to convert from DocBook or other SGML formats into “classical” file formats like HTML, man, info, RTF and many more. There's also a utility to compare two SGML files and only display the differences in markup. This is useful for comparing documents prepared for different languages.

Package Information

- Download (HTTP):
<http://sources-redhat.mirrors.redwire.net/docbook-tools/new-trials/SOURCES/docbook-utils-0.6.14.tar.gz>
- Download (FTP):
<ftp://sources.redhat.com/pub/docbook-tools/new-trials/SOURCES/docbook-utils-0.6.14.tar.gz>
- Download MD5 sum: 6b41b18c365c01f225bc417cf632d81c
- Download size: 124 KB
- Estimated disk space required: 1.44 MB
- Estimated build time: .03 SBU

DocBook-utils Dependencies

Required

OpenJade-1.3.2, DocBook DSSSL Stylesheets-1.79 and DocBook SGML DTD-3.1

Optional

JadeTeX-3.13 (for conversion to DVI, PS and PDF), SGMLSpM (for conversion to man and texinfo), and Lynx-2.8.5 or Links-2.1pre17 or w3m (for conversion to ASCII text)

Installation of DocBook-utils



Note

Earlier versions of the BLFS OpenSP instructions installed a catalog containing an SGMLDECL `unicode.sd` declaration into the system SGML catalogs. This declaration causes some of the OpenJade programs to fail occasionally. You'll need to remove these catalog definitions if they exist, or the package build will fail. The following command can determine if you need to remove these catalog definitions:

```
grep "OpenSP-1.5.1" /etc/sgml/catalog
```

If anything was returned, run the following command as the `root` user to remove the catalog definitions:

```
sed -i.orig \  
-e "/CATALOG \\/etc\/sgml\/OpenSP-1.5.1.cat/d" \  
/etc/sgml/catalog
```

```
/etc/sgml/catalog \
/etc/sgml/sgml-docbook.cat
```

Install DocBook-utils by running the following commands:

```
sed -i 's:/html:/' doc/HTML/Makefile.in &&
./configure --prefix=/usr &&
make
```

Now, as the root user:

```
make install
```

Many packages use an alternate name for the DocBook-utils scripts. If you wish to create these alternate names, use the following command:

```
for doctype in html ps dvi man pdf rtf tex texi txt
do
    ln -s docbook2$doctype /usr/bin/db2$doctype
done
```



Note

The **jw** script uses the **which** command to locate required utilities. You must install which-2.16 before attempting to use any of the DocBook-utils programs.

Command Explanations

sed -i 's:/html:/' doc/HTML/Makefile.in: This command changes the installation directory of the HTML documents.

Contents

Installed Programs:	docbook2dvi, docbook2html, docbook2man, docbook2pdf, docbook2ps, docbook2rtf, docbook2tex, docbook2texi, docbook2txt, jw, and sgmldiff
Installed Libraries:	None
Installed Directories:	/usr/share/doc/docbook-utils-0.6.14 and /usr/share/sgml/docbook/utis-0.6.14
Installed Symlinks:	db2dvi, db2html, db2man, db2pdf, db2ps, db2rtf, db2tex, db2texi, and db2txt

Short Descriptions

docbook2* are simple one-line wrapper scripts to **jw**. They are provided as easy-to-remember names used to convert DocBook or other SGML files to the respective format.

db2* are symlinks pointing at the respectively named **docbook2*** commands, created to satisfy some program's use of these names.

jw is a script used to convert DocBook or other SGML files to various output formats. It hides most of OpenJade's complexity and adds comfortable features.

sgmldiff is used to compare two SGML files and only return the differences in the markup. This is especially useful to compare files that should be identical except for language differences in the content.

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-4.4

Introduction to DocBook XML DTD

The DocBook XML DTD-4.4 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/4.4/docbook-xml-4.4.zip>
- Download (FTP): <ftp://ftp.fu-berlin.de/unix/linux/mirrors/gentoo/distfiles/docbook-xml-4.4.zip>
- Download MD5 sum: cbb04e9a700955d88c50962ef22c1634
- Download size: 96 KB
- Estimated disk space required: 1.2 MB
- Estimated build time: 0.01 SBU

DocBook XML DTD Dependencies

Required

libxml2-2.6.20 and UnZip-5.52

Installation of DocBook XML DTD



Note

The package source is distributed in zip format and requires **unzip**. You should create a directory and change to that directory before unzipping the file to ease the removal of the source files after the package has been installed.

Install DocBook XML DTD by running the following commands as the root user:

```
install -v -d -m755 /usr/share/xml/docbook/xml-dtd-4.4 &&
install -v -d -m755 /etc/xml &&
chown -R root:root . &&
cp -v -af docbook.cat *.dtd ent/ *.mod \
  /usr/share/xml/docbook/xml-dtd-4.4
```

Create (or update) and populate the /etc/xml/docbook catalog file by running the following commands as the root user:

```
if [ ! -e /etc/xml/docbook ]; then
  xmlcatalog --noout --create /etc/xml/docbook
```

```

fi &&
xmlcatalog --noout --add "public" \
  "-//OASIS//DTD DocBook XML V4.4//EN" \
  "http://www.oasis-open.org/docbook/xml/4.4/docbookx.dtd" \
  /etc/xml/docbook &&
xmlcatalog --noout --add "public" \
  "-//OASIS//DTD DocBook XML CALS Table Model V4.4//EN" \
  "file:///usr/share/xml/docbook/xml-dtd-4.4/calstblx.dtd" \
  /etc/xml/docbook &&
xmlcatalog --noout --add "public" \
  "-//OASIS//DTD XML Exchange Table Model 19990315//EN" \
  "file:///usr/share/xml/docbook/xml-dtd-4.4/soextblx.dtd" \
  /etc/xml/docbook &&
xmlcatalog --noout --add "public" \
  "-//OASIS//ELEMENTS DocBook XML Information Pool V4.4//EN" \
  "file:///usr/share/xml/docbook/xml-dtd-4.4/dbpoolx.mod" \
  /etc/xml/docbook &&
xmlcatalog --noout --add "public" \
  "-//OASIS//ELEMENTS DocBook XML Document Hierarchy V4.4//EN" \
  "file:///usr/share/xml/docbook/xml-dtd-4.4/dbhierx.mod" \
  /etc/xml/docbook &&
xmlcatalog --noout --add "public" \
  "-//OASIS//ELEMENTS DocBook XML HTML Tables V4.4//EN" \
  "file:///usr/share/xml/docbook/xml-dtd-4.4/htmltblx.mod" \
  /etc/xml/docbook
xmlcatalog --noout --add "public" \
  "-//OASIS//ENTITIES DocBook XML Notations V4.4//EN" \
  "file:///usr/share/xml/docbook/xml-dtd-4.4/dbnotnx.mod" \
  /etc/xml/docbook &&
xmlcatalog --noout --add "public" \
  "-//OASIS//ENTITIES DocBook XML Character Entities V4.4//EN" \
  "file:///usr/share/xml/docbook/xml-dtd-4.4/dbcentx.mod" \
  /etc/xml/docbook &&
xmlcatalog --noout --add "public" \
  "-//OASIS//ENTITIES DocBook XML Additional General Entities V4.4//EN" \
  "file:///usr/share/xml/docbook/xml-dtd-4.4/dbgenent.mod" \
  /etc/xml/docbook &&
xmlcatalog --noout --add "rewriteSystem" \
  "http://www.oasis-open.org/docbook/xml/4.4" \
  "file:///usr/share/xml/docbook/xml-dtd-4.4" \
  /etc/xml/docbook &&
xmlcatalog --noout --add "rewriteURI" \
  "http://www.oasis-open.org/docbook/xml/4.4" \
  "file:///usr/share/xml/docbook/xml-dtd-4.4" \
  /etc/xml/docbook

```

Create (or update) and populate the `/etc/xml/catalog` catalog file by running the following commands as the root user:

```

if [ ! -e /etc/xml/catalog ]; then
  xmlcatalog --noout --create /etc/xml/catalog
fi &&
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 creates the files and updates the catalogs. In order to install ScrollKeeper or to utilize DocBook XML DTD V4.4 when any version 4.x is requested in the System Identifier, you need to add additional statements to the catalog files. If you have any of the DocBook XML DTD's referenced below already installed on your system, remove those entries from the **for** command below (issue the commands as the root user):

```

for DTDVERSION in 4.1.2 4.2 4.3
do
  xmlcatalog --noout --add "public" \
    "-//OASIS//DTD DocBook XML V$DTDVERSION//EN" \
    "http://www.oasis-open.org/docbook/xml/$DTDVERSION/docbookx.dtd" \
    /etc/xml/docbook
  xmlcatalog --noout --add "rewriteSystem" \
    "http://www.oasis-open.org/docbook/xml/$DTDVERSION" \
    "file:///usr/share/xml/docbook/xml-dtd-4.4" \
    /etc/xml/docbook
  xmlcatalog --noout --add "rewriteURI" \
    "http://www.oasis-open.org/docbook/xml/$DTDVERSION" \
    "file:///usr/share/xml/docbook/xml-dtd-4.4" \
    /etc/xml/docbook
  xmlcatalog --noout --add "delegateSystem" \
    "http://www.oasis-open.org/docbook/xml/$DTDVERSION/" \
    "file:///etc/xml/docbook" \
    /etc/xml/catalog
  xmlcatalog --noout --add "delegateURI" \
    "http://www.oasis-open.org/docbook/xml/$DTDVERSION/" \
    "file:///etc/xml/docbook" \
    /etc/xml/catalog

```

done

Contents

Installed Programs:	None
Installed Libraries:	None
Installed Files:	DTD, MOD and ENT files
Installed Directories:	/etc/sgml and /usr/share/xml/docbook/xml-dtd-4.4

Short Descriptions

- 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 files contain components of the document type definition that are sourced into the DTD files.
- ENT files files contain lists of named character entities allowed in HTML.

DocBook XSL Stylesheets-1.68.1

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://prdownloads.sourceforge.net/docbook/docbook-xsl-1.68.1.tar.bz2>
- Download (FTP):
- Download MD5 sum: f4985efbc0f3411af8106928f8752fc5
- Download size: 967 KB
- Estimated disk space required: 26.4 MB
- Estimated build time: 0.01 SBU

DocBook XSL Stylesheets Dependencies

Required

libxslt-1.1.14

Installation of DocBook XSL Stylesheets

Install DocBook XSL Stylesheets by running the following commands as the root user:

```
install -v -d -m755 /usr/share/xml/docbook/xsl-stylesheets-1.68.1 &&
install -v -d -m755 /etc/xml &&
chown -R root:root . &&
cp -v -af INSTALL VERSION common eclipse extensions fo html htmlhelp \
  images javahelp lib manpages params profiling template xhtml \
  /usr/share/xml/docbook/xsl-stylesheets-1.68.1 &&
install -v -d -m755 /usr/share/doc/xml &&
cp -v -af doc/* /usr/share/doc/xml &&
cd /usr/share/xml/docbook/xsl-stylesheets-1.68.1 &&
sh INSTALL
```

Create (or append to) and populate the XML catalog files using the following commands as the root user:

```
if [ ! -f /etc/xml/catalog ]; then
  xmlcatalog --noout --create /etc/xml/catalog
fi &&
if [ ! -f /etc/xml/docbook ]; then
  xmlcatalog --noout --create /etc/xml/docbook
fi &&
xmlcatalog --noout --add "rewriteSystem" \
  "http://docbook.sourceforge.net/release/xsl/1.68.1" \
  "/usr/share/xml/docbook/xsl-stylesheets-1.68.1" \
  /etc/xml/catalog &&
xmlcatalog --noout --add "rewriteURI" \
  "http://docbook.sourceforge.net/release/xsl/1.68.1" \
```

```

    "/usr/share/xml/docbook/xsl-stylesheets-1.68.1" \
    /etc/xml/catalog &&
xmlcatalog --noout --add "rewriteSystem" \
    "http://docbook.sourceforge.net/release/xsl/current" \
    "/usr/share/xml/docbook/xsl-stylesheets-1.68.1" \
    /etc/xml/catalog &&
xmlcatalog --noout --add "rewriteURI" \
    "http://docbook.sourceforge.net/release/xsl/current" \
    "/usr/share/xml/docbook/xsl-stylesheets-1.68.1" \
    /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

```

Command Explanations

sh INSTALL: This command creates a local catalog for the XSL files.

Configuring DocBook XSL Stylesheets

Config Files

/etc/xml/catalog

Configuration Information

The system profile needs to be updated to utilize the new installed catalog. This can be done with the following command:

```

cat > /etc/profile.d/xsl.sh << "EOF"
# Set up Environment Variable for XSL Processing
export XML_CATALOG_FILES="/usr/share/xml/docbook/\
xsl-stylesheets-1.68.1/catalog.xml /etc/xml/catalog"
EOF

```

The above installation script creates the files and updates the catalog with the current version of the XML stylesheets. Some project stylesheets reference specific versions of XSL stylesheets, like BLFS-6.0, which needs the 1.67.2 version. The following commands can serve as an example for using a single XSL version to support any hard coded versions, as needed. Use the following as an example to use the current version of the stylesheets for the 1.67.2 version. Edit or add to the commands to suit your particular needs. Issue the commands as the root user:

```

xmlcatalog --noout --add "rewriteSystem" \
    "http://docbook.sourceforge.net/release/xsl/1.67.2" \
    "/usr/share/xml/docbook/xsl-stylesheets-1.68.1" \
    /etc/xml/catalog &&
xmlcatalog --noout --add "rewriteURI" \

```

```
"http://docbook.sourceforge.net/release/xsl/1.67.2" \
"/usr/share/xml/docbook/xsl-stylesheets-1.68.1" \
/etc/xml/catalog
```

Alternatively, other versions can be installed in their own versioned directories and catalog entries made in the following form:

```
xmlcatalog --noout --add "rewriteSystem" \
  "http://docbook.sourceforge.net/release/xsl/[version]" \
  "/usr/share/xml/docbook/xsl-stylesheets-[version]" \
  /etc/xml/catalog &&
xmlcatalog --noout --add "rewriteURI" \
  "http://docbook.sourceforge.net/release/xsl/[version]" \
  "/usr/share/xml/docbook/xsl-stylesheets-[version]" \
  /etc/xml/catalog
```

Contents

Installed Programs:	None
Installed Libraries:	None
Installed Files:	XSL style sheets for HTML and FO
Installed Directories:	/usr/share/xml/docbook/xsl-stylesheets-1.68.1 and /usr/share/doc/xml

Chapter 45. PostScript

This chapter includes applications that create, manipulate or view PostScript files and create or 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 MD5 sum: 0c8e0c31b08c14f7a7198ce967eb3281
- Download size: 1.9 MB
- Estimated disk space required: 20.7 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

X (XFree86-4.5.0 or X.org-6.8.2), PSUtils-p17, TeX-3.0, AFPL Ghostscript-8.51 or ESP Ghostscript-7.07.1, libpaper, Adobe Reader and Ghostview

Installation of a2ps

Install a2ps by running the following commands:

```
sed -i "s|emacs||" contrib/Makefile.in &&
sed -i "s|/usr/local/share|/usr/share|" configure &&
sed -i "s|char \*malloc ();|/* & */|" \
lib/path-concat.c &&
./configure --prefix=/usr \
--sysconfdir=/etc/a2ps --localstatedir=/var \
--enable-shared --with-medium=letter &&
make
```

To test the results, issue: **make check**. The `printers.tst` test will fail, as there is no default test printer.

Now, as the root user:

```
make install
```

Install the downloaded i18n-fonts by running the following commands as the `root` user:

```
cp -v fonts/* /usr/share/a2ps/fonts &&
cp -v afm/* /usr/share/a2ps/afm &&
cd /usr/share/a2ps/afm &&
./make_fonts_map.sh &&
mv fonts.map.new fonts.map
```

Command Explanations

sed -i -e "s|emacs||" contrib/Makefile.in: This command eliminates the compiling and installing of the Emacs script files. If you have substituted Emacs for Vi as your primary editor, skip this step.

sed -i -e "s|usr/local/share|usr/share|" configure: This command modifies the configure script to search for Ghostscript fonts at the location where they were installed by the BLFS instructions.

sed -i -e "s|char *malloc ();|* & *|" lib/path-concat.c: This command fixes a build problem with GCC-3.4.x

--sysconfdir=/etc/a2ps: Configuration data is installed in `/etc/a2ps` instead of `/usr/etc`.

--enable-shared: This switch enables building the dynamic `liba2ps` library.

--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

Installed Programs:	<code>a2ps</code> , <code>card</code> , <code>composeglyphs</code> , <code>fixnt</code> , <code>fixps</code> , <code>ogonkify</code> , <code>pdiff</code> , <code>psmandup</code> , <code>psset</code> , and <code>texi2dvi4a2ps</code>
Installed Libraries:	<code>liba2ps.[so,a]</code> and filter data
Installed Directories:	<code>/etc/a2ps</code> and <code>/usr/share/a2ps</code>

Short Descriptions

a2ps	is a filter, utilized primarily by printing scripts, that converts standard input or supported files to PostScript.
card	prints a reference card of a given program's options.

composeglyphs	creates a composite font program.
fixnt	is supposed to fix the problems in the PostScript files generated by the Microsoft PostScript driver under Windows NT (3.5 and 4.0).
fixps	tries to fix common PostScript problems that break postprocessing.
ogonkify	provides international support for Postscript by performing various munging of PostScript files related to printing in different languages.
pdiff	produces a pretty comparison between files.
psmandup	tries to produce a version of a given PostScript file to print in manual duplex.
psset	produces a version of a given PostScript file with a protected call to the PostScript operator 'setpagedevice'. Typical use is making a file print duplex, or on the manual tray, etc.
texi2dvi4a2ps	compiles Texinfo and LaTeX files to DVI or PDF

Enscript-1.6.4

Introduction to Enscript

Enscript converts ASCII text files to PostScript, HTML, RTF, ANSI and overstrikes.

Package Information

- Download (HTTP): <http://www.iki.fi/mtr/genscript/enscript-1.6.4.tar.gz>
- Download (FTP):
- Download MD5 sum: b5174b59e4a050fb462af5dbf28ebba3
- Download size: 1.0 MB
- Estimated disk space required: 10.2 MB
- Estimated build time: 0.13 SBU

Installation of Enscript

Install Enscript by running the following commands:

```
./configure --prefix=/usr --sysconfdir=/etc/enscript \
  --localstatedir=/var --with-media=Letter &&
make
```

To test the results, issue: **make check**.

Now, as the root user:

```
make install
```

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

Installed Programs: diffpp, enscript, mkafmmap, over, sliceprint, and states

Installed Libraries: None

Installed Directories: /usr/share/enscript

Short Descriptions

diffpp converts **diff** output files to a format suitable to be printed with **enscript**.

- enscript** is a filter, used primarily by printing scripts, that converts ASCII text files to PostScript, HTML, RTF, ANSI and overstrikes.
- mkafmmap** creates a font map from a given file.
- over** is a script which calls **enscript** and passes the correct parameters to create overstriced fonts.
- sliceprint** slices documents with long lines.
- states** is an **awk**-like text processing tool with some state machine extensions. It is designed for program source code highlighting and for similar tasks where state information helps input processing.

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):
- Download MD5 sum: b161522f3bd1507655326afa7db4a0ad
- 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:

```
sed 's@/usr/local@/usr@g' Makefile.unix > Makefile &&
make
```

This package does not come with a test suite.

Now, as the `root` user:

```
make install
```

Command Explanations

`sed 's@/usr/local@/usr@g' Makefile.unix > Makefile`: This command creates a `Makefile` that installs the program to the `/usr` prefix instead of the `/usr/local` prefix.

Contents

Installed Programs: epsffit, extractres, fixdlsrps, fixfmpps, fixmacps, fixpsditps, fixpspps, fixscribeps, fixtpps, fixwfwps, fixwpps, fixwwps, getafm, includeres, psbook, psmerge, psnup, psresize, psselect, pstops, and showchar

Installed Libraries: None

Installed Directories: /usr/share/psutils

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 can issue this command:

```
lp -o number-up=2 [filename]
```

Short Descriptions

epsffit	fits an EPSF file to a given bounding box.
psbook	rearranges pages into signatures.
psnup	puts multiple pages per physical sheet of paper.
psresize	alters the document paper size.
pssselect	selects pages and page ranges.
pstops	performs general page rearrangements and selection.
scripts	the remaining commands are scripts that perform specific functions described in their respective man pages.

GSview-4.7

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-4.7.tar.gz>
- Download (FTP): <ftp://mirror.cs.wisc.edu/pub/mirrors/ghost/ghostgum/gsview-4.7.tar.gz>
- Download MD5 sum: ce6288cc8597d6b918498d6d02654bb7
- Download size: 910 KB
- Estimated disk space required: 11 MB
- Estimated build time: 0.1 SBU

Additional Downloads

- Required Patch: <http://www.linuxfromscratch.org/blfs/downloads/6.1/gsview-4.7-pstotext-1.patch>

GSview Dependencies

Required

GTK+-1.2.10 and AFPL Ghostscript-8.51 or ESP Ghostscript-7.07.1 (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. You can create a symlink from your preferred browser to **/usr/bin/netscape**, or simply edit `srcunx/gvxreg.c` using the following **sed** script with your browser's executable file name substituted 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-4.7-pstotext-1.patch &&
make
```

This package does not come with a test suite.

Now, as the `root` user:

```
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

Installed Programs: gsview and gsview-help
Installed Libraries: None
Installed Directories: /etc/gsview, /usr/share/doc/gsview-4.7

Short Descriptions

gsview is a viewer for PostScript (PS) and PDF files.
gsview-help is a script for displaying help files in your chosen browser.

Xpdf-3.00pl3

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 MD5 sum: 95294cef3031dd68e65f331e8750b2c2
- Download size: 534 KB
- Estimated disk space required: 31.7 MB
- Estimated build time: 0.32 SBU

Additional Downloads

- Required patch: <ftp://ftp.foolabs.com/pub/xpdf/xpdf-3.00pl1.patch>
- Required patch: <ftp://ftp.foolabs.com/pub/xpdf/xpdf-3.00pl2.patch>
- Required patch: <ftp://ftp.foolabs.com/pub/xpdf/xpdf-3.00pl3.patch>
- Required patch:
http://www.linuxfromscratch.org/blfs/downloads/6.1/xpdf-3.00pl3-freetype_2.1.7_hack-2.patch

Xpdf Dependencies

Required

LessTif-0.94.4

Optional

AFPL Ghostscript-8.51 or ESP Ghostscript-7.07.1 (just the fonts), t1lib and libpaper

Installation of Xpdf

Install Xpdf by running the following commands:

```
patch -d xpdf -Np0 -i ../../xpdf-3.00pl1.patch &&
patch -d xpdf -Np0 -i ../../xpdf-3.00pl2.patch &&
patch -d xpdf -Np0 -i ../../xpdf-3.00pl3.patch &&
patch -Np1 -i ../xpdf-3.00pl3-freetype_2.1.7_hack-2.patch &&
./configure --prefix=/usr --sysconfdir=/etc \
  --with-freetype2-includes=/usr/include/freetype2 &&
make
```

This package does not come with a test suite.

Now, as the root user:

```
make install
```

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` and `~/ .xpdfrc`

Configuration Information

In the `/etc` directory you will find a sample `xpdfrc` that can be either copied to `~/ .xpdfrc` or taken as an example to write your own configuration file. Below you'll find a condensed version of the file you may wish to build from.

```
# 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
#psPaperSize                           A4
textEOL                                 unix

enableT1lib                             yes
enableFreeType                          yes
antialias                                yes

urlCommand                              "links -g %s"
```

Contents

Installed Programs: pdffonts, pdfimages, pdfinfo, pdftoppm, pdftops, pdftotext, and xpdf

Installed Libraries: None

Installed Directories: None

Short Descriptions

pdffonts lists the fonts used in a PDF file along with various information for each font.

pdfimages saves images from a PDF file as PPM, PBM, or JPEG files.

pdfinfo prints the contents of the 'Info' dictionary (plus some other useful information) from a PDF file.

pdftoppm converts PDF files to PBM, PGM and PPM formats.

pdftops converts PDF files to Postscript format.

pdftotext parses ASCII text from PDF files.

xpdf displays files in PDF format.

FOP-0.20.5

Introduction to FOP

The FOP (Formatting Objects Processor) package contains a print formatter driven by XSL formatting objects (XSL-FO). It is a Java application that reads a formatting object tree and renders the resulting pages to a specified output. Output formats currently supported include PDF, PCL, PostScript, SVG, XML (area tree representation), print, AWT, MIF and ASCII text. The primary output target is PDF.

Package Information

- Download (HTTP): <http://www.apache.org/dist/xml/fop/fop-0.20.5-src.tar.gz>
- Download (FTP): <ftp://apache.mirrors.pair.com/xml/fop/source/fop-0.20.5-src.tar.gz>
- Download MD5 sum: 1a31eb1357e5d4b8d32d4cb3edae2da2
- Download size: 7.8 MB
- Estimated disk space required: 45.3 MB
- Estimated build time: 0.25 SBU

Additional Downloads

Required package

- Java Advanced Imaging (JAI) API components:
http://javashoplmsun.com/ECom/docs/Welcome.jsp?StoreId=22&PartDetailId=jai-1_1_2_01-oth-JPR&SiteId=JSC&TransactionId=noreg
- Download MD5 sum: f2be3619a8d002eff3874355e96327eb
- Download size: 2.6 MB

Choose the “Linux JDK Install” file after accepting the license agreement.

Required patch

- http://www.linuxfromscratch.org/blfs/downloads/6.1/fop_0.20.5-jdk_1.5.0-1.patch

FOP Dependencies

Required

JDK-1.5.0

Optional

libxslt-1.1.14, JIMI SDK, Batik and Forrest (only used to rebuild the documentation)

Installation of FOP



Note

Ensure `$JAVA_HOME` is set correctly before beginning the build.

Some versions of tar will display a message similar to “tar: A lone zero block at 33476” when unpacking the source tarball. You may safely ignore this message.

Installing JAI

Install the JAI components by running the following commands as the `root` user while in the root of the FOP source tree:

```
chmod 755 ../jai-1_1_2_01-lib-linux-i586-jdk.bin &&
FOP_BUILD_DIR=$(pwd) &&
cd $JAVA_HOME &&
yes | $FOP_BUILD_DIR/../../jai-1_1_2_01-lib-linux-i586-jdk.bin &&
cd $FOP_BUILD_DIR
```

Installing FOP required components

Install FOP by running the following commands:

```
patch -Np1 -i ../fop_0.20.5-jdk_1.5.0-1.patch &&
./build.sh &&
sed -i -e "s/build/lib/" fop.sh
```

Now, as the `root` user:

```
install -v -d -m755 \
  /opt/fop-0.20.5/{bin,lib,docs/{general,lib,site}} &&
install -v -m755 fop.sh /opt/fop-0.20.5/bin &&
install -v -m644 build/fop.jar lib/avalon-framework-cvs-20020806.jar \
  /opt/fop-0.20.5/lib &&
install -v -m644 docs/* /opt/fop-0.20.5/docs &&
install -v -m644 CHANGES LICENSE README ReleaseNotes.html STATUS \
  /opt/fop-0.20.5/docs/general &&
install -v -m644 lib/{avalon.LICENSE.txt,readme} \
  /opt/fop-0.20.5/docs/lib &&
cp -v -R build/site/* /opt/fop-0.20.5/docs/site &&
ln -svf fop-0.20.5 /opt/fop
```

Installing the Batik JAR

You'll need to install one additional Java class library to process SVG objects. This library is part of the Batik package, but is also included with the FOP package. If you have Batik installed, ensure the `batik.jar` library is included in your `$CLASSPATH` environment variable. Alternatively, create a symbolic link from `/opt/fop-0.20.5/lib/batik.jar` pointing to the full path of the installed `batik.jar` file so that the `fop.sh` script will automatically pick it up.

If you don't have the Batik package installed, run the following commands as the `root` user:

```
install -v -m644 lib/batik.jar /opt/fop-0.20.5/lib &&
install -v -m644 lib/batik.LICENSE.txt \
  /opt/fop-0.20.5/docs/lib
```

Installing the Xalan-Java components

The components of FOP required to process FO files created by an XSL transformation engine (also known as an XSLT processor) is now complete. An XSL transformation engine (**xsltproc**) is included with the `libxslt-1.1.14` package in BLFS. The FOP package includes components of Xalan-Java to accomplish XSL transformations. If you have the Xalan-Java package installed, skip to the next section.

If you wish to install the Xalan-Java components provided by the FOP package, run the following commands as the root user:

```
sed -i -e "s/build/lib/" xalan.sh &&
install -v -m755 xalan.sh /opt/fop-0.20.5/bin &&
install -v -m644 lib/xml-apis.jar \
        lib/xercesImpl-2.2.1.jar \
        lib/xalan-2.4.1.jar \
        /opt/fop-0.20.5/lib &&
install -v -m644 lib/{xml-apis,xerces,xalan}.LICENSE.txt \
        lib/xml-apis.README.txt \
        /opt/fop-0.20.5/docs/lib
```

Installing the Jimi SDK JAR

If you installed the Java Image I/O class library (Jimi SDK) into the FOP source tree `lib` directory before building FOP (this will enable Jimi support), ensure you also install this JAR file into `/opt/fop-0.20.5/lib`.

Command Explanations

yes | \$FOP_BUILD_DIR/./jai-...-jdk.bin: This command installs the JAI components into the JDK file structure. The **yes** command is piped through so that you don't have to scroll through four pages of the license agreement and automatically responds “yes” to the agreement. `$FOP_BUILD_DIR` is used as a reference point to the source executable and as a method to return back to the FOP source tree.

sed -i -e "s/build/lib/" ...: These commands modify the installed shell scripts so that the location of the installed `fop.jar` file is correctly identified.

install -v ...; cp -v ...: There is no installation script provided by the FOP package. These commands install the package.

ln -svf fop-0.20.5 /opt/fop: This creates a convenience symlink so that `$FOP_HOME` doesn't have to be changed each time there's a package version change.

Configuring FOP

Config Files

`~/ .foprc`

Configuration Information

Using FOP to process some large FO's (including the FO derived from the BLFS XML sources), can lead to memory errors. Unless you add a parameter to the **java** command used in the **fop.sh** script you may receive messages similar to the one shown below:

Exception in thread "main" java.lang.OutOfMemoryError: Java heap space

To avoid errors like this, you need to pass an extra parameter to the **java** command used in the **fop.sh** script. This can be accomplished by creating a `~/.foprc` (which is sourced by the **fop.sh** script) and adding the parameter to the `FOP_OPTS` environment variable.

The **fop.sh** script looks for a `FOP_HOME` environment variable to locate the FOP class libraries. You can create this variable using the `~/.foprc` file as well. Create a `~/.foprc` file using the following commands:

```
cat > ~/.foprc << "EOF"
FOP_OPTS="-Xmx[RAM_Installed]m"
FOP_HOME="/opt/fop"
```

```
EOF
```

Replace `[RAM_Installed]` with a number representing the amount of RAM installed in your computer. An example would be `FOP_OPTS="-Xmx768m"`. For more information about memory issues running FOP, see <http://xml.apache.org/fop/running.html#memory>.

To include the **fop.sh** script in your path, update your personal or system-wide profile with the following:

```
PATH=$PATH:/opt/fop/bin
```

Contents

Installed Programs: fop.sh and xalan.sh

Installed Libraries: avalon-framework-cvs-20020806.jar, batik.jar, fop.jar, xalan-2.4.1.jar, xercesImpl-2.2.1.jar, and xml-apis.jar. JAI components include libmllib_jai.so, jai_codec.jar, jai_core.jar, and mlibwrapper_jai.jar

Installed Directory: /opt/fop-0.20.5

Short Descriptions

fop.sh is a wrapper script to the **java** command which sets up the FOP environment and passes the required parameters.

`fop.jar` contains all the FOP Java classes.

Other PostScript Programs

kghostview is a Qt based PostScript/PDF viewer from kdegraphics-3.4.1.

Chapter 46. Typesetting

This chapter includes applications that create output equivalent to typesetting.

TeX-3.0

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 (HTTP): <http://www.tug.org/ftp/tex-archive/systems/unix/teTeX/3.0/distrib/tetex-src-3.0.tar.gz>
- Download (FTP): <ftp://tug.ctan.org/tex-archive/systems/unix/teTeX/3.0/distrib/tetex-src-3.0.tar.gz>
- Download MD5 sum: 944a4641e79e61043fdaf8f38ecbb4b3
- Download size: 12.7 MB
- Estimated disk space required: 416 MB (542 MB with optional tarball)
- Estimated build time: 2.07 SBU

Additional Downloads

Required Macros and Fonts

- Download (HTTP): <http://www.tug.org/ftp/tex-archive/systems/unix/teTeX/3.0/distrib/tetex-texmf-3.0.tar.gz>
- Download (FTP): <ftp://tug.ctan.org/tex-archive/systems/unix/teTeX/3.0/distrib/tetex-texmf-3.0.tar.gz>
- Download MD5 sum: 11aa15c8d3e28ee7815e0d5fcd43fd4
- Download size: 91.7 MB

Optional 'texmf' Sources:

- Download (HTTP): <http://www.tug.org/ftp/tex-archive/systems/unix/teTeX/3.0/distrib/tetex-texmfsrc-3.0.tar.gz>
- Download (FTP): <ftp://tug.ctan.org/tex-archive/systems/unix/teTeX/3.0/distrib/tetex-texmfsrc-3.0.tar.gz>
- Download MD5 sum: 66c32a11964a49982ba2a32d3bbfe7f5
- Download size: 57.7 MB

TeX Dependencies

Required

Ed-0.2

Optional

libpng-1.2.8, Chapter 25, X Window System Environment, Perl-Tk, t1lib and GD

Installation of TeX

Before building TeX, the macros and fonts package (`texmf` tarball) must be installed. Install the macros and fonts using the following commands as the `root` user:

```
install -v -d -m755 /usr/share/texmf &&
gzip -dc ../tetex-texmf-3.0.tar.gz \
| (umask 0; cd /usr/share/texmf; tar -xf -)
```

If the optional `texmf` source code TAR ball was downloaded, untar it now as the `root` user:

```
gzip -dc ../tetex-texmfsrc-3.0.tar.gz \
| (umask 0; cd /usr/share/texmf; tar -xf -)
```

Install TeX by running the following commands:

```
./configure --prefix=/usr \
--exec-prefix=/usr --bindir=/usr/bin \
--without-texinfo --with-x=no \
--with-system-ncurses --with-system-zlib &&
make all
```

Now, as the `root` user:

```
make install &&
texconfig dvips paper letter &&
texconfig font rw
```



Note

The paper size may be changed to `a4`, as is used in most countries.

Command Explanations

`--with-x=no`: This switch will avoid any X dependencies. TeX can be compiled with X support, notably for `xdvi`. If this is desired, remove this configure option.

`--exec-prefix=/usr --bindir=/usr/bin`: These switches ensure that TeX binaries are installed in `/usr/bin`.

`--without-texinfo`: A default LFS installation already has the Texinfo package installed; this switch 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; this switch avoids building it here.

`--disable-a4`: Use this option to set the default paper size to letter and the default unit to inch.

`texconfig dvips paper letter`: This command sets the default paper size for TeX.

`texconfig font rw`: This command specifies writable fonts.

**Tip**

Run `./configure --help` for information about using other switches which will enable the build to use any installed packages you may have on your system.

Contents

- Installed Programs:** 100 separate binaries and scripts along with 30 symlinks to these programs.
- Installed Library:** libkpathsea.a
- Installed Directories:** ~/.texmf-config, /usr/include/kpathsea, /usr/share/texinfo/html, /usr/share/texmf, /usr/share/texi2html and /usr/share/texmf-var

Short Descriptions

- TeX programs** included in the TeX package are too numerous to individually list. Please refer to the individual program man pages and `file:///usr/share/texmf/doc/index.html` for details, as well as a tour of the expansive TeX documentation.
- `libkpathsea.a` contains functions used by TeX for searching and cataloging path names.

JadeTeX-3.13

Introduction to JadeTeX

The JadeTeX package is a companion package to the OpenJade DSSSL processor. JadeTeX transforms high level LaTeX macros into DVI/PostScript and Portable Document Format (PDF) forms.

Package Information

- Download (HTTP): <http://prdownloads.sourceforge.net/jadetex/jadetex-3.13.tar.gz>
- Download (FTP):
- Download MD5 sum: 634dfc172fbf66a6976e2c2c60e2d198
- Download size: 103 KB
- Estimated disk space required: 9.3 MB
- Estimated build time: 0.04 SBU

Additional Downloads

- Recommended demo files:
<http://anduin.linuxfromscratch.org/sources/BLFS/SVN/I-K/jadetex-3.13-demo.tar.bz2>

JadeTeX Dependencies

Required

TeX-3.0 and OpenJade-1.3.2

Installation of JadeTeX

If you downloaded the demo files tarball, unpack it along with the source tarball. It will unpack as a demo directory in the root of the source tree.

First, as the `root` user, make some required modifications to the `texmf.cnf` file already installed on the system by the TeX package, then build a new `latex.fmt` file using the following commands:

```
sed -i.orig -e "s/original texmf.cnf/modified texmf.cnf/" \
    -e "s/memory hog.../&\npool_size.context = 750000/" \
    $(kpsewhich texmf.cnf) &&
cat >> $(kpsewhich texmf.cnf) << "EOF"

% The following 3 sections added for JadeTeX

% latex settings
main_memory.latex = 1100000
param_size.latex = 1500
stack_size.latex = 1500
hash_extra.latex = 15000
string_vacancies.latex = 45000
pool_free.latex = 47500
nest_size.latex = 500
```

```

save_size.latex = 5000
pool_size.latex = 500000
max_strings.latex = 55000
font_mem_size.latex= 400000

% jadetex settings
main_memory.jadetex = 1500000
param_size.jadetex = 1500
stack_size.jadetex = 1500
hash_extra.jadetex = 50000
string_vacancies.jadetex = 45000
pool_free.jadetex = 47500
nest_size.jadetex = 500
save_size.jadetex = 5000
pool_size.jadetex = 500000
max_strings.jadetex = 55000

% pdfjadetex settings
main_memory.pdfjadetex = 2500000
param_size.pdfjadetex = 1500
stack_size.pdfjadetex = 1500
hash_extra.pdfjadetex = 50000
string_vacancies.pdfjadetex = 45000
pool_free.pdfjadetex = 47500
nest_size.pdfjadetex = 500
save_size.pdfjadetex = 5000
pool_size.pdfjadetex = 500000
max_strings.pdfjadetex = 55000

EOF
LATEX_FMT_DIR="$(kpsewhich -expand-var '$TEXMFSYSVAR')/web2c" &&
mv -v $(kpsewhich latex.fmt) $(kpsewhich latex.fmt).orig &&
mv -v $LATEX_FMT_DIR/latex.log $LATEX_FMT_DIR/latex.log.orig &&
fmtutil-sys --byfmt latex

```

Install JadeTeX using the following commands:

```
make
```

Now, as the root user:

```

install -v -m755 -d \
    $(kpsewhich -expand-var '$TEXMFLOCAL')/tex/jadetex/config &&
install -v -m644 dsssl.def jadetex.ltx \
    $(kpsewhich -expand-var '$TEXMFLOCAL')/tex/jadetex &&
install -v -m644 {,pdf}jadetex.ini \
    $(kpsewhich -expand-var '$TEXMFLOCAL')/tex/jadetex/config &&
FMTUTIL_CNF="$(kpsewhich fmtutil.cnf)" &&
mv $FMTUTIL_CNF $FMTUTIL_CNF.orig &&
cat $FMTUTIL_CNF.orig - >> $FMTUTIL_CNF << "EOF"

# JadeTeX formats:
jadetex      etex      -      "&latex"      jadetex.ini
pdfjadetex  pdfetex   -      "&pdflatex"   pdfjadetex.ini

```

```

EOF
mv -v $(kpsewhich -expand-var '$TEXMFMAIN')/ls-R \
      $(kpsewhich -expand-var '$TEXMFMAIN')/ls-R.orig &&
mv -v $(kpsewhich -expand-var '$TEXMFSYSVAR')/ls-R \
      $(kpsewhich -expand-var '$TEXMFSYSVAR')/ls-R.orig &&
mktexlsr &&
fmtutil-sys --byfmt jadetex &&
fmtutil-sys --byfmt pdfjadetex &&
mktexlsr &&
ln -v -sf etex /usr/bin/jadetex &&
ln -v -sf pdfetex /usr/bin/pdfjadetex

```

If you downloaded the demo files tarball, issue the following commands as an unprivileged user to test the functionality of the new JadeTeX installation:

```

cd demo &&
openjade -t tex -d demo.dsl demo.sgm &&
jadetex demo.tex &&
pdfjadetex demo.tex

```

The commands should complete without errors or warnings and create `demo.dvi` and `demo.pdf` files.

Command Explanations

sed -i -e ... -e ... \$(kpsewhich texmf.cnf): This command uses **kpsewhich** to locate the installed `texmf.cnf`. The first change is used to modify the header of the file so that if TeX is upgraded, the file won't get overwritten. The next change adds a parameter to increase ConTeXt's memory size to accommodate JadeTeX.

fmtutil-sys ...: These commands are used to build the `latex.fmt`, `jadetex.fmt` and `pdfjadetex.fmt` files. Additionally, the command automatically places the files in the correct directory.

mktexlsr; ln -v -sf tex ...; ln -v -sf pdftex ...: The JadeTeX programs are actually just symlinks to the TeX programs. **mktexlsr** updates TeX's `ls-R` database used by the `libkpathsea` library so that TeX knows to use the JadeTeX `.fmt` files when **jadetex** or **pdfjadetex** is called.

Configuring JadeTeX

Config Files

`jadetex.dtx` in the JadeTeX source tree.

Configuration Information

If you need to modify the default JadeTeX macro settings, see the JadeTeX FAQ.

Contents

Installed Programs: jadetex and pdfjadetex

Installed Libraries: None

Installed Directories: /usr/share/texmf-local

Short Descriptions

jadetex transforms LaTeX macros created by OpenJade into DVI/PostScript forms.

pdfjadetex transforms LaTeX macros created by OpenJade into Portable Document Format (PDF) forms.

Appendix A. Creative Commons License

Creative Commons Legal Code

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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
ANSI	American National Standards Institute
API	Application Programming Interface
APR	Apache Portable Runtime
ARP	Address Resolution Protocol
ASCII	American Standard Code for Information Interchange
ASN	Abstract Syntax Notation
ASF	Advanced Streaming Format
ATA	AT-Attached
ATSC	Advanced Television Systems Committee
ATK	Accessibility ToolKit
AVI	Audio Video Interleave
AWT	Abstract Window Toolkit
BER	Basic Encoding Rules
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
CPU	Central Processing Unit
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
DARPA	Directory Address Resolution Protocol Allocation
DEC	Digital Equipment Corporation
DER	Distinguished Encoding Rules
DES	Data Encryption Standard
DHCP	Dynamic Host Configuration Protocol
DICT	Dictionary Server Protocol (RFC 2229)
DIN	German Industrial Norm
DNS	Domain Name Service
DOS	Disk Operating System
DRI	Direct Rendering Infrastructure
DSC	Document Structuring Conventions
DSO	Dynamic Shared Objects
DSSSL	Document Style Semantics and Specification Language
DV	Digital Video
DVD	Digital Versatile Disk (also Digital Video Disk)
DVI	DeVice Independent
ELF	Executable and Linking Format
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
GLUT	OpenGL Utility Toolkit
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
GSS	Generic Security Service
GSSAPI	Generic Security Service Application Programming Interface
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

IANA	Internet Assigned Numbers Authority
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
ISO	International Standards Organisation
ISP	Internet Service Provider
IT	ImpulseTracker Module
JAI	Java Advanced Imaging
JAR	Java ARchive
JDK	Java Development Kit
JFIF	JPEG File Interchange Format
JPEG	Joint Photographic Experts Group
KDC	Key Distribution Center
KDE	KDesktop 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	Lempel-Ziv-Oberhumer
LZW	Lempel-Ziv-Welch
MAC	Media Access Control
MCOP	Multimedia COmmunication Protocol
MCU	Multipoint Control Unit
MD	Message-Digest
MDA	Mail Delivery Agent
MED	MED/OctaMED Module
MIDI	Musical Instrument Digital Interface
MIF	Maker Interchange Format
MII	Media Independent 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
MSL	Magick Scripting Language
MTA	Mail Transport Agent
MTM	MultiTracker Module
MUA	Mail User Agent
NASM	Netwide ASseMbler
NNTP	Network News Transfer Protocol
NFS	Network File System
NIS	Network Information Service
NPTL	Native Posix Thread Library
NSPR	Netscape Portable Runtime
NSS	Network Security Services
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
OS	Operating System
OSF	Open Software Foundation
OSS	Open Sound System
PAM	Pluggable authentication Modules
PBM	Portable BitMap
PCI	Peripheral Component Interconnect
PCL	Printer Control Language
PCM	Pulse Code Modulation
PDC	Primary Domain Controller
PDF	Portable Document Format
PEAR	PHP Extension and Application Repository
PGM	Portable Grey Map
PGP	Pretty Good Privacy
PHP	PHP Hypertext Preprocessor
PIM	Personal Information Manager
PLIP	Parallel Line Internet Protocol
PNG	Portable Network Graphics
PO	Portable Object
POD	Plain Old Documentation
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
RARP	Reverse Address Resolution Protocol
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
RTC	Real Time Clock
RTP	Real Time Protocol
RW	Read Write
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	XDisplay 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	XMultiMedia System

YP Yellow Pages

YUV Luminance-Bandwidth-Chrominance

Index

Packages

- a2ps, 938
- AALib, 225
- AbiWord, 768
- AFPL Ghostscript, 902
- ALSA Firmware, 819
- ALSA Library, 809
- ALSA OSS, 820
- ALSA Plugins, 811
- ALSA Tools, 816
- ALSA Utilities, 813
- Apache, 415
- Apache Ant, 280
- aRts, 567
- ASH, 153
- Aspell, 189
- AT SPI, 717
- ATK, 535
- Audio File, 823
- Autofs, 85
- Avifile, 877
- Balsa, 805
- Bc, 231
- Berkeley DB, 473
- BIND, 418
- BIND Utilities, 396
- BLFS Bootscripts, 52
- Bluefish, 150
- Bonobo, 749
- Bug-buddy, 682
- CDParanoia, 869
- Cdrdao, 892
- Cdrtools, 890
- Compface, 235
- Control Center, 665
- Cpio, 273
- CrackLib, 92
- CUPS, 897
- CURL, 351
- CVS, 365
- Cyrus SASL, 129
- DejaGnu, 283
- Desktop-file-utils, 249
- Dhcp, 483
- Dhcpd, 344
- Dillo, 799
- DocBook DSSSL Stylesheets, 926
- DocBook SGML DTD-3.1, 917
- DocBook SGML DTD-4.4, 919
- DocBook-utils, 928
- DocBook XML DTD, 931
- DocBook XSL Stylesheets, 935
- Doxygen, 285
- Ed, 148
- EEL, 656
- Emacs, 142
- Enscript, 941
- EOG, 688
- Epiphany, 730
- Esound, 824
- ESP Ghostscript, 904
- Ethereal, 398
- Evolution, 779
- Evolution Data Server, 680
- Exim, 458
- Expat, 187
- Expect, 287
- FAM, 166
- Fcron, 258
- Fetchmail, 405
- FFmpeg, 874
- File Roller, 692
- Firefox, 793
- FLAC, 843
- Fluxbox, 555
- Fontconfig, 217
- FOP, 950
- Freeglut, 550
- FreeTTS, 871
- FreeType, 216
- FriBidi, 230
- G-Wrap, 196
- GAIL, 652
- GAL, 676
- GAL-1, 757
- Galeon, 796
- gcalctool, 709
- GCC-3.3.4, 295
- GCC-3.4.3, 290
- GConf, 614
- GConf-1, 751
- GConf Editor, 694
- GDBM, 175
- GDK Pixel Buffer, 746

GDM, 736
 gedit, 686
 GGV, 690
 Giflib, 209
 GIMP, 776
 Gimp-Print, 907
 GLib-1, 177
 GLib2, 179
 GMP, 174
 GNet, 356
 GNOME Games, 734
 GNOME Icon Theme, 627
 GNOME Magnifier, 724
 GNOME Media, 704
 GNOME Netstatus, 707
 GNOME Session, 644
 GNOME Speech, 722
 GNOME System Monitor, 700
 GNOME Terminal, 648
 GNOME Themes, 633
 GNOME Utilities, 696
 GNOME Applets, 654
 Gnome-audio, 706
 Gnome-backgrounds, 638
 GNOME Desktop, 636
 GNOME Doc Utils, 659
 Gnome-keyring, 628
 GNOME Libraries, 744
 Gnome-menus, 640
 GNOME MIME Data, 617
 GNOME Panel, 642
 GNOME Print, 748
 GNOME Virtual File System, 619
 GNOME Virtual File System-1, 753
 GNOME2 User Docs, 667
 GnomeMeeting, 732
 Gnopernicus, 726
 GnuCash, 773
 Gnumeric, 771
 GnuPG, 115
 GOK, 728
 GPDF, 711
 GPM, 255
 Gst-plugins, 859
 GStreamer, 857
 GSview, 945
 GTK, 531
 GTK Engines, 632
 GTK-Doc, 240
 GTK2, 537
 GtkHTML, 678
 GtkHTML-1, 765
 gtksourceview, 684
 gucharmap, 713
 Guile, 297
 Guppi, 759
 Hd2u, 239
 Hdparm, 261
 Heimdal, 120
 Hicolor-icon-theme, 548
 HTML Tidy, 246
 Id3lib, 842
 ImageMagick, 237
 Imlib, 223
 Imlib2, 227
 Inetutils, 367
 Intltool, 242
 Iptables, 104
 Ispell, 192
 JadeTeX, 958
 Java Access Bridge, 720
 JDK, 299
 JOE, 146
 Kde-i18n, 605
 Kdeaccessibility, 597
 Kdeaddons, 604
 Kdeadmin, 575
 Kdeartwork, 603
 Kdebase, 571
 Kdebindings, 595
 Kdeedu, 587
 Kdegames, 601
 Kdegraphics, 583
 Kdelibs, 569
 Kdemultimedia, 581
 Kdenetwork, 577
 Kdepim, 579
 Kdesdk, 589
 Kdetoys, 599
 Kdeutils, 585
 Kdevelop, 591
 Kdewebdev, 593
 Kerberos5(MIT), 128
 KOffice, 781
 LAME, 867
 Lcms, 212
 Leafnode, 486
 LessTif, 539

Liba52, 850
 Libao, 828
 Libart-lgpl, 220
 Libbonobo, 612
 Libbonoboui, 625
 Libcaplet, 761
 Libcroco, 183
 Libdv, 848
 Libdvdcss, 845
 Libdvdread, 847
 Libesmtp, 188
 Libexif, 229
 LibFAME, 840
 Libgail-gnome, 719
 Libghttp, 764
 Libglade, 185
 Libglade-1, 755
 Libgnome, 621
 Libgnomecanvas, 623
 Libgnomecups, 670
 libgnomeprint, 672
 libgnomeprintui, 674
 Libgnomeui, 630
 Libgsf, 184
 Libgtkhtml, 661
 LibGTop, 650
 LibIDL, 181
 Libjpeg, 200
 Libmad, 837
 Libmikmod, 855
 Libmng, 214
 Libmpeg3, 835
 Libogg, 830
 Libpcap, 358
 Libpng, 202
 Librep, 305
 Librsvg, 221
 Libsoup, 357
 Libtiff, 204
 Libungif, 206
 Libusb, 198
 Libvorbis, 831
 Libwnck, 544
 Libxklavier, 549
 Libxml, 169
 Libxml2, 170
 Libxslt, 172
 Links, 359
 LPRng, 900
 Lynx, 361
 LZO, 197
 MC, 275
 Metacity, 557
 Mozilla, 788
 Mpg123, 861
 MPlayer, 879
 MySQL, 476
 Nail, 401
 Nano, 144
 NAS, 833
 NASM, 307
 Nautilus, 657
 Nautilus CD Burner, 702
 NcFTP, 369
 NCPFS, 371
 Net-tools, 374
 NFS Utilities, 425
 Nmap, 394
 NTP, 377
 OAF, 742
 OpenJade, 924
 OpenLDAP, 489
 OpenOffice, 783
 OpenQuicktime, 838
 OpenSP, 921
 OpenSSH, 429
 OpenSSL, 89
 ORBit, 740
 ORBit2, 610
 Other Programming Tools, 332
 PAM(Linux), 95
 Pan, 804
 Pango, 533
 PCI Utilities, 269
 PCRE, 160
 PDL, 309
 Perl modules, 314
 PHP, 321
 Pilot-link, 253
 Pine, 409
 Pkg-config, 271
 Popt, 162
 Portmap, 381
 Postfix, 462
 PostgreSQL, 479
 PPP, 338
 Procmail, 403
 Proftpd, 432

PSUtils, 943
 Python, 324
 Qpopper, 467
 Qt, 526
 ReiserFS, 136
 Rep-gtk, 233
 RP-PPPoE, 347
 rsync, 493
 Ruby, 326
 Samba, 436
 SANE, 909
 Sawfish, 553
 Screen, 244
 ScrollKeeper, 634
 SDL, 826
 Sendmail, 469
 SGML Common, 915
 Shadow, 98
 shared-mime-info, 546
 Slang, 164
 SLIB, 194
 Slrn, 411
 Soup, 762
 Speex, 841
 Startup-notification, 542
 Stunnel, 132
 Subversion, 385
 Sysstat, 277
 System-tools-backends, 698
 Tcl, 328
 Tcpwrappers, 388
 Tcsh, 155
 TeX, 955
 Thunderbird, 801
 Tk, 330
 Traceroute, 392
 Transcode, 887
 Tripwire, 117
 UDFtools, 894
 UnZip, 265
 Vim, 140
 Vorbis Tools, 863
 vsFTPD, 445
 VTE, 646
 W3m, 363
 Wget, 390
 Which, 263
 Whois, 395
 WvDial, 340

WvStreams, 353
 XFce, 559
 XFree86, 511
 XFS, 138
 Xine Libraries, 853
 Xine User Interface, 885
 Xinetd, 447
 XMMS, 865
 Xorg, 504
 Xpdf, 947
 XSane, 913
 Xscreensaver, 251
 XviD, 851
 Yelp, 663
 Zenity, 715
 Zip, 267
 ZSH, 157

Programs

a2ps, 939
 a52dec, 850
 aafire, 225
 aainfo, 225
 aalib-config, 225
 aatest, 226
 aaxine, 886
 ab, 417
 AbiWord-2.2, 769
 ac3dec, 817
 accept, 898
 aconnect, 815
 addr2name.awk, 293
 adsl-connect, 349
 adsl-setup, 349
 adsl-start, 349
 adsl-status, 349
 adsl-stop, 349
 afslog, 125
 alsacnf, 815
 alsactl, 815
 alsamixer, 815
 amidi, 815
 amixer, 815
 amor, 599
 animate, 238
 ant, 281
 antRun, 281
 antRun.pl, 281
 aoss, 821

apachectl, 417
 aplay, 815
 aplaymidi, 815
 appletviewer, 303
 applyfilter, 488
 apxs, 417
 arecord, 815
 arecordmidi, 815
 ark, 586
 arp, 375
 artsbuilder, 582
 artsc-config, 568
 artscat, 568
 artscontrol, 568
 artsd, 568
 artsdsp, 568
 artsplay, 568
 artshell, 568
 artswrapper, 568
 as10k1, 817
 aseqdump, 815
 aseqnet, 815
 ash, 154
 aspell, 190
 aspell-import, 190
 assistant, 530
 at-spi-registryd, 718
 au[utilities], 834
 audiofile-config, 823
 autoexpect, 288
 automount, 87
 autopasswd, 288
 avibench, 878
 avicap, 878
 avicat, 878
 avicodec, 888
 avidump, 888
 avifile-config, 878
 avifix, 888
 aviindex, 888
 avimake, 878
 avimerge, 888
 aviplay, 878
 avirec, 878
 avirecompress, 878
 avisplit, 888
 avisync, 888
 avitype, 878
 b2m, 142
 balsa, 806
 bc, 232
 berkeley_db_svc, 475
 bluefish, 151
 bmp2tiff, 204
 bounce, 465
 brlmonitor, 727
 bsetroot, 556
 bug-buddy, 683
 cacaxine, 886
 cancel, 898, 901
 capinfos, 399
 card, 939
 cdda2wav, 891
 cdparanoia, 870
 cdrdao, 893
 cdrecord, 891
 cdrwtool, 895
 cervisia, 589
 chat, 339
 checkgroups, 488
 checkmail, 834
 checkpc, 901
 cjpeg, 201
 cleanup, 465
 clusterdb, 481
 collateindex.pl, 927
 compare, 238
 compface, 235
 complete-ant-cmd.pl, 281
 composeglyphs, 940
 composite, 238
 compressdoc, 75
 conjure, 238
 convert, 238
 cpio, 274
 create-cracklib-dict, 94
 createdb, 481
 createlang, 481
 createuser, 481
 cryptdir, 288
 cspctl, 817
 ctags, 142
 cue2toc, 893
 cups-calibrate, 908
 cups-config, 898
 cupsaddsmb, 898
 cupsd, 898
 cupstestppd, 898

curl, 352
 curl-config, 352
 cvs, 366
 cvsbug, 366
 c_rehash, 90
 dbmanage, 417
 db_archive, 475
 db_checkpoint, 475
 db_deadlock, 475
 db_dump, 475
 db_load, 475
 db_printlog, 475
 db_recover, 475
 db_stat, 475
 db_upgrade, 475
 db_verify, 475
 dc, 232
 debugreiserfs, 136
 dechunk, 839
 decryptdir, 288
 designer, 530
 desktop-file-install, 250
 desktop-file-validate, 250
 devdump, 891
 dftest, 400
 dhclient, 342, 485
 dhcpcd, 346
 dhcpcd, 485
 dhcrelay, 485
 diffpp, 941
 dig, 423
 dillo, 800
 disable, 899
 disable-paste, 256
 dislocate, 288
 display, 238
 djpeg, 201
 dnsdomainname, 375
 dnssec-keygen, 423
 dnssec-signzone, 423
 docbook2*, 929
 domainname, 375
 dos2unix, 239
 doxygen, 286
 doxytag, 286
 doxywizard, 286
 dpid, 800
 dpidc, 800
 dropdb, 481
 droplang, 481
 dropuser, 481
 dubdv, 848
 dvconnect, 849
 ebrowse, 142
 echomixer, 817
 ecpg, 481
 ed, 149
 editcap, 400
 editmap, 472
 emacs, 142
 emacsclient, 143
 enable, 899
 encodedv, 849
 enscript, 942
 envy24control, 817
 eog, 689
 epiphany, 731
 epsffit, 944
 erb, 327
 error, 465
 escputil, 908
 esd, 825
 esd-config, 825
 esdcat, 825
 esdctl, 825
 esdfilt, 825
 esdloop, 825
 esdmon, 825
 esdplay, 825
 esdrec, 825
 esdsample, 825
 etags, 143
 ethereal, 400
 evolution-2.2, 780
 evolution-data-server-1.2, 681
 exicyclog, 461
 exigrep, 461
 exim-4.43-2, 461
 eximon, 461
 eximon.bin, 461
 eximstats, 461
 exim_checkaccess, 461
 exim_dbmbuild, 461
 exim_dumpdb, 461
 exim_fixdb, 461
 exim_lock, 461
 exim_tidydb, 461
 exinext, 461

exipick, 461
 exiqgrep, 461
 exiqsumm, 461
 exiwhat, 461
 expect, 288
 expectk, 289
 exportfs, 427
 extcheck, 304
 extract_a52, 850
 extract_ac3, 817
 famd, 168
 fax2ps, 205
 fax2tiff, 205
 fbrun, 556
 fbsetbg, 556
 fbxine, 886
 fc-cache, 218, 522
 fc-list, 218
 fc-match, 218
 fcron, 259
 fcrondyn, 259
 fcronsighup, 260
 fcrontab, 260
 fetchmail, 406
 fetchmailconf, 406
 fetchnews, 488
 ffmpeg, 875
 ffplay, 876
 ffserver, 876
 fgr, 560
 file-roller, 693
 findsmb, 443
 firefox, 795
 firefox-config, 795
 fixnt, 940
 fixps, 940
 flac, 844
 flea, 408
 flush, 465
 fluxbox, 556
 fluxbox-generate_menu, 556
 fop.sh, 953
 formail, 404
 freetype-config, 216
 fribidi, 230
 fribidi-config, 230
 fsck.xfs, 138
 ftp, 125
 ftp-rfc, 288
 ftpcount, 434
 ftpd, 125, 368
 ftpshut, 434
 ftptop, 434
 ftpwho, 435
 funzip, 266
 g-wrap-config, 196
 g77, 294
 galeon, 797
 galeon-config-tool, 797
 gamma4scanimage, 911
 gcalctool, 710
 gcdmaster, 893
 gcj, 294
 gcjh, 294
 gconf-editor, 695
 gdialog, 716
 gdk-pixbuf-csource, 538
 gdk-pixbuf-query-loaders, 538
 gdm, 738
 gdm-restart, 738
 gdm-safe-restart, 738
 gdmchooser, 738
 gdmconfig, 738
 gdmsetup, 738
 gedit, 687
 gfloppy, 697
 ggview, 691
 gif2epsn, 207, 210
 gif2ps, 207, 210
 gif2rgb, 207, 210
 gif2tiff, 205
 gif2x11, 207, 210
 gifasm, 207, 210
 gifbg, 207, 210
 gifburst, 207, 210
 gifclip, 207, 210
 gifclrm, 207, 210
 gifcolor, 207, 210
 gifcomb, 207, 210
 gifcompose, 207, 210
 giffiltr, 207, 210
 giffix, 207
 gifflip, 207, 210
 gifhisto, 207, 210
 gifinfo, 207, 210
 gifinter, 207, 210
 gifinto, 207, 210
 gifix, 210

gifovly, 207, 210
 gifpos, 207, 210
 gifrotat, 207, 210
 gifrsize, 207, 210
 gifspnge, 207, 210
 giftext, 207, 210
 gifwedge, 208, 210
 gij, 294
 gimp-2.2, 778
 gimp-remote-2.2, 778
 gimpprint-config, 908
 gimptool-2.0, 778
 glib-config, 177
 glib-genmarshal, 180
 glib-gettextize, 180
 glib-mkenums, 180
 glxgears, 522
 glxinfo, 522
 gmplayer, 883
 gnat, 294
 gnatbind, 294
 gnatbl, 294
 gnatchop, 294
 gnatclean, 294
 gnatfind, 294
 gnatkr, 294
 gnatlink, 294
 gnatls, 294
 gnatmake, 294
 gnatname, 294
 gnatprep, 294
 gnatxref, 294
 gnome-about, 637
 gnome-cd, 705
 gnome-dictionary, 697
 gnome-doc-prepare, 660
 gnome-help, 664
 gnome-keyring-daemon, 629
 gnome-menu-spec-test, 641
 gnome-netstatus-applet, 708
 gnome-pty-helper, 647
 gnome-screenshot, 697
 gnome-search-tool, 697
 gnome-session, 645
 gnome-session-*, 645
 gnome-smproxy, 645
 gnome-sound-recorder, 705
 gnome-system-log, 697
 gnome-system-monitor, 701
 gnome-terminal, 649
 gnome-volume-control, 705
 gnome-wm, 645
 gnomemeeting, 733
 gnopernicus, 727
 gnucash, 775
 gnumeric-1.4.1, 772
 gobject-query, 180
 gok, 729
 gpdf, 712
 gpg, 116
 gpgsplit, 116
 gpgv, 116
 gpm, 256
 gpm-root, 257
 gpr2make, 294
 gprcmd, 294
 grep-changelog, 143
 grepjar, 294
 gs, 903, 906
 gst-complete-0.8, 858
 gst-compprep-0.8, 858
 gst-feedback-0.8, 858
 gst-inspect-0.8, 858
 gst-launch-0.8, 858
 gst-launch-ext-0.8, 860
 gst-md5sum-0.8, 858
 gst-register-0.8, 858
 gst-typefind-0.8, 858
 gst-visualise-0.8, 860
 gst-xmlinspect-0.8, 858
 gst-xmllaunch-0.8, 858
 gstreamer-properties, 705
 gsview, 946
 gsview-help, 946
 gtk-config, 532
 gtk-query-immodules-2.0, 538
 gtk-update-icon-cache, 538
 gtkdoc*, 241
 gucharmap, 714
 guile, 297
 guile-config, 297
 guile-snarf, 297
 guile-tools, 298
 gview, 141
 gvim, 141, 141
 gvimdiff, 141
 hdparm, 262
 hdsconf, 817

hdsploder, 817
 hdspmixer, 817
 hltest, 257
 host, 423
 hostname, 375
 hoststat, 472
 hprop, 125
 hpropd, 125
 htdigest, 417
 htpasswd, 417
 httpd, 417
 icc2ps, 213
 icclink, 213
 icctrans, 213
 icon2gif, 208, 210
 id3convert, 842
 id3cp, 842
 id3info, 842
 id3tag, 842
 identify, 238
 idl2eth, 400
 idle, 325
 idlj, 304
 iecset, 815
 ifconfig, 375
 ijsgimpprint, 908
 import, 238
 inetd, 368
 initdb, 481
 install-catalog, 916
 instdso.sh, 417
 intltool-extract, 242
 intltool-merge, 243
 intltool-prepare, 243
 intltool-update, 243
 intltoolize, 242
 iostat, 278
 ip6tables, 105
 ipcclean, 481
 ipmaddr, 375
 ipop2d, 410
 ipop3d, 410
 ipropd-master, 125
 ipropd-slave, 125
 iptables, 105
 iptables-restore, 105
 iptables-save, 105
 iptunnel, 375
 irb, 327
 irkick, 586
 isodebug, 891
 isodump, 891
 isoinfo, 891
 isovfy, 891
 ispell, 190, 193
 issndfile, 834
 itox, 457
 jade, 925
 jadetex, 961
 jar, 294, 304
 jarsigner, 304
 java, 304
 javac, 304
 javadoc, 304
 javah, 304
 javap, 304
 javaws, 304
 jcf-dump, 294
 jdb, 304
 jmacs, 146
 joe, 146
 jpegicc, 213
 jpegtran, 201
 jpico, 147
 jstar, 147
 juk, 582
 jv-convert, 294
 jv-scan, 294
 jw, 930
 kaboodle, 582
 kaddressbook, 580
 kadmin, 125
 kadmind, 125
 kalarm, 580
 kalzium, 588
 kandy, 580
 karm, 580
 kate, 572
 kbabel, 589
 kbruch, 588
 kcachegrind, 590
 kcalc, 586
 kcharselect, 586
 kchart, 782
 kcm, 125
 kcoloredit, 584
 kcontrol, 572
 kcron, 576

kdat, 576
 kdc, 125
 kdebugdialog, 572
 KDE Games, 601
 KDE Support Programs, 570
 kdepasswd, 586
 kdeprint, 572
 kdestroy, 125
 kdesu, 572
 kdevelop, 592
 kdf, 586
 kdict, 578
 kdm, 572
 kdvi, 584
 kedit, 586
 keduca, 588
 keytool, 304
 kf, 126
 kfax, 584
 kfd, 126
 kfind, 572
 kfloppy, 586
 kformula, 782
 kgamma, 584
 kget, 578
 kgetcred, 126
 kghostview, 584
 kgpg, 586
 kgpgcertmanager, 580
 khangman, 588
 khelpcenter, 572
 khexedit, 586
 kibitz, 288
 kicker, 572
 kiconedit, 584
 kig, 588
 kinfocenter, 572
 kinit, 126
 kioslaves, 572
 kiten, 588
 kivio, 782
 kjots, 586
 klettres, 588
 klipper, 572
 klist, 126
 kmag, 598
 kmail, 580
 kmenuedit, 572
 kmessedwords, 588
 kmid, 582
 kmix, 582
 kmoon, 599
 kmousetool, 598
 kmouth, 598
 kmplot, 588
 knewsticker, 578
 knode, 580
 knotes, 580
 kodo, 599
 kompare, 590
 kongueror, 572
 konsole, 572
 konsolehelper, 580
 kontakt, 580
 kooka, 584
 kopete, 578
 korganizer, 580
 korn, 580
 kpackage, 576
 kpager, 572
 kpaint, 584
 kpasswd, 126
 kpasswd, 126
 kpercentage, 588
 kpf, 578
 kpilot, 580
 kpovmodeler, 584
 kppp, 578
 kpresenter, 782
 krb5-config, 126
 krdc, 578
 krec, 582
 kregexpeditor, 586
 krfb, 578
 kruler, 584
 kscd, 582
 ksirc, 578
 ksnapshot, 584
 ksplashml, 572
 kspread, 782
 kstars, 588
 kstash, 126
 ksysguard, 572
 ksysv, 576
 ktalkd, 578
 kteatime, 600
 ktimer, 586
 ktouch, 588

ktutil, 126
 ktux, 600
 kugar, 782
 kuickshow, 584
 kuser, 576
 kv41setup, 878
 kverbos, 588
 kview, 584
 kvoctrain, 588
 kwifimanager, 578
 kword, 782
 kworldclock, 600
 kwrite, 572
 kx, 126
 kxd, 126
 kxkb, 573
 kxsldb, 593
 lame, 868
 ld10k1, 817
 ldapadd, 492
 ldapcompare, 492
 ldapdelete, 492
 ldapmodify, 492
 ldapmodrdn, 492
 ldappasswd, 492
 ldapsearch, 492
 ldapwhoami, 492
 ldrdf, 308
 leafnode, 488
 leafnode-version, 488
 libesmtp-config, 188
 libfame-config, 840
 libgailutil.so, 653
 libglade-convert, 186
 libIDL-config-2, 181
 libmikmod-config, 856
 libpng12-config, 203
 linguist, 530
 links, 360
 lisa, 578
 lmt, 465
 lo10k1, 817
 local, 465
 lockfile, 404
 login, 126
 logresolve, 417
 lp, 899, 901
 lpadmin, 899
 lpc, 899, 901
 lpd, 901
 lpinfo, 899
 lpmove, 899
 lpoptions, 899
 lppasswd, 899
 lpq, 899, 901
 lpr, 899, 901
 lprm, 899, 901
 lprng_certs, 901
 lprng_index_certs, 901
 lpstat, 899, 901
 lpunlock, 288
 lrelease, 530
 lspci, 270
 lupdate, 530
 lwresd, 423
 lynx, 362
 Magick-config, 238
 magnifier, 725
 mailq, 465, 472
 mailstat, 404
 mailstats, 472
 makemap, 472
 make_streamable, 839
 mapping-daemon, 703
 master, 465
 mc, 276
 mcedit, 276
 mcpidl, 568
 mcview, 276
 mencoder, 883
 mergecap, 400
 metacity, 558
 metacity-theme-viewer, 558
 metacity-window-demo, 558
 metaflac, 844
 mev, 257
 mii-tool, 375
 mixartloader, 817
 mkafmmap, 942
 mkfontdir, 523
 mkfontscale, 523
 mkfs.xfs, 139
 mkhybrid, 891
 mkisofs, 891
 mkpasswd, 288
 mkreiserfs, 136
 mkudffs, 895
 mmxnow-config, 878

moc, 530
 mogrify, 238
 montage, 238
 motif-config, 541
 mount.smbfs, 443
 mouse-test, 257
 mozilla, 792
 mp3rtsp, 868
 mp3x, 868
 mpeg3cat, 836
 mpeg3dump, 836
 mpeg3toc, 836
 mpg123, 862
 mplayer, 883
 mpstat, 278
 mt, 274
 mtest, 410
 multixterm, 289
 mutt, 408
 mutt_dotlock, 408
 mwm, 541
 mxmkmf, 541
 nail, 402
 named, 424
 named-checkconf, 424
 named-checkzone, 424
 nameif, 375
 nano, 145
 nasd, 834
 nasm, 308
 native2ascii, 304
 nautilus, 658
 nautilus-cd-burner, 703
 ncftp, 370
 ncftpbatch, 370
 ncftpbookmarks, 370
 ncftpget, 370
 ncftpls, 370
 ncftpput, 370
 ncftpspooler, 370
 ndisasm, 308
 neon-config, 387
 net, 443
 netstat, 375
 newaliases, 465, 472
 newsq, 488
 nfsstat, 427
 nhfsgraph, 427
 nhfsnums, 427
 nhfsrun, 427
 nhfsstone, 427
 nisdomainname, 375
 nmap, 394
 nmapfe, 394
 nmbd, 443
 nmblookup, 443
 noatun, 582
 nqmgr, 466
 nslookup, 424
 nsupdate, 424
 ntlm_auth, 443
 ntp-keygen, 379
 ntp-wait, 379
 ntpd, 379
 ntpdate, 379
 ntpdc, 379
 ntpq, 379
 ntptime, 379
 ntpttrace, 379
 oclock, 519
 ogg123, 864
 oggdec, 864
 oggenc, 864
 ogginfo, 864
 ogonkify, 940
 omshell, 485
 onsgmls, 922
 openjade, 925
 openssl, 90
 oqmgr, 466
 orbd, 304
 osgmlnorm, 922
 ospam, 922
 ospcat, 922
 ospent, 922
 osx, 922
 otp, 126
 otpprint, 126
 over, 942
 pal2rgb, 205
 pam_tally, 97
 pan, 804
 pango-querymodules, 534
 passmass, 288
 pcre-config, 161
 pcregrep, 161
 pcretest, 161
 pcxhrloader, 817

pdbedit, 443
 pdffonts, 949
 pdfimages, 949
 pdfinfo, 949
 pdfjadetex, 961
 pdftoppm, 949
 pdftops, 949
 pdftotext, 949
 pdiff, 940
 pdl, 313
 pdldoc, 313
 pear, 323
 perlDL, 313
 pfrom, 126
 pg_config, 481
 pg_controldata, 481
 pg_ctl, 481
 pg_dump, 481
 pg_dumpall, 482
 pg_resetxlog, 482
 pg_restore, 482
 php, 323
 pickup, 466
 pico, 410
 pilot, 410
 pilot-link programs, 254
 pine, 410, 410
 pipe, 466
 pkg-config, 272
 pktsetup, 895
 playbucket, 834
 playdv, 849
 plipconfig, 375
 pltcl_delmod, 482
 pltcl_listmod, 482
 pltcl_loadmod, 482
 pmap_dump, 382
 pmap_set, 382
 policytool, 304
 popper, 126, 468
 portmap, 382
 postalias, 466
 postcat, 466
 postconf, 466
 postdrop, 466
 postfix, 466
 postgres, 482
 postkick, 466
 postlock, 466
 postlog, 466
 postmap, 466
 postmaster, 482
 postqueue, 466
 postsuper, 466
 ppm2tiff, 205
 pppd, 339
 pppdump, 339
 pppoe, 349
 pppoe-relay, 349
 pppoe-server, 349
 pppoe-sniff, 349
 pppstats, 339
 pptemplate, 313
 praliases, 472
 precat, 190
 preunzip, 190
 prezip, 190
 prezip-bin, 190
 procmail, 404
 profiles, 443
 proftpd, 434
 proxymap, 466
 psbook, 944
 psmadup, 940
 psnup, 944
 pspell-config, 190
 psql, 482
 psresize, 944
 psselect, 944
 psset, 940
 pstops, 944
 purgestat, 472
 push, 126
 pydoc, 325
 python, 325
 python2.4, 325
 ql010k1, 817
 qm2ts, 530
 qmake, 530
 qmgr, 466
 qmqpd, 466
 qtconfig, 530
 qtdump, 839
 qtinfo, 839
 quanta, 593
 randpkt, 400
 rarp, 376
 ras2tiff, 205

raw2gif, 208, 210
 raw2tiff, 205
 rcp, 126
 rcs-checkin, 143
 rcs2log, 366
 rfdump, 308
 rdflib, 308
 rdjpgcom, 201
 rdx, 308
 readcd, 891
 recover, 839
 red, 149
 reiserfsck, 137
 reiserfstune, 137
 reject, 899
 rep, 306
 resize_reiserfs, 137
 rexecd, 368
 rftp, 288
 rgb2gif, 208, 210
 rgb2ycbcr, 205
 rgview, 141
 ri, 327
 rjoe, 147
 rlogin-cwd, 288
 rlogind, 368
 rmedigicontrol, 817
 rmic, 294, 304
 rmid, 304
 rmiregistry, 294, 304
 rndc, 424
 rndc-confgen, 424
 rotatelog, 417
 route, 376
 rpcclient, 443
 rpc.lockd, 427
 rpc.mountd, 427
 rpc.nfsd, 427
 rpc.rquotad, 427
 rpc.statd, 428
 rpdump, 410
 rpload, 410
 rscsi, 891
 rsh, 126
 rshd, 126, 368
 rsvg, 222
 rsvg-view, 222
 rsync, 495
 ruby, 327
 run-with-aspell, 190
 runant.pl, 281
 runant.py, 281
 runttest, 284
 rxtelnet, 126
 rxterm, 126
 sa1, 278
 sa2, 278
 sadc, 278
 sadf, 278
 safe_finger, 389
 sagenda, 786
 sane-config, 911
 sane-find-scanner, 911
 saned, 911
 sar, 278
 saslauthd, 131
 sasldblistusers2, 131
 saslpaswd2, 131
 sawfish, 554
 sawfish-client, 554
 sawfish-ui, 554
 sbiload, 817
 scalc, 786
 scanadf, 912
 scanimage, 912
 scgcheck, 891
 scp, 431
 screen, 245
 sdl-config, 827
 sdraw, 786
 sendmail, 466, 472
 serialver, 304
 servertool, 304
 setpci, 270
 sfax, 786
 sfconvert, 823
 sfinfo, 823
 sftp, 431
 sftp-server, 431
 sgmldiff, 930
 sgmlwhich, 916
 showmount, 428
 showq, 466
 siggen, 119
 simpres, 786
 slabel, 786
 slapadd, 492
 slapcat, 492

slapd, 492
 slapdn, 492
 slapindex, 492
 slappasswd, 492
 slaptest, 492
 slattach, 376
 sletter, 786
 slib, 195
 sliceprint, 942
 slrn, 412
 slrnpull, 412
 slurpd, 492
 smaster, 786
 smath, 786
 smbcacls, 443
 smbclient, 443
 smbcontrol, 443
 smbquotas, 443
 smbd, 443
 smbmnt, 443
 smbmount, 443
 smbpasswd, 443
 smbpool, 443
 smbstatus, 443
 smbtar, 443
 smbtree, 443
 smbmount, 443
 smemo, 786
 smrsh, 472
 smtp, 466
 smtpd, 466
 smtpd.py, 325
 soffice, 787
 soundtoh, 834
 spadmin, 787
 spawn, 466
 speaker-test, 815
 speexdec, 841
 speexenc, 841
 spell, 190
 sscape_ctl, 817
 ssconvert, 772
 ssh, 431
 ssh-add, 431
 ssh-agent, 431
 ssh-keygen, 431
 ssh-keyscan, 431
 ssh-keysign, 431
 sshd, 431
 startfluxbox, 556
 startx, 518
 states, 942
 string2key, 126
 stunnel, 134
 stunnel3, 134
 su, 126
 svccard, 787
 svn, 387
 svnadmin, 387
 svndumpfilter, 387
 svnlook, 387
 svnservice, 387
 svnversion, 387
 swat, 443
 sweb, 787
 swriter, 787
 tab2space, 248
 talkd, 368
 tccat, 888
 tcdecode, 888
 tcdemux, 888
 tcextract, 888
 tcframe, 888
 tcsh8.4, 329
 tcmodinfo, 888
 tmp3cut, 888
 tcpd, 389
 tcpdchk, 389
 tcpdmatch, 389
 tcpdprobe, 889
 tcrequant, 889
 tcscan, 889
 tcsh, 156
 txmlcheck, 889
 tdbbackup, 444
 tdbdump, 444
 tdbtool, 444
 telnet, 126
 telnetd, 126, 368
 tenletxr, 126
 termidx, 147
 test-speech, 723
 testparm, 444
 testprns, 444
 tethereal, 400
 TeX programs, 957
 texi2dvi4a2ps, 940
 texpire, 488

text2gif, 208, 210
 text2pcap, 400
 tftpd, 368
 thumbnail, 205
 thunderbird, 803
 tickadj, 379
 tidy, 248
 tiff2bw, 205
 tiff2pdf, 205
 tiff2ps, 205
 tiff2rgba, 205
 tiffcmp, 205
 tiffcp, 205
 tiffdither, 205
 tiffdump, 205
 tiffgt, 205
 tifficc, 213
 tiffinfo, 205
 tiffmedian, 205
 tiffset, 205
 tiffsplit, 205
 timed-read, 289
 timed-run, 289
 tknewsbiff, 289
 tkpasswd, 289
 tnameserv, 304
 toc2cddb, 893
 toc2cue, 893
 toc2mp3, 893
 traceroute, 393
 transcode, 889
 tripwire, 119
 trivial-rewrite, 466
 try-from, 389
 ttfadmin.sh, 769
 ttftool, 770
 twadmin, 119
 twm, 518
 twprint, 119
 udffsck, 895
 uic, 530
 uil, 541
 umbrello, 590
 unbuffer, 289
 uncompface, 235
 uni, 354
 uniconfd, 354
 unix_chkpwd, 97
 unzip, 266
 unzipfsx, 266
 update-desktop-database, 250
 update-mime-database, 547
 update-pciids, 270
 us428control, 817
 usb-config, 199
 usx2yloader, 817
 uuicpd, 368
 vacation, 472
 vacuumdb, 482
 vcut, 864
 verify, 466
 verify_krb5_conf, 126
 virtual, 466
 vorbiscomment, 864
 vsftpd, 446
 vte, 647
 vumeter, 705
 vxloader, 817
 w3m, 364
 w3mman, 364
 Wand-config, 238
 wbinfo, 444
 weather, 289
 wget, 391
 which, 263
 whois, 368, 395
 winbindd, 444
 wish8.4, 331
 wmxmms, 866
 word-list-compress, 190
 wrjpgcom, 201
 wrudf, 895
 wtpt, 213
 wvdial, 341
 wvdialconf, 341
 x11perf, 519
 xcalc, 519
 xcam, 912
 xclock, 519
 xconv.pl, 457
 xdm, 524
 xf86cfg, 518
 xf86config, 518
 xfce-mcs-manager, 560
 xfce-setting-show, 561
 xfce4-about, 560
 xfce4-panel, 561
 xfce4-session, 561

xfce4-session-logout, 561
 xfdesktop, 561
 xfhelp4, 561
 xflock4, 561
 xfmountdev4, 561
 XFree86, 518
 xfrun4, 561
 xfsamba4, 561
 xfs_admin, 139
 xfs_bmap, 139
 xfs_check, 139
 xfs_copy, 139
 xfs_db, 139
 xfs_freeze, 139
 xfs_growfs, 139
 xfs_info, 139
 xfs_io, 139
 xfs_logprint, 139
 xfs_mkfile, 139
 xfs_ncheck, 139
 xfs_repair, 139
 xfs_rtcp, 139
 xftaskbar4, 561
 xfterm4, 561
 xfrash4, 561
 xftree4, 561
 xfwm4, 561
 xine, 886
 xine-bugreport, 886
 xine-check, 886
 xine-config, 854
 xine-remote, 886
 xinetd, 457
 xinit, 518
 xkibitz, 289
 xload, 519
 xlsfonts, 519
 xmbind, 541
 xml2-config, 171
 xml2po, 660
 xmlcatalog, 171
 xmllint, 171
 xmlwf, 187
 xmms, 866
 xmms-config, 866
 xmodmap, 519
 xnlock, 127
 xpdf, 949
 xpstat, 289

xrdb, 525
 xsane, 914
 xscanimage, 912
 xscreensaver, 252
 xscreensaver-command, 252
 xscreensaver-demo, 252
 xscreensaver-getimage, 252
 xscreensaver-getimage-file, 252
 xscreensaver-getimage-video, 252
 xscreensaver-gl-helper, 252
 xscreensaver-text, 252
 xslt-config, 173
 xsltproc, 173
 xterm, 518
 xvidtune, 519
 xwininfo, 518
 yelp, 664
 ypdomainname, 376
 zenity, 716
 zip, 267
 zipcloak, 268
 zipgrep, 266
 zipinfo, 266
 zipnote, 268
 zipsplit, 268
 zsh, 158

Libraries

libbonoboui-2.[so,a], 626
 a52_decore.so, 889
 af6_decore.so, 889
 ant-*.jar, 282
 export/filter/import_*.so, 889
 fop.jar, 953
 Glib libraries, 180
 gnome-java-bridge.jar, 721
 GTK+ Libraries, 538
 KDE Internationalization, 605
 kde-libraries, 570
 KDE plugins and scripts, 604
 kio_kamera, 584
 libaspell.so, 190
 liba52.[so,a], 850
 libaa.[so,a], 226
 libao.[so,a], 829
 aRts Libraries, 568
 libart_lgpl.[so,a], 745
 libart_lgpl_2.[so,a], 220
 libasn1.[so,a], 127

libasound.[so,a], 810
 libasound_module_pcm_jack.so, 812
 libasound_module_pcm_oss.so, 812
 libatk-1.0.so, 536
 libaudio.[so,a], 834
 libaudiofile.[so,a], 823
 libavcodec.so, 876
 libavformat.so, 876
 libaviplay*.so, 878
 libbonobo-2.[so,a], 613
 libcdda_interface.[so,a], 870
 libcdda_paranoia.[so,a], 870
 libcompface.[so,a], 236
 libcrack.[so,a], 94
 libcrypto.[so,a], 90
 libcurl.[so,a], 352
 libdbh.so,
 libdha.so, 884
 libdv.[so,a], 849
 libdvdcss.[so,a], 846
 libdvdread.[so,a], 847
 libe*.so, 681
 libeditline.a, 127
 libeel-2.[so,a], 656
 libesd.[so,a], 825
 libesmtp.[so,a], 188
 libesmtp SASL plugins, 188
 libethereal.so, 400
 libexif.[so,a], 229
 libexpat.[so,a], 187
 libexpect5.43.[so,a], 289
 libexslt.[so,a], 173
 libfam.[so,a], 168
 libfame.[so,a], 840
 lib[,Ogg]FLAC[,++].[so,a], 844
 libfontconfig.[so,a], 218
 libfreetype.[so,a], 216
 libfribidi.[so,a], 230
 libgail-gnome.so, 719
 libgconf-1.[so,a], 752
 libgconf-2.[so,a], 615
 libgdbm.[so,a], 176
 libgdk.[so,a], 532
 libgdk_pixbuf.[so,a], 747
 libgif.[so,a], 211
 libgimp-2.0.so, 778
 libgimpbase-2.0.so, 778
 libgimpcolor-2.0.so, 778
 libgimpmath-2.0.so, 778
 libgimpmodule-2.0.so, 778
 libgimpthumb-2.0.so, 778
 libgimpui-2.0.so, 778
 libgimpwidgets-2.0.so, 778
 libglade-2.0.[so,a], 186
 libglib.[so,a], 178
 libglut.[so,a], 551
 libgmp.[so,a], 174
 libgnet-2.0.[so,a], 356
 libgnome.[so,a], 745
 libgnome-2.[so,a], 622
 libgnome-desktop-2.[so,a], 637
 libgnome-keyring.so, 629
 libgnome-menu.[so,a], 641
 libgnomecups-1.0.[so,a], 671
 libgnomeprint-2-2.[so,a], 673
 libgnomeprintui-2-2.[so,a], 675
 libgnomespeech.[so,a], 723
 libgnomeui.[so,a], 745
 libgnomeui-2.[so,a], 631
 libgnorbagtk.[so,a], 745
 libgssapi.[so,a], 127
 libgtk.[so,a], 532
 libgtkhtml-2.[so,a], 662
 libgtkhtml-3.6.[so,a], 679
 libgtksourceview-1.0.[so,a], 685
 libgtop-2.0.[so,a], 651
 libhandle.so, 139
 libhdb.[so,a], 127
 libid3.[so,a], 842
 libIDL.[so,a], 741
 libIDL-2.[so,a], 181
 libIIOP.[so,a], 741
 libimlib*.[so,a], 224
 libImlib2.[so,a], 228
 libip*.so, 105
 libjpeg.[so,a], 201
 libkadm5clnt.[so,a], 127
 libkadm5srv.[so,a], 127
 libkafs.[so,a], 127
 libkpathsea.a, 957
 libkrb5.[so,a], 127
 liblber.[so,a], 492
 liblcms.[so,a], 213
 libldap.[so,a], 492
 libldap_r.[so,a], 492
 liblpr.[so,a], 901
 liblzo2.[so,a], 197
 libmad.[so,a], 837

libmikmod.[so,a], 856
 libmng.[so,a], 215
 libmp3lame.[so,a], 868
 libmpeg3.[so,a], 836
 libnautilus-*.so, 658
 libneon.[so,a], 387
 libogg.[so,a], 830
 libopenquicktime.[so,a], 839
 libORBit.[so,a], 741
 libORBit-2.[so,a], 611
 libORBitutil.[so,a], 741
 libosp.so, 923
 libotp.[so,a], 127
 libpam.[so,a], 97
 libpanel-applet-2.[so,a], 643
 libpcap.a, 358
 libpci.a, 270
 libpng.[so,a], 203
 libpopt.[so,a], 163
 libpostproc.so, 884
 libpspell.so, 190
 librep.so, 306
 libroken.[so,a], 127
 librsvg-2.[so,a], 222
 libruby.so, 327
 libsane.so, 912
 libsane-*.so, 912
 libsasl2.so, 131
 libscg.a, 891
 libscrollkeeper.so, 635
 libSDL*.so, 827
 libsoup-2.2.[so,a], 357
 libspeex.[so,a], 841
 libssl.[so,a], 90
 libstartup-notification-1.[so,a], 542
 libstunnel.so, 134
 libsvn_*.so, 387
 libtcl.so, 329
 libtelephony.[so,a], 355
 libtidy.[so,a], 248
 libtiff.[so,a], 205
 libtiffxx.[so,a], 205
 libtk.so, 331
 libudffs.a, 895
 libuniconf.[so,a], 354
 libunzip.so, 266
 libusb.[so,a], 199
 libvorbis*.so, 832
 libvte.[so,a], 647
 libwiredtap.so, 400
 libwnck-1.[so,a], 545
 libwrap.[so,a], 389
 libwvbase.[so,a], 354
 libwvfft.[so,a], 354
 libwvogg-speex.[so,a], 355
 libwvogg-vorbis.[so,a], 355
 libwvqt.[so,a], 355
 libwvstreams.[so,a], 355
 libwvutils.[so,a], 355
 libxfce4mcs.so,
 libxfce4util.so,
 libxfcegui4.so,
 libxft.so,
 libxfont.so,
 libxfs.so,
 libxine.so, 854
 libxklavier.[so,a], 549
 libXm.so, 541
 libxml.[so,a], 169
 libxml2.[so,a], 171
 libxmms.[so,a], 866
 libxmms-flac.[so,a], 844
 libxplc-cxx.a, 355
 libxslt.[so,a], 173
 libxvidcore.[so,a], 852
 libzvt.[so,a], 745
 Lisp bindings, 234
 mod_authz_svn.so, 387, 387
 muttbug, 408
 Pango libraries, 534
 xercesImpl.jar, 282
 xml-apis.jar, 282

Kernel Configuration

ALSA, 809
 Automounter, 85
 Capturing network packets, 398
 DHCP, 483
 Iptables, 104
 Kernel-mode PPPoE, 347
 NFS Utilities, 425
 PPP support, 338
 Scanning devices, 909
 UDF File System, 894
 USB device filesystem, 199
 USB Palm devices, 253
 XFree86, 512
 Xorg, 505

Configuration Files

\$PGDATA/pg_hba_conf, 480
 \$PGDATA/pg_indent.con, 480
 \$PGDATA/postgresql.conf, 480
 ~/.mc/*, 275
 ~/.ant/ant.conf, 281
 ~/.antrc, 281
 ~/.asoundrc, 810
 ~/.bashrc, 69
 ~/.bash_logout, 69
 ~/.bash_profile, 68, 529
 ~/.bluefish, 150
 ~/.cshdirs, 155
 ~/.cshrc, 155
 ~/.cvspass, 366
 ~/.cvsrc, 366
 ~/.cvswrappers, 366
 ~/.dillo/*, 799
 ~/.dircolors, 69
 ~/.etherreal/preferences, 399
 ~/.expect.rc, 288
 ~/.fetchmailrc, 405
 ~/.ffmpeg/ffserver-config, 875
 ~/.fluxbox/init, 555
 ~/.fluxbox/keys, 555
 ~/.fluxbox/menu, 555
 ~/.foprc, 952
 ~/.gimp-2.0/gimprc, 777
 ~/.gpm-root, 256
 ~/.history, 155
 ~/.jnewsrsrc, 412
 ~/.joerc, 146
 ~/.libao, 828, 863
 ~/.links/*, 360
 ~/.lisarc, 577
 ~/.login, 155
 ~/.logout, 155
 ~/.mailrc, 402
 ~/.mime.types, 408
 ~/.mplayer/*, 883
 ~/.muttrc, 408
 ~/.mwmrc, 540
 ~/.my.cnf, 477
 ~/.nailrc, 402
 ~/.nanorc, 144
 ~/.ncftp/*, 370
 ~/.nwclient, 372
 ~/.ogg123rc, 863
 ~/.orbitrc, 721
 ~/.pangorc, 533
 ~/.perldirc, 313
 ~/.pinerc, 410
 ~/.procmailrc, 403
 ~/.screenrc, 245
 ~/.slrnrc, 412
 ~/.ssh/*, 430
 ~/.subversion/config, 386
 ~/.tcshrc, 155
 ~/.vimrc, 71
 ~/.w3m/*, 363
 ~/.wgetrc, 390
 ~/.xine/config, 885
 ~/.xinitrc, 509, 516, 553, 555, 558, 560, 574
 ~/.xmms/config, 865
 ~/.xpdfrc, 948
 ~/.Xresources, 525
 ~/.xscreensaver, 252
 \$exp_library/expect.rc, 288
 \$HOME/.profile, 153
 /etc/a2ps/a2ps-site.cfg, 939
 /etc/a2ps/a2ps.cfg, 939
 /etc/aliases, 460, 464
 /etc/ant/ant.conf, 281
 /etc/apache/*, 416
 /etc/apache/httpd.conf, 416
 /etc/asound.conf, 810
 /etc/asound.state, 813
 /etc/auto.master, 86
 /etc/auto.misc, 86
 /etc/auto.net, 86
 /etc/bashrc, 67
 /etc/csh.cshrc, 155
 /etc/csh.login, 155
 /etc/csh.logout, 155
 /etc/default/useradd, 58
 /etc/dhclient.conf, 342, 484
 /etc/dhcpd.conf, 484
 /etc/dillo/dillo.rc, 799
 /etc/dillo/dpidrc, 799
 /etc/dircolors, 69
 /etc/esd.conf, 824
 /etc/etherreal.conf, 399
 /etc/exim.conf, 460
 /etc/exportfs, 426
 /etc/fam.conf, 167
 /etc/fcron.allow, 259
 /etc/fcron.conf, 259

/etc/fcron.deny, 259
 /etc/ffserver.conf, 875
 /etc/fonts/*, 218
 /etc/fonts/conf.d/*, 218
 /etc/fonts/local.conf, 522
 /etc/fstab, 427
 /etc/gimp/2.0/*, 777
 /etc/gnome/gdm/gdm.conf, 737
 /etc/gpm-root.conf, 256
 /etc/group, 60
 /etc/gsview/*, 946
 /etc/heimdal/*, 122
 /etc/hosts.allow, 388
 /etc/hosts.deny, 388
 /etc/imlib/imrc, 223
 /etc/inetd.conf, 167, 388, 440, 467, 487, 497, 501
 /etc/issue, 72
 /etc/joe/jmacsrc, 146
 /etc/joe/joerc, 146
 /etc/joe/jpicorc, 146
 /etc/joe/jstarrc, 146
 /etc/joe/rjoerc, 146
 /etc/ld.so.conf, 509, 516, 529, 565
 /etc/leafnode/config, 487
 /etc/libao.conf, 828, 863
 /etc/lisarc, 577
 /etc/login.defs, 60, 99, 99
 /etc/lpd/*, 900
 /etc/lynx.cfg, 362
 /etc/mail/*, 471
 /etc/man.conf, 529, 565
 /etc/mime.types, 408
 /etc/mplayer/*, 883
 /etc/Muttrc, 408
 /etc/my.cnf, 477
 /etc/nail.rc, 402
 /etc/named.conf, 419
 /etc/namedb/pz/127.0.0.0, 419
 /etc/namedb/root.hints, 419
 /etc/nano/nanorc, 144
 /etc/nas/nasd.conf, 833
 /etc/nntpsrvr, 487
 /etc/ntp.conf, 345, 377
 /etc/openldap/*, 490
 /etc/openldap/ldap.conf, 490
 /etc/openldap/slapd.conf, 490
 /etc/pam.conf, 96, 99, 252, 259
 /etc/pam.d/*, 96, 99, 259
 /etc/pam.d/gdm, 737
 /etc/pam.d/gdm-autologin, 737
 /etc/pam.d/samba, 440
 /etc/pam.d/xscreensaver, 252
 /etc/pam.d/xdm, 524
 /etc/pango/pangorc, 533
 /etc/passwd, 60
 /etc/pear.conf, 323
 /etc/php.ini, 323
 /etc/postfix/*, 464
 /etc/ppp/chap-secrets, 348
 /etc/ppp/firewall-masq, 348
 /etc/ppp/firewall-standalone, 348
 /etc/ppp/pap-secrets, 348
 /etc/ppp/peers/*, 340
 /etc/ppp/pppoe-server-options, 348
 /etc/ppp/pppoe.conf, 348
 /etc/ppp/*, 339
 /etc/printcap, 900
 /etc/procmailrc, 403
 /etc/profile, 62, 153, 529
 /etc/profile.d, 64
 /etc/profile.d/dircolors.sh, 64
 /etc/profile.d/extrapaths.sh, 64
 /etc/profile.d/i18n.sh, 66
 /etc/profile.d/extra-prompt.sh, 66
 /etc/profile.d/readline.sh, 65
 /etc/profile.d/tinker-term.sh, 65
 /etc/profile.d/umask.sh, 65
 /etc/profile.d/X.sh, 66
 /etc/proftpd.conf, 433
 /etc/resolv.conf, 345, 348, 419
 /etc/rndc.conf, 419
 /etc/rpc, 167
 /etc/rsyncd.conf, 494
 /etc/samba/smb.conf, 437
 /etc/sane.d/*conf, 910
 /etc/saslauthd.conf, 130
 /etc/screenrc, 245
 /etc/scrollkeeper.conf, 635
 /etc/security/*, 96, 99
 /etc/security/access.conf, 102
 /etc/security/limits.conf, 102
 /etc/services, 440
 /etc/sgml/catalog, 918, 920
 /etc/sgml/sgml.conf, 916
 /etc/shells, 73
 /etc/skel/*, 58
 /etc/slrn.rc, 412
 /etc/ssh/sshd_config, 430

/etc/ssh/ssh_config, 430
 /etc/ssl/openssl.cnf, 90
 /etc/stunnel/stunnel.conf, 133, 440
 /etc/subversion/config, 386
 /etc/sysconfig/.../dhclient, 342
 /etc/sysconfig/autofs.conf, 86
 /etc/sysconfig/createfiles, 487, 509, 516
 /etc/sysconfig/.../dhcpcd, 345
 /etc/sysconfig/mouse, 256
 /etc/sysconfig/nfs-server, 426
 /etc/sysconfig/.../pppoe, 348
 /etc/syslog.conf, 258, 467
 /etc/tripwire/*, 117
 /etc/unicontf.conf, 354
 /etc/vimrc, 71
 /etc/vsftpd.conf, 446
 /etc/w3m/*, 363
 /etc/wgetrc, 390
 /etc/wvdial.conf, 340
 .../app-.../XScreenSaver, 252
 /etc/X11/mwm/system.mwmrc, 540
 /etc/X11/XF86Config, 516, 522
 /etc/X11/xorg.conf, 509, 522
 /etc/xinetd.conf, 167, 388, 440, 447, 467, 487
 /etc/xinetd.d/chargen, 447
 /etc/xinetd.d/comsat, 447
 /etc/xinetd.d/cvpsserver, 497
 /etc/xinetd.d/daytime, 447
 /etc/xinetd.d/echo, 447
 /etc/xinetd.d/exec, 447
 /etc/xinetd.d/finger, 447
 /etc/xinetd.d/ftp, 447
 /etc/xinetd.d/irc, 447
 /etc/xinetd.d/login, 447
 /etc/xinetd.d/netstat, 447
 /etc/xinetd.d/nntp, 487
 /etc/xinetd.d/ntalk, 447
 /etc/xinetd.d/pop3, 467
 /etc/xinetd.d/rquotad, 447
 /etc/xinetd.d/rstatd, 447
 /etc/xinetd.d/ruserd, 447
 /etc/xinetd.d/sgi_fam, 167
 /etc/xinetd.d/shell, 447
 /etc/xinetd.d/sprayd, 447
 /etc/xinetd.d/svn, 501
 /etc/xinetd.d/swat_tunnel, 440
 /etc/xinetd.d/systat, 447
 /etc/xinetd.d/talk, 447
 /etc/xinetd.d/telnet, 447

/etc/xinetd.d/tftp, 447
 /etc/xinetd.d/time, 447
 /etc/xinetd.d/walld, 447
 /etc/xml/catalog, 933, 936
 /etc/xml/docbook, 933
 /etc/xpdfrc, 948
 /etc/yp.conf, 345
 /etc/zlogin, 157
 /etc/zlogout, 157
 /etc/zprofile, 157
 /etc/zshenv, 157
 /etc/zshrc, 157
 local.perlldrc, 313
 /opt/gnome-1.4/etc/mime-magic, 744
 /opt/gnome-1.4/etc/paper.config, 744
 /opt/.../gnome.soundlist, 744
 /opt/.../gtk-events.soundlist, 744
 /usr/share/alsa/alsa.conf, 810
 .../alsa/{cards,pcm}/*.*conf, 810
 /var/lib/dhcpc/*, 345

Bootscripts

General Information, 52

alsa, 813
 apache, 417
 autofs, 86
 bind, 423
 cups, 898
 cyrus-sasl, 130
 dhclient (service script), 342
 dhcpcd, 484
 dhcpcd (service script), 345
 exim, 460
 fam, 167
 fcron, 259
 gdm, 737
 gpm, 256
 heimdal, 124
 iptables, 105
 lisa, 577
 lprng, 900
 mysql, 478
 nas, 834
 ncpfs (IPX service script), 372
 netfs, 88, 427
 nfs-client, 427
 nfs-server, 426
 ntp, 378
 openldap, 490

portmap, 382
 postfix, 465
 postgresql, 481
 pppoe (service script), 348
 proftpd, 434
 random, 74
 samba, 442
 sendmail, 471
 sshd, 430
 stunnel, 134
 svn, 501
 sysstat, 278
 winbind, 442
 xinetd, 456

Others

~/fonts, 218
 abiword, 769
 ALSA Description, 808
 Archive::Tar, 315
 Business::ISBN, 317
 Business::ISBN::Data, 317
 Compress::Zlib, 315
 Crypt::SSLeay, 318
 Date::Manip, 318
 db2*, 929
 Digest::BubbleBabble, 317
 Digest::HMAC, 317
 Digest::SHA, 315
 Digest::SHA1, 317
 DRI, 522
 DTD Files, 934
 ENT-files, 934
 evolution, 780
 exim, 461
 ExtUtils::CBuilder, 315
 ExtUtils::ParseXS, 315
 f77, 293
 Finance::Quote, 318
 Finance::QuoteHist, 319
 fonts.dir, 523
 fonts.scale, 523
 gimp, 778
 gimp-remote, 778
 gnome-calculator, 710
 gnome-text-editor, 687
 gnumeric, 772
 HTML::Parser, 315
 HTML::TableExtract, 319

HTML::Tagset, 316
 Image::Magick, 238
 IO::Socket::INET6, 317
 IO::Zlib, 315
 kauth, 125
 KDE Artwork, 603
 libpng-config, 203
 libsp.so, 923
 LWP, 317
 mail, 402
 mailx, 402
 MOD files, 934
 Module::Build, 314
 Module::Corelist, 318
 Module::Info, 314
 Module::Signature, 315
 Net::DNS, 316
 Net::IP, 317
 nsgmls, 922
 PAR::Dist, 315
 Pod::Escapes, 314
 Pod::Simple, 314
 pstoraster, 906
 SGML DTD files, 918, 920
 SGML entities files, 916
 SGML MOD files, 918, 920
 sgml2xml, 922
 sgmlnorm, 922
 SGMLSpm, 316
 slogin, 431
 Socket6, 317
 spam, 922
 spcat, 922
 spent, 922
 SWAT, 440
 sx, 922
 tcsh, 329
 Test::Builder::Tester, 314
 Test::Pod, 314
 Test::Prereq, 317
 Text::CSV_XS, 319
 Tk, 316
 TrueType, 522
 URI, 317
 /usr/share/fonts, 218
 wish, 331
 XML entities files, 916
 XML::Parser, 316
 YAML, 315