

# **Beyond Linux® From Scratch**

**Version 2013-05-24**

**The BLFS Development Team**

# Beyond Linux® From Scratch: Version 2013-05-24

by The BLFS Development Team

Published 2013-05-24

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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.

## Revision History

Revision 2013-05-24	2013-05-24	Ongoing Release
Revision 6.3	2008-08-24	Seventh release
Revision 6.2.0	2007-02-14	Sixth release
Revision 6.1	2005-08-14	Fifth release
Revision 6.0	2005-04-02	Fourth release
Revision 5.1	2004-06-05	Third release
Revision 5.0	2003-11-06	Second release
Revision 1.0	2003-04-25	First release

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# Dedication

This book is dedicated to the LFS community

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# Preface

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. 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–December 2006)

My introduction to the [B]LFS project was actually by accident. I was trying to build a GNOME environment using some how-tos and other information I found on the web. A couple of times I ran into some build issues and Googling pulled up some old BLFS mailing list messages. Out of curiosity, I visited the Linux From Scratch web site and shortly thereafter was hooked. I've not used any other Linux distribution for personal use since.

I can't promise anyone will feel the sense of satisfaction I felt after building my first few systems using [B]LFS instructions, but I sincerely hope that your BLFS experience is as rewarding for you as it has been for me.

The BLFS project has grown significantly the last couple of years. There are more package instructions and related dependencies than ever before. The project requires your input for continued success. If you discover that you enjoy building BLFS, please consider helping out in any way you can. BLFS requires hundreds of hours of maintenance to keep it even semi-current. If you feel confident enough in your editing skills, please consider joining the BLFS team. Simply contributing to the mailing list discussions with sound advice and/or providing patches to the book's XML will probably result in you receiving an invitation to join the team.

Randy McMurchy  
 randy <at> linuxfromscratch.org  
 BLFS Editor (December 2006–January 2011)

## Foreword

This is the development version of the BLFS book. This version of the book is intended to be used when building on top of a system built using the LFS development book as well as the current stable version of LFS. Though this version of the book is development in nature, every effort has been made to ensure accuracy and reliability of the instructions. Many people find that using the instructions in this book after building the current stable or development version of LFS provides a stable and very modern Linux system.

Enjoy!

Randy McMurchy  
 August 24th, 2008

## 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. Note that the material contained in this book, in particular the dependency listings, is based upon the assumption that you are using a base LFS system with every package listed in the LFS book already installed and configured. 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!

## 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 - Basic Networking**

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. Networking libraries and command-line networking tools are also covered here.

## **Part V - Servers**

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

## **Part VI - 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 VII - KDE**

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

## **Part VIII - GNOME**

GNOME is the main alternative to KDE in the Desktop Environment arena and we cover GNOME-3.6 here.

## **Part IX - Xfce**

Xfce is an lightweight alternative to GNOME and KDE.

## **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 texlive.

## **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 used throughout the book.

## 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 attempts 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 Chapter 2, Important Information, as this contains comments about how to unpack software, issues related to using different locales 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 and Disk Management), 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 Chapter 13, 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 as each BLFS installation 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 Networking part. It deals with connecting to the Internet or your LAN (Chapter 14, Connecting to a Network) using a variety of methods such as DHCP and PPP, and with items such as Networking Libraries (Chapter 17, 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 this section 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 25, 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-1.0.27 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 a result from issuing a command. It 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 HowTos, download locations, websites, etc.

SeaMonkey-2.13.2

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 or group reference in the instructions.

# Book Version

This is BLFS-BOOK version 2013-05-24 dated May 22nd, 2013. This is the development branch of the BLFS book, currently targeting the LFS development book. If this version (2013-05-24) is older than a month, it's likely that your mirror hasn't been synchronized recently and a newer version is probably available for download or viewing. Check one of the mirror sites at <http://www.linuxfromscratch.org/mirrors.html> for an updated version.

## Mirror Sites

The BLFS project has a number of mirrors set up 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](http://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, please do not 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

Current release: 2013-05-24 – May 22nd, 2013

### Changelog Entries:

- May 24th, 2013
  - [igor] - Updated libxml2 and Screen instructions to reflect changes in newer LFS versions.
- May 22nd, 2013
  - [krejzi] - Updated Kernel Configuration for Xorg Drivers. Thanks to Igor Živković for the patch.
  - [krejzi] - MesaLib 9.1.3.
  - [krejzi] - Xorg Intel Driver 2.21.7.
- May 21st, 2013
  - [ken] - ImageMagick 6.8.5-6.
- May 19th, 2013
  - [krejzi] - Doxygen 1.8.4.
  - [krejzi] - GPGME 1.4.1.
  - [krejzi] - ISO Codes 3.42.
  - [krejzi] - libburn 1.3.0.
  - [krejzi] - libidn 1.26.
  - [krejzi] - libisoburn 1.3.0.
  - [krejzi] - libisofs 1.3.0.

- [krejzi] - libnl 3.2.22.
- [krejzi] - Midori 0.5.2.
- [krejzi] - OpenOBEX 1.7.
- [krejzi] - p11-kit 0.18.2.
- [krejzi] - Pinentry 0.8.3.
- [krejzi] - Polkit 0.111.
- [krejzi] - Poppler 0.22.4.
- [krejzi] - Qpdf 4.1.0.
- May 17th, 2013
  - [krejzi] - Amarok 2.7.1.
  - [krejzi] - CMake 2.8.11.
  - [krejzi] - Colord 1.0.0.
  - [krejzi] - Firefox/Xulrunner 21.0.
  - [krejzi] - JSON-C 0.11.
  - [krejzi] - libdrm 2.4.45.
  - [krejzi] - libical 1.0.
  - [krejzi] - Midori 0.5.1.
  - [krejzi] - Python 3.3.2.
  - [krejzi] - Ruby 1.9.3-p429.
  - [krejzi] - Thunderbird 17.0.6.
  - [krejzi] - Xorg Synaptics Driver 1.7.1.
- May 12th, 2013
  - [krejzi] - Cyrus SASL 2.1.26.
  - [krejzi] - FFmpeg 1.2.1.
  - [krejzi] - Fluxbox 1.3.5. Thanks to Igor Živković for the patch.
  - [krejzi] - Git 1.8.2.3.
  - [krejzi] - GnuPG 2.0.20.
  - [krejzi] - GnuTLS 3.1.11.
  - [krejzi] - libpcap 1.4.0.
  - [krejzi] - MPlayer 1.1.1.
  - [krejzi] - Python 2.7.5.
  - [krejzi] - SBC 1.1.
  - [krejzi] - Soprano 2.9.2.
  - [krejzi] - Whois 5.0.25.
- May 9th, 2013
  - [krejzi] - FreeType 2.4.12.

- [krejzi] - LibreOffice 4.0.3.
- [krejzi] - Pixman 0.30.0.
- [krejzi] - Xfce4 Notifyd 0.2.4.
- May 8th, 2013
  - [rthomsen] - KDE 4.10.3.
  - [rthomsen] - Akonadi 1.9.2.
- May 7th, 2013
  - [krejzi] - Updated Xfce4 components to latest available ones.
- May 5th, 2013
  - [krejzi] - Colord 0.1.34.
  - [krejzi] - GParted 0.16.1.
  - [krejzi] - MesaLib 9.1.2.
  - [krejzi] - Soprano 2.9.1.
  - [krejzi] - Telepathy Mission Control 5.14.1.
  - [krejzi] - Updated Xorg Applications to latest available ones. Fixed Luit and XModMap build.
- April 27th, 2013
  - [rthomsen] - Added sed to allow Akonadi to use MySQL 5.6.
  - [krejzi] - AccountsService 0.6.31.
  - [krejzi] - Apache HTTPD 2.4.4.
  - [krejzi] - Apr Util 1.5.1.
  - [krejzi] - Check 0.9.10.
  - [krejzi] - Colord 0.1.33.
  - [krejzi] - D-Bus 1.6.10.
  - [krejzi] - Farstream 0.2.3.
  - [krejzi] - GDB 7.6.
  - [krejzi] - Git 1.8.2.2.
  - [krejzi] - Gnumeric 1.12.2.
  - [krejzi] - GOffice 0.10.2.
  - [krejzi] - GParted 0.16.0.
  - [krejzi] - GStreamer 1.0.7.
  - [krejzi] - GStreamer Base Plugins 1.0.7.
  - [krejzi] - GStreamer Good Plugins 1.0.7.
  - [krejzi] - GStreamer Bad Plugins 1.0.7.
  - [krejzi] - GStreamer Ugly Plugins 1.0.7.
  - [krejzi] - GStreamer Libav 1.0.7.
  - [krejzi] - Guile 2.0.9.

- [krejzi] - Harfbuzz 0.9.16.
  - [krejzi] - IBus 1.5.2.
  - [krejzi] - JSON GLib 0.16.0.
  - [krejzi] - libdrm 2.4.44.
  - [krejzi] - libgcrypt 1.5.2.
  - [krejzi] - liboauth 1.0.1.
  - [krejzi] - libpng 1.6.2.
  - [krejzi] - libtasn1 3.3.
  - [krejzi] - libxml2 2.9.1.
  - [krejzi] - MySQL 5.6.11.
  - [krejzi] - Nano 2.3.2.
  - [krejzi] - Nettle 2.7.
  - [krejzi] - PCI Utils 3.2.0.
  - [krejzi] - Sharutils 4.13.5.
- April 24th, 2013
    - [krejzi] - Added Xorg Cirrus Driver, used by Qemu virtual GPU.
    - [rthomsen] - Added QJson 0.8.1.
  - April 21st, 2013
    - [ken] - rxvt-unicode-9.16.
    - [ken] - NFS-utils-1.2.7.
    - [ken] - patch xine-ui-0.99.7 so that opening files from the menu works.
    - [ken] - Openssh-6.2p1.
  - April 17th, 2013
    - [krejzi] - Freeglut 2.8.1.
    - [krejzi] - Xorg Server 1.14.1.
    - [krejzi] - Xorg VMWare Driver 13.0.1.
  - April 14th, 2013
    - [krejzi] - ALSA 1.0.27.
    - [krejzi] - CUPS Filters 1.0.34.
    - [krejzi] - cURL 7.30.0.
    - [krejzi] - Firefox/Xulrunner 20.0.1.
    - [krejzi] - libdiscid 0.5.0.
    - [krejzi] - MIT Kerberos V5 1.11.2.
    - [krejzi] - p11-kit 0.18.
    - [krejzi] - Poppler 0.22.3.
    - [krejzi] - SQLite 3.7.16.2.

- April 8th, 2013
  - [krejzi] - CUPS Filters 1.0.33.
  - [krejzi] - Git 1.8.2.1.
  - [krejzi] - Harfbuzz 0.9.15.
  - [krejzi] - VLC 2.0.6.
- April 7th, 2013
  - [krejzi] - Mp323 1.15.3.
  - [krejzi] - Python 2.7.4.
  - [krejzi] - Python 3.3.1.
  - [krejzi] - Telepathy GLib 2.20.2.
  - [krejzi] - Xorg Intel Driver 2.21.6.
  - [krejzi] - Xorg Synaptics Driver 1.7.0.
- April 5th, 2013
  - [krejzi] - Firefox/Xulrunner 20.0.
  - [krejzi] - libpng 1.6.1.
  - [krejzi] - LibreOffice 4.0.2.
  - [krejzi] - OpenLDAP 2.4.35.
  - [krejzi] - Thunderbird 17.0.5.
  - [rthomsen] - KDE 4.10.2.
  - [ken] - Postgresql-9.2.4. Fixes #3796.
- March 31st, 2013
  - [rthomsen] - Mercurial 2.5.2. Fixes #3797.
  - [krejzi] - ISC Bind 9.9.2-P2.
  - [krejzi] - ISC DHCP 4.2.5-P1.
  - [krejzi] - libdrm 2.4.43.
  - [krejzi] - SQLite 3.7.16.1.
  - [krejzi] - Xorg Evdev Driver 2.8.0.
  - [krejzi] - Xorg Nouveau Driver 1.0.7.
  - [krejzi] - Xorg OpenChrome Driver 0.3.2.
- March 26th, 2013
  - [bdubbs] - Update to bind-9.9.2-P1. Fixes #3697.
- March 25th, 2013
  - [krejzi] - libffi 3.0.13.
- March 24th, 2013
  - [krejzi] - GnuTLS 3.1.10.
  - [krejzi] - NSPR 4.9.6.

- March 23rd, 2013
  - [krejzi] - AudioFile 0.3.6.
  - [krejzi] - Colord 0.1.31.
  - [krejzi] - Colord GTK 0.1.25.
  - [krejzi] - CUPS 1.6.2.
  - [krejzi] - CUPS Filters 1.0.31.
  - [krejzi] - GStreamer 1.0.6.
  - [krejzi] - GStreamer Base Plugins 1.0.6.
  - [krejzi] - GStreamer Good Plugins 1.0.6.
  - [krejzi] - GStreamer Bad Plugins 1.0.6.
  - [krejzi] - GStreamer Ugly Plugins 1.0.6.
  - [krejzi] - GStreamer Libav 1.0.6.
  - [krejzi] - GTK+ 2.24.17.
  - [krejzi] - Harfbuzz 0.9.14.
  - [krejzi] - ICU 51.1.
  - [krejzi] - libburn 1.2.8.
  - [krejzi] - libgcrypt 1.5.1.
  - [krejzi] - libisoburn 1.2.8.
  - [krejzi] - libisofs 1.2.8.
  - [krejzi] - MesaLib 9.1.1.
  - [krejzi] - Poppler 0.22.2.
  - [krejzi] - SQLite 3.7.16.
  - [krejzi] - UDisks 2.1.0.
  - [krejzi] - UPower 0.9.20.
  - [krejzi] - Xorg Intel Driver 2.21.5.
- March 18th, 2013
  - [thomas] - fcron 3.1.2.
- March 16th, 2013
  - [bdubbs] - Changed from qemu-kvm to qemu-1.4.0 which now includes kvm options.
  - [krejzi] - Added Glamor EGL 0.5.0.
  - [krejzi] - Added GtkSourceView 2.10.5.
  - [krejzi] - Added libgusb 0.1.6.
  - [krejzi] - Added libunique 1.1.6.
  - [krejzi] - Added Mousepad 0.3.0.
  - [krejzi] - Added Ristretto 0.6.3.
  - [krejzi] - Added Xfce4 Mixer 4.10.0.

- [krejzi] - AbiWord 2.9.4.
  - [krejzi] - Colord 0.1.30.
  - [krejzi] - CUPS Filters 1.0.30.
  - [krejzi] - D-Bus GLib Bindings 0.100.2.
  - [krejzi] - DejaGnu 1.5.1.
  - [krejzi] - Evolution 3.6.4.
  - [krejzi] - Exo 0.10.2.
  - [krejzi] - FFmpeg 1.2.
  - [krejzi] - Git 1.8.2.
  - [krejzi] - Gnumeric 1.12.1.
  - [krejzi] - GOffice 0.10.1.
  - [krejzi] - GPGME 1.4.0.
  - [krejzi] - GTK Xfce Engine 3.0.1.
  - [krejzi] - Harfbuzz 0.9.13.
  - [krejzi] - Iptables 1.4.18.
  - [krejzi] - libassuan 2.1.0.
  - [krejzi] - libdvdcss 1.2.13.
  - [krejzi] - Midori 0.4.9.
  - [krejzi] - OpenLDAP 2.4.34.
  - [krejzi] - Parole 0.5.0.
  - [krejzi] - Telepathy Logger 0.8.0.
  - [krejzi] - Thunar 1.6.2.
  - [krejzi] - Thunderbird 17.0.4.
  - [krejzi] - Tumbler 0.1.27.
  - [krejzi] - Xfce4 Terminal 0.6.1.
  - [krejzi] - Xfdesktop 4.10.2.
  - [krejzi] - Xorg Intel Driver 2.21.4.
  - [krejzi] - Enabled support for Radeon "South Islands" GPUs in MesaLib and Xorg ATI Driver by default.
- March 15th, 2013
    - [bdubbs] - Add a fix to udev-extras keymap Makefile issue exposed by LFS-7.3.
  - March 13th, 2013
    - [bdubbs] - Update to php-5.4.11. Fixes #3694.
  - March 10th, 2013
    - [bdubbs] - Added patch to bridge-utils caused by linux-3.8 include file change.
    - [bdubbs] - Update to gptfdisk-0.8.6.
    - [rthomsen] - Phonon-backend-vlc 0.6.2. Fixes #3784.

- [rthomsen] - Akonadi 1.9.1.
  - [rthomsen] - KDE 4.10.1.
  - [krejzi] - Firefox/Xulrunner 19.0.2.
  - [krejzi] - LibreOffice 4.0.1.
  - [krejzi] - Xorg Server 1.14.0.
  - [krejzi] - Xorg Nouveau Driver 1.0.6.
  - [krejzi] - Xorg Synaptics Driver 1.6.3.
  - [krejzi] - Xorg Wacom Driver 0.20.0.
- March 9th, 2013
    - [bdubbs] - Update to Lynx-2.8.8dev.15. Fixes #3655.
  - March 8th, 2013
    - [bdubbs] - Update to hdparm-9.43. Fixes #3654.
    - [bdubbs] - Added qemu-kvm patch to correct .texi error exposed by texinfo-5.0. Also added environment variables to correctly link executables. Fixes #3823.
    - [bdubbs] - Update to Subversion-1.7.8. Fixes #3827.
  - March 7th, 2013
    - [bdubbs] - Fix link to Chinese fonts. Fixes #3821.
    - [bdubbs] - Update wording of DRI detection in Xorg configuration.
  - March 6th, 2013
    - [bdubbs] - Update to xterm-291. Fixes #3728.
  - March 5th, 2013
    - [bdubbs] - Remove gperf dependency from xcb-util because it is no longer used.
    - [bdubbs] - Remove optional generation of text documents from gperf because it breaks the install without TeXLive.
  - March 4th, 2013
    - [bdubbs] - Updated to traceroute-2.0.19. Add a note about the differences between this package and the version installed in the LFS package inetutils. Fixes #3730.
  - March 3rd, 2013
    - [krejzi] - Added a patch to fix segfault in cURL.
    - [krejzi] - AudioFile 0.3.5.
    - [krejzi] - Clutter Gst 2.0.2.
    - [krejzi] - Ekiga 4.0.1.
    - [krejzi] - FFmpeg 1.1.3.
    - [krejzi] - GMime 2.6.15.
    - [krejzi] - Graphviz 2.30.1.
    - [krejzi] - Gtk VNC 0.5.2.

- [krejzi] - libarchive 3.1.2.
  - [krejzi] - libdiscid 0.3.2.
  - [krejzi] - libffi 3.0.12.
  - [krejzi] - libgpg-error 1.11.
  - [krejzi] - libpwquality 1.2.1.
  - [krejzi] - Mp3agic 1.15.1.
  - [krejzi] - MySQL 5.5.30.
  - [krejzi] - NetworkManager 0.9.8.0.
  - [krejzi] - Opal 3.10.10.
  - [krejzi] - pkg-config 0.28.
  - [krejzi] - Postfix 2.10.0.
  - [krejzi] - Pplib 2.10.10.
  - [krejzi] - Raptor 2.0.9.
  - [krejzi] - sg3\_utils 1.35.
  - [krejzi] - Shared Mime Info 1.1.
  - [krejzi] - Updated to latest GNOME packages.
- March 2nd, 2013
    - [krejzi] - Bluefish 2.2.4.
    - [krejzi] - LibreOffice 4.0.0.
    - [krejzi] - Pidgin 2.10.7.
    - [krejzi] - Thunderbird 17.0.3.
    - [krejzi] - Transmission 2.77.
  - March 1st, 2013
    - [krejzi] - Boost 1.53.0.
    - [krejzi] - Cairo 1.12.14.
    - [krejzi] - cURL 7.29.0.
    - [krejzi] - Gimp 2.8.4.
    - [krejzi] - Git 1.8.1.5.
    - [krejzi] - Gnumeric 1.12.0.
    - [krejzi] - GnuTLS 3.1.9.1.
    - [krejzi] - GOffice 0.10.0.
    - [krejzi] - GTK+ 2.24.16.
    - [krejzi] - libdrm 2.4.42.
    - [krejzi] - libgsf 1.14.26.

- [krejzi] - libpng 1.5.14.
  - [krejzi] - libtirpc 0.2.3.
  - [krejzi] - MesaLib 9.1.
  - [krejzi] - MIT Kerberos V5 1.11.1.
  - [krejzi] - NSPR 4.9.5.
  - [krejzi] - NSS 3.14.3.
  - [krejzi] - Ntfs-3g 2013.1.13.
  - [krejzi] - OpenSSL 1.0.1e.
  - [krejzi] - p11-kit 0.15.2.
  - [krejzi] - Poppler 0.22.1.
  - [krejzi] - Ruby 1.9.3-p392.
  - [krejzi] - XKeyboard Config 2.8.
  - [krejzi] - Xorg ATI Driver 7.1.0.
  - [krejzi] - Xorg Intel Driver 2.21.3.
  - [krejzi] - XScreenSaver 5.21.
- February 27th, 2013
    - [ken] - Update message about NIS and RPC headers in libtirpc.
  - February 21st, 2013
    - [wblaszczyk] - Fixed JSON-C missing headers issue. Fixes #3808.
  - February 20th, 2013
    - [randy] - Updated GnuPG to 1.4.13.
  - February 18th, 2013
    - [randy] - Minor fixes and dependency updates.
  - February 13th, 2013
    - [randy] - Added instructions to libiodbc and Virtuoso so they play nice with unixODBC.
  - February 11th, 2013
    - [randy] - Updated Perl Module Date::Manip to 6.38.
    - [randy] - Updated FFmpeg to 1.1.2.
    - [krejzi] - Added wpa service configuration to wpa\_supplicant instructions.
  - February 10th, 2013
    - [randy] - Updated ImageMagick to 6.8.2-8.
    - [krejzi] - Updated GCC instructions to install Ada and Go compilers. Thanks to Pierre Labastie for the patch.
  - February 9th, 2013
    - [rthomsen] - KDE 4.10.0.
    - [rthomsen] - Added xcb-util-image 0.3.9 and xcb-util-renderutil 0.3.8.
  - February 7th, 2013

- [randy] - Minor modifications and added dependencies to the SANE instructions.
- [rthomsen] - Cairo 1.12.12.
- [rthomsen] - Strigi 0.7.8.
- [rthomsen] - Phonon-backend-gstreamer 4.6.3.
- February 4th, 2013
  - [randy] - Updated Enscript to 1.6.6.
- February 3rd, 2013
  - [thomas] - Samba 3.6.12.
- February 2nd, 2013
  - [rthomsen] - Dhcpacd 5.6.7.
  - [randy] - Modified the build commands and dependencies in the VLC instructions.
- January 29th, 2013
  - [randy] - Modified the dependencies for the XML::Simple Perl Module instructions.
- January 26th, 2013
  - [randy] - Added a dependency and modified the libical instructions.
  - [thomas] - PostgreSQL 9.2.2
- January 25th, 2013
  - [krejzi] - Clutter Gst 2.0.0.
  - [krejzi] - Colord 0.1.28.
  - [krejzi] - CrackLib 2.8.22.
  - [krejzi] - DHCP 4.2.5.
  - [krejzi] - Doxygen 1.8.3.1.
  - [krejzi] - Ed 1.7.
  - [krejzi] - Evolution 3.6.3.
  - [krejzi] - JSON C 0.10.
  - [krejzi] - MesaLib 9.0.2.
  - [krejzi] - Postfix 2.9.5.
  - [krejzi] - Rasqal 0.9.30.
  - [krejzi] - Sharutils 4.13.3.
  - [krejzi] - Soprano 2.9.0.
  - [krejzi] - Transmission 2.76.
  - [krejzi] - Xorg Server 1.13.2.
  - [krejzi] - Updated some GNOME Core packages to latest available upstream.
- January 24th, 2013
  - [krejzi] - MySQL 5.5.29.
  - [randy] - Updated Audacious/Audacious-Plugins to 3.3.3

- January 23rd, 2013
  - [randy] - Added a patch to the gst-plugins-ugly instructions to fix building against the new libcdio API.
- January 21st, 2013
  - [randy] - Modified dependencies and general cleanup of the Gimp instructions.
- January 20th, 2013
  - [randy] - Added a patch to the GeoClue instructions so it will build against GPSD.
  - [krejzi] - Firefox/Xulrunner 18.0.1.
  - [krejzi] - Thunderbird 17.0.2.
  - [krejzi] - Xorg Intel Driver 2.20.19.
  - [thomas] - fcron 3.1.1.
- January 19th, 2013
  - [krejzi] - Replaced libjpeg 8d with libjpeg-turbo 1.2.1.
  - [krejzi] - Amarok 2.7.0.
  - [krejzi] - Cairo 1.12.10.
  - [krejzi] - CMake 2.8.10.2.
  - [krejzi] - ICU 50.1.2.
  - [krejzi] - libdrm 2.4.41.
  - [krejzi] - libnl 3.2.19.
  - [krejzi] - Nettle 2.6.
  - [krejzi] - Polkit 0.110.
  - [krejzi] - Qpdf 4.0.1.
  - [krejzi] - Taglib 1.8.
  - [krejzi] - WPA Suplicant 2.0.
  - [krejzi] - Xorg Intel Driver 2.20.18.
  - [krejzi] - Xorg VMMouse Driver 13.0.0.
  - [krejzi] - Xorg VMware Driver 13.0.0.
- January 18th, 2013
  - [krejzi] - Graphviz 2.30.0.
  - [krejzi] - libsoup 2.40.3.
  - [krejzi] - Ruby 1.9.3-p374.
  - [krejzi] - Tcl 8.6.0.
  - [krejzi] - Tk 8.6.0.
  - [krejzi] - Removed Tcl extension build instructions from SQLite page as it is now part of Tcl 8.6.0.
  - [krejzi] - Fixed Python 2 bsddb module build against newer Berkeley DB.
  - [krejzi] - Updated GNOME 3.6 packages to latest available ones.
  - [randy] - Added DESTDIR instructions to packages that update '/usr/share/glib-2.0/schemas'.

- [randy] - Updated the xincludes files.
- [randy] - Updated package URLs.
- January 15th, 2013
  - [randy] - Remove an unneeded parameter from the libmpeg2 instructions.
  - [randy] - Corrected the API documentation installation instructions in the xine-lib instructions.
  - [randy] - Tweaked the MPlayer instructions and updated the default skin tarball.
- January 13th, 2013
  - [randy] - Added a parameter to the CUPS-Filters instructions.
- January 12th, 2013
  - [krejzi] - Colord 0.1.27.
  - [krejzi] - GStreamer 1.0.5.
  - [krejzi] - GStreamer Base Plugins 1.0.5.
  - [krejzi] - GStreamer Good Plugins 1.0.5.
  - [krejzi] - GStreamer Bad Plugins 1.0.5.
  - [krejzi] - GStreamer Ugly Plugins 1.0.5.
  - [krejzi] - GStreamer Libav 1.0.5.
  - [krejzi] - GTK+ 3.6.4.
  - [krejzi] - libburn 1.2.6.
  - [krejzi] - libisoburn 1.2.6.
  - [krejzi] - libisofs 1.2.6.
  - [krejzi] - SQLite 3.7.15.2.
  - [krejzi] - UPower 0.9.19.
- January 11th, 2013
  - [Randy] - Added commands to the Fribidi instructions so that it will link against the GLib-2 library.
  - [Randy] - Added dependencies to the yasm instructions.
- January 10th, 2013
  - [krejzi] - CUPS Filters 1.0.29.
  - [Randy] - Updated to Samba-3.6.10.
  - [Randy] - Added dependencies to the Guile and GnuTLS instructions.
- January 5th, 2013
  - [krejzi] - Added SBC 1.0.
  - [krejzi] - Re Added Transcode 1.1.7.
  - [krejzi] - AccountsService 0.6.30.
  - [krejzi] - Akonadi 1.9.0.
  - [krejzi] - Cogl 1.12.2.
  - [krejzi] - Farstream 0.2.2.

- [krejzi] - GnuTLS 3.1.6.
- [krejzi] - GTK+ 3.6.3.
- [krejzi] - Iptables 1.4.17.
- [krejzi] - KDE 4.9.5.
- [krejzi] - libdiscid 0.3.0.
- [krejzi] - lm\_sensors 3.3.3.
- [krejzi] - MIT Kerberos V5 1.11.
- [krejzi] - PulseAudio 3.0.
- [krejzi] - Qpdf 4.0.0.
- [krejzi] - Redland 1.0.16.
- [krejzi] - SoundTouch 1.7.1.
- [krejzi] - Talloc 2.0.8.
- [krejzi] - UDisks 2.0.1.
- [krejzi] - Xorg Wacom Driver 0.19.0.
- January 2nd, 2013
  - [krejzi] - IBus 1.5.1.
  - [krejzi] - Nasm 2.10.07.
  - [krejzi] - Ruby 1.9.3-p362.
- January 1st, 2013
  - [krejzi] - Removed Cairo expose\_snapshot patch since it causes more problems than it solves.
  - [bdubbs] - Add gptfdisk-0.8.5. Moved parted to disk management chapter.
  - [bdubbs] - Archive 2012 changelog.

*Changelog for 2012*

*Changelog for 2011*

*Changelog for 2010*

*Changelog for 2009*

*Changelog for 2008*

## Mailing Lists

The [linuxfromscratch.org](http://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>.

## BLFS Wiki

The BLFS Project has created a Wiki for users to comment on pages and instructions at <http://wiki.linuxfromscratch.org/blfs/wiki>. Comments are welcome from all users.

The following are the rules for posting:

- Users must register and log in to edit a page.
- Suggestions to change the book should be made by creating a new ticket, *not* by making comments in the Wiki.
- Questions with your specific installation problems should be made by subscribing and mailing to the BLFS Support Mailing List at <mailto:blfs-support@linuxfromscratch.org>.
- Discussions of build instructions should be made by subscribing and mailing to the BLFS Development List at <mailto:blfs-dev@linuxfromscratch.org>.
- Inappropriate material will be removed.

## 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 `modprobe.conf` and has it been loaded? You should use **lsmod** as the `root` user to see if it's loaded. Check the `sys.log` file 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 **usermod -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 2013-05-24),
- 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,
- if you are installing a BLFS package on a non-LFS system.

(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/smarter-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.

## 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 a line. Many thanks to all of the LFS community for their assistance with this project.

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The list of contributors is far too large to provide detailed information about the contributions for each contributor. Over the years, the following individuals have provided significant inputs to the book:

- Timothy Bauscher
- Daniel Bauman
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- Robert Daniels
- Richard Downing
- Manuel Canales Esparcia
- Jim Gifford
- Manfred Glombowski
- Mark Hymers
- James Iwanek
- Jeremy Jones
- Seth Klein
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- Larry Lawrence
- Chris Lynn
- Andrew McMurry
- Billy O'Connor
- Alexander Patrakov
- Olivier Peres
- Andreas Pedersen
- Henning Rohde
- Matt Rogers
- James Robertson
- Henning Rohde
- Jesse Tie-Ten-Quee
- Jeremy Utley
- Zack Winkles
- Igor Zivkovic
- Fernando de Oliveira

## General Acknowledgments

- Fernando Arbeiza
- Miguel Bazdresch
- Gerard Beekmans
- Oliver Brakmann
- Jeremy Byron

- Ian Chilton
- David Ciecielski
- Jim Harris
- Lee Harris
- Marc Heerdink
- Steffen Knollmann
- Eric Konopka
- Scot McPherson
- Ted Riley

## Contact Information

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

# Chapter 2. Important Information

This chapter is used to explain some of the policies used throughout the book, to introduce important concepts and to explain some issues you may see with some of the included packages.

## Notes on Building Software

Those people who have built an LFS system may be aware of the general principles of downloading and unpacking software. Some of that information is repeated here for those new to building their own software.

Each set of installation instructions contains a URL from which you can download the package. The patches; however, are stored on the LFS servers and are 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 the package and changed into the directory created by the unpacking process (the 'build' directory). We also assume you have uncompressed any required patches and they are in the directory immediately above the 'build' directory.

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 during configuration or compilation, 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 the parent of the 'build' directory 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.

## Automated Building Procedures

There are times when automating the building of a package can come in handy. Everyone has their own reasons for wanting to automate building, and everyone goes about it in their own way. Creating Makefiles, Bash scripts, Perl scripts or simply a list of commands used to cut and paste are just some of the methods you can use to automate building BLFS packages. Detailing how and providing examples of the many ways you can automate the building of packages is beyond the scope of this section. This section will expose you to using file redirection and the `yes` command to help provide ideas on how to automate your builds.

### File Redirection to Automate Input

You will find times throughout your BLFS journey when you will come across a package that has a command prompting you for information. This information might be configuration details, a directory path, or a response to a license agreement. This can present a challenge to automate the building of that package. Occasionally, you will be

prompted for different information in a series of questions. One method to automate this type of scenario requires putting the desired responses in a file and using redirection so that the program uses the data in the file as the answers to the questions.

Building the CUPS package is a good example of how redirecting a file as input to prompts can help you automate the build. If you run the test suite, you are asked to respond to a series of questions regarding the type of test to run and if you have any auxiliary programs the test can use. You can create a file with your responses, one response per line, and use a command similar to the one shown below to automate running the test suite:

```
make check < ./cups-1.1.23-testsuite_parms
```

This effectively makes the test suite use the responses in the file as the input to the questions. Occasionally you may end up doing a bit of trial and error determining the exact format of your input file for some things, but once figured out and documented you can use this to automate building the package.

## Using yes to Automate Input

Sometimes you will only need to provide one response, or provide the same response to many prompts. For these instances, the **yes** command works really well. The **yes** command can be used to provide a response (the same one) to one or more instances of questions. It can be used to simulate pressing just the **Enter** key, entering the **Y** key or entering a string of text. Perhaps the easiest way to show its use is in an example.

First, create a short Bash script by entering the following commands:

```
cat > blfs-yes-test1 << "EOF"
#!/bin/bash

echo -n -e "\n\nPlease type something (or nothing) and press Enter ---> "
read A_STRING

if test "$A_STRING" = ""; then A_STRING="Just the Enter key was pressed"
else A_STRING="You entered '$A_STRING'"
fi

echo -e "\n\n$A_STRING\n\n"
EOF
chmod 755 blfs-yes-test1
```

Now run the script by issuing **./blfs-yes-test1** from the command line. It will wait for a response, which can be anything (or nothing) followed by the **Enter** key. After entering something, the result will be echoed to the screen. Now use the **yes** command to automate the entering of a response:

```
yes | ./blfs-yes-test1
```

Notice that piping **yes** by itself to the script results in **y** being passed to the script. Now try it with a string of text:

```
yes 'This is some text' | ./blfs-yes-test1
```

The exact string was used as the response to the script. Finally, try it using an empty (null) string:

```
yes '' | ./blfs-yes-test1
```

Notice this results in passing just the press of the **Enter** key to the script. This is useful for times when the default answer to the prompt is sufficient. This syntax is used in the Net-tools [610] instructions to accept all the defaults to the many prompts during the configuration step. You may now remove the test script, if desired.

## File Redirection to Automate Output

In order to automate the building of some packages, especially those that require you to read a license agreement one page at a time, requires using a method that avoids having to press a key to display each page. Redirecting the output to a file can be used in these instances to assist with the automation. The previous section on this page touched on creating log files of the build output. The redirection method shown there used the **tee** command to redirect output to a file while also displaying the output to the screen. Here, the output will only be sent to a file.

Again, the easiest way to demonstrate the technique is to show an example. First, issue the command:

```
ls -l /usr/bin | more
```

Of course, you'll be required to view the output one page at a time because the **more** filter was used. Now try the same command, but this time redirect the output to a file. The special file **/dev/null** can be used instead of the filename shown, but you will have no log file to examine:

```
ls -l /usr/bin | more > redirect_test.log 2>&1
```

Notice that this time the command immediately returned to the shell prompt without having to page through the output. You may now remove the log file.

The last example will use the **yes** command in combination with output redirection to bypass having to page through the output and then provide a **y** to a prompt. This technique could be used in instances when otherwise you would have to page through the output of a file (such as a license agreement) and then answer the question of "do you accept the above?". For this example, another short Bash script is required:

```
cat > blfs-yes-test2 << "EOF"
#!/bin/bash

ls -l /usr/bin | more

echo -n -e "\n\nDid you enjoy reading this? (y,n) "

read A_STRING

if test "$A_STRING" = "y"; then A_STRING="You entered the 'y' key"
else A_STRING="You did NOT enter the 'y' key"
fi

echo -e "\n\n$A_STRING\n\n"
EOF
chmod 755 blfs-yes-test2
```

This script can be used to simulate a program that requires you to read a license agreement, then respond appropriately to accept the agreement before the program will install anything. First, run the script without any automation techniques by issuing **./blfs-yes-test2**.

Now issue the following command which uses two automation techniques, making it suitable for use in an automated build script:

```
yes | ./blfs-yes-test2 > blfs-yes-test2.log 2>&1
```

If desired, issue **tail blfs-yes-test2.log** to see the end of the paged output, and confirmation that **y** was passed through to the script. Once satisfied that it works as it should, you may remove the script and log file.

Finally, keep in mind that there are many ways to automate and/or script the build commands. There is not a single “correct” way to do it. Your imagination is the only limit.

## Dependencies

For each package described, BLFS lists the known dependencies. These are listed under several headings, whose meaning is as follows:

- *Required* means that the target package cannot be correctly built without the dependency having first been installed.
- *Recommended* means that BLFS strongly suggests this package is installed first for a clean and trouble-free build, that won't have issues either during the build process, or at run-time.
- *Optional* means that this package might be installed for added functionality. Often BLFS will describe the dependency to explain the added functionality that will result.

## Using the Most Current Package Sources

On occasion you may run into a situation in the book when a package will not build or work properly. Though the Editors attempt to ensure that every package in the book builds and works properly, sometimes a package has been overlooked or was not tested with this particular version of BLFS.

If you discover that a package will not build or work properly, you should see if there is a more current version of the package. Typically this means you go to the maintainer's web site and download the most current tarball and attempt to build the package. If you cannot determine the maintainer's web site by looking at the download URLs, use Google and query the package's name. For example, in the Google search bar type: 'package\_name download' (omit the quotes) or something similar. Sometimes typing: 'package\_name home page' will result in you finding the maintainer's web site.

## 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/development/chapter07/bootscripts.html` for more information on the LFS-Bootscripts package.

### Package Information

- Download: <http://www.linuxfromscratch.org/blfs/downloads/svn/blfs-bootscripts-20130512.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.

# Libraries: Static or shared?

## Libraries: Static or shared?

The original libraries were simply an archive of routines from which the required routines were extracted and linked into the executable program. These are described as static libraries (libfoo.a). On some old operating systems they are the only type available.

On almost all Linux platforms there are also shared libraries (libfoo.so) - one copy of the library is loaded into virtual memory, and shared by all the programs which call any of its functions. This is space efficient.

In the past, essential programs such as a shell were often linked statically so that some form of minimal recovery system would exist even if shared libraries, such as libc.so, became damaged (e.g. moved to `lost+found` after fsck following an unclean shutdown). Nowadays, most people use an alternative system install or a Live CD if they have to recover. Journaling filesystems also reduce the likelihood of this sort of problem.

Developers, at least while they are developing, often prefer to use static versions of the libraries which their code links to.

Within the book, there are various places where configure switches such as **--disable-static** are employed, and other places where the possibility of using system versions of libraries instead of the versions included within another package is discussed. The main reason for this is to simplify updates of libraries.

If a package is linked to a dynamic library, updating to a newer library version is automatic once the newer library is installed and the program is (re)started (provided the library major version is unchanged, e.g. going from libfoo.so.2.0 to libfoo.so.2.1. Going to libfoo.so.3 will require recompilation - **ldd** can be used to find which programs use the old version). If a program is linked to a static library, the program always has to be recompiled. If you know which programs are linked to a particular static library, this is merely an annoyance. But usually you will *not* know which programs to recompile.

Most libraries are shared, but if you do something unusual, such as moving a shared library to `/lib` accidentally breaking the `.so` symlink in `/usr/lib` while keeping the static library in `/lib`, the static library will be silently linked into the programs which need it.

One way to identify when a static library is used, is to deal with it at the end of the installation of every package. Write a script to find all the static libraries in `/usr/lib` or wherever you are installing to, and either move them to another directory so that they are no longer found by the linker, or rename them so that libfoo.a becomes e.g. libfoo.a.hidden. The static library can then be temporarily restored if it is ever needed, and the package needing it can be identified. You may choose to exclude some of the static libraries from glibc if you do this (`libc_nonshared.a`, `libg.a`, `libieee.a`, `libm.a`, `libpthread_nonshared.a`, `librpcsvc.a`, `libsipc++.a`) to simplify compilation.

If you use this approach, you may discover that more packages than you were expecting use a static library. That was the case with nettle-2.4 in its default static-only configuration: It was required by GnuTLS-3.0.19, but also linked into package(s) which used GnuTLS, such as glib-networking-2.32.3.

Many packages put some of their common functions into a static library which is only used by the programs within the package and, crucially, the library is *not* installed as a standalone library. These internal libraries are not a problem - if the package has to be rebuilt to fix a bug or vulnerability, nothing else is linked to them.

When BLFS mentions system libraries, it means shared versions of libraries. Some packages such as Firefox-21.0 and ghostscript-9.06 include many other libraries. When they link to them, they link statically so this also makes the programs bigger. The version they ship is often older than the version used in the system, so it may contain bugs - sometimes developers go to the trouble of fixing bugs in their included libraries, other times they do not.

Sometimes, deciding to use system libraries is an easy decision. Other times it may require you to alter the system version (e.g. for libpng-1.6.2 if used for Firefox-21.0). Occasionally, a package ships an old library and can no longer link to the current version, but can link to an older version. In this case, BLFS will usually just use the shipped version. Sometimes the included library is no longer developed separately, or its upstream is now the same as the package's upstream and you have no other packages which will use it. In those cases, you might decide to use the included static library even if you usually prefer to use system libraries.

# Locale Related Issues

This page contains information about locale related problems and issues. In the following paragraphs you'll find a generic overview of things that can come up when configuring your system for various locales. Many (but not all) existing locale related problems can be classified and fall under one of the headings below. The severity ratings below use the following criteria:

- Critical: The program doesn't perform its main function. The fix would be very intrusive, it's better to search for a replacement.
- High: Part of the functionality that the program provides is not usable. If that functionality is required, it's better to search for a replacement.
- Low: The program works in all typical use cases, but lacks some functionality normally provided by its equivalents.

If there is a known workaround for a specific package, it will appear on that package's page. For the most recent information about locale related issues for individual packages, check the *User Notes* in the BLFS Wiki.

## The Needed Encoding is Not a Valid Option in the Program

Severity: Critical

Some programs require the user to specify the character encoding for their input or output data and present only a limited choice of encodings. This is the case for the `-X` option in `a2ps-4.14` and `Enscript-1.6.6`, the `-input-charset` option in unpatched `Cdrtools`, and the character sets offered for display in the menu of `Links-2.7`. If the required encoding is not in the list, the program usually becomes completely unusable. For non-interactive programs, it may be possible to work around this by converting the document to a supported input character set before submitting to the program.

A solution to this type of problem is to implement the necessary support for the missing encoding as a patch to the original program or to find a replacement.

## The Program Assumes the Locale-Based Encoding of External Documents

Severity: High for non-text documents, low for text documents

Some programs, `nano-2.3.2` or `JOE-3.7` for example, assume that documents are always in the encoding implied by the current locale. While this assumption may be valid for the user-created documents, it is not safe for external ones. When this assumption fails, non-ASCII characters are displayed incorrectly, and the document may become unreadable.

If the external document is entirely text based, it can be converted to the current locale encoding using the `iconv` program.

For documents that are not text-based, this is not possible. In fact, the assumption made in the program may be completely invalid for documents where the Microsoft Windows operating system has set de facto standards. An example of this problem is ID3v1 tags in MP3 files (see the *BLFS Wiki ID3v1Coding page* for more details). For these cases, the only solution is to find a replacement program that doesn't have the issue (e.g., one that will allow you to specify the assumed document encoding).

Among BLFS packages, this problem applies to `nano-2.3.2`, `JOE-3.7`, and all media players except `Audacious-3.3.3`.

Another problem in this category is when someone cannot read the documents you've sent them because their operating system is set up to handle character encodings differently. This can happen often when the other person is using Microsoft Windows, which only provides one character encoding for a given country. For example, this causes problems with UTF-8 encoded TeX documents created in Linux. On Windows, most applications will assume that these documents have been created using the default Windows 8-bit encoding.

In extreme cases, Windows encoding compatibility issues may be solved only by running Windows programs under *Wine*.

## The Program Uses or Creates Filenames in the Wrong Encoding

Severity: Critical

The POSIX standard mandates that the filename encoding is the encoding implied by the current LC\_CTYPE locale category. This information is well-hidden on the page which specifies the behavior of Tar and Cpio programs. Some programs get it wrong by default (or simply don't have enough information to get it right). The result is that they create filenames which are not subsequently shown correctly by **ls**, or they refuse to accept filenames that **ls** shows properly. For the GLib-2.34.3 library, the problem can be corrected by setting the **G\_FILENAME\_ENCODING** environment variable to the special "@locale" value. Glib2 based programs that don't respect that environment variable are buggy.

The Zip-3.0 and UnZip-6.0 have this problem because they hard-code the expected filename encoding. UnZip contains a hard-coded conversion table between the CP850 (DOS) and ISO-8859-1 (UNIX) encodings and uses this table when extracting archives created under DOS or Microsoft Windows. However, this assumption only works for those in the US and not for anyone using a UTF-8 locale. Non-ASCII characters will be mangled in the extracted filenames.

The general rule for avoiding this class of problems is to avoid installing broken programs. If this is impossible, the **convmv** command-line tool can be used to fix filenames created by these broken programs, or intentionally mangle the existing filenames to meet the broken expectations of such programs.

In other cases, a similar problem is caused by importing filenames from a system using a different locale with a tool that is not locale-aware (e.g., OpenSSH-6.2p1). In order to avoid mangling non-ASCII characters when transferring files to a system with a different locale, any of the following methods can be used:

- Transfer anyway, fix the damage with **convmv**.
- On the sending side, create a tar archive with the **--format=posix** switch passed to **tar** (this will be the default in a future version of **tar**).
- Mail the files as attachments. Mail clients specify the encoding of attached filenames.
- Write the files to a removable disk formatted with a FAT or FAT32 filesystem.
- Transfer the files using Samba.
- Transfer the files via FTP using RFC2640-aware server (this currently means only wu-ftpd, which has bad security history) and client (e.g., lftp).

The last four methods work because the filenames are automatically converted from the sender's locale to UNICODE and stored or sent in this form. They are then transparently converted from UNICODE to the recipient's locale encoding.

## The Program Breaks Multibyte Characters or Doesn't Count Character Cells Correctly

Severity: High or critical

Many programs were written in an older era where multibyte locales were not common. Such programs assume that C "char" data type, which is one byte, can be used to store single characters. Further, they assume that any sequence of characters is a valid string and that every character occupies a single character cell. Such assumptions completely break in UTF-8 locales. The visible manifestation is that the program truncates strings prematurely (i.e., at 80 bytes instead of 80 characters). Terminal-based programs don't place the cursor correctly on the screen, don't react to the "Backspace" key by erasing one character, and leave junk characters around when updating the screen, usually turning the screen into a complete mess.

Fixing this kind of problems is a tedious task from a programmer's point of view, like all other cases of retrofitting new concepts into the old flawed design. In this case, one has to redesign all data structures in order to accommodate to the fact that a complete character may span a variable number of "char"s (or switch to wchar\_t and convert as needed). Also, for every call to the "strlen" and similar functions, find out whether a number of bytes, a number of characters, or the width of the string was really meant. Sometimes it is faster to write a program with the same functionality from scratch.

Among BLFS packages, this problem applies to xine-ui-0.99.7 and all the shells.

## The Package Installs Manual Pages in Incorrect or Non-Displayable Encoding

Severity: Low

LFS expects that manual pages are in the language-specific (usually 8-bit) encoding, as specified on the *LFS Man DB page*. However, some packages install translated manual pages in UTF-8 encoding (e.g., Shadow, already dealt with), or manual pages in languages not in the table. Not all BLFS packages have been audited for conformance with the requirements put in LFS (the large majority have been checked, and fixes placed in the book for packages known to install non-conforming manual pages). If you find a manual page installed by any of BLFS packages that is obviously in the wrong encoding, please remove or convert it as needed, and report this to BLFS team as a bug.

You can easily check your system for any non-conforming manual pages by copying the following short shell script to some accessible location,

```
#!/bin/sh
# Begin checkman.sh
# Usage: find /usr/share/man -type f | xargs checkman.sh
for a in "$@"
do
    # echo "Checking $a..."
    # Pure-ASCII manual page (possibly except comments) is OK
    grep -v '\.\\"' "$a" | iconv -f US-ASCII -t US-ASCII >/dev/null 2>&1 \
        && continue
    # Non-UTF-8 manual page is OK
    iconv -f UTF-8 -t UTF-8 "$a" >/dev/null 2>&1 || continue
    # Found a UTF-8 manual page, bad.
    echo "UTF-8 manual page: $a" >&2
done
# End checkman.sh
```

and then issuing the following command (modify the command below if the **checkman.sh** script is not in your PATH environment variable):

```
find /usr/share/man -type f | xargs checkman.sh
```

Note that if you have manual pages installed in any location other than `/usr/share/man` (e.g., `/usr/local/share/man`), you must modify the above command to include this additional location.

## 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 `$PREFIX/lib` to `/etc/ld.so.conf` or expand `LD_LIBRARY_PATH` to include it. Before using the latter option, check out [http://xahlee.org/UnixResource\\_dir/\\_ldpath.html](http://xahlee.org/UnixResource_dir/_ldpath.html). If you modify `/etc/ld.so.conf`, remember to update `/etc/ld.so.cache` by executing `ldconfig` as the `root` user.
- Add `$PREFIX/man` to `/etc/man_db.conf` or expand `MANPATH`.
- Add `$PREFIX/info` to `INFOPATH`.
- Add `$PREFIX/lib/pkgconfig` to `PKG_CONFIG_PATH`. Some packages are now installing `.pc` files in `$PREFIX/share/pkgconfig`, so you may have to include this directory also.
- Add `$PREFIX/include` to `CPPFLAGS` when compiling packages that depend on the package you installed.
- Add `$PREFIX/lib` to `LDLIBRARY_PATH` when compiling packages that depend on a library installed by the package.

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

- If you know the name of the package, then search Freecode for it at <http://freecode.com/>. 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](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](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://www.linuxfromscratch.org/search.html> for the error or if that fails, try searching Google. Often, a distribution will have already solved the problem (many of them use development versions of packages, so they see the changes

sooner than those of us who normally use stable released versions). But be cautious - all builders tend to carry patches which are no longer necessary, and to have fixes which are only required because of their particular choices in how they build a package. You may have to search deeply to find a fix for the package version you are trying to use, or even to find the package (names are sometimes not what you might expect, e.g. ghostscript often has a prefix or a suffix in its name), but the following notes might help:

- Arch <http://www.archlinux.org/packages/> - enter the package name in the 'Keywords' box, select the package name, select one of the 'SVN Entries' fields, then select the PKGBUILD to see how they build this package, or look at any patches.
- Debian <ftp://ftp.uk.debian.org/debian/pool> (use your country's version if there is one) - the source will be in .tar.gz tarballs (either the original upstream .orig source, or else a dfg containing those parts which comply with debian's free software guidelines) accompanied by versioned .diff.gz or .tar.gz additions. These additions often show how the package is built, and may contain patches. In the .diff.gz versions, any patches create files in debian/patches.
- Fedora <http://pkgs.fedoraproject.org/cgit/> - this site is still occasionally overloaded, and somewhat hard to navigate (nearly 300 pages, linked by number) but it is an easy way of looking at .spec files and patches. If you know their name for the package (e.g. mesa.git) you can append that to the URI to get to it. If unavailable, try looking for a local mirror of ftp.fedora.com (the primary site is usually unavailable if fedora cgit is not responding) and download a source rpm to see what they do.
- Gentoo - the mirrors for ebuilds and patches seem to be well-hidden, and they change frequently. Also, if you have found a mirror, you need to know which directory the application has been assigned to. The ebuilds themselves can be found at <http://packages.gentoo.org/> - use the search field. If there are any patches, a mirror will have them in the files/ directory. Depending on your browser, or the mirror, you might need to download the ebuild to be able to read it. Treat the ebuild as a sort of pseudo-code / shell combination - look in particular for sed commands and patches, or hazard a guess at the meanings of the functions such as dodoc.
- PLD <http://cvs.pld-linux.org/cgi-bin/cvsweb/packages/> - another distro which uses rpms, cvsweb provides access to patches and the spec files.
- Slackware - the official package browser is currently broken. The site at <http://slackbuilds.org/> has current and previous versions in their unofficial repository with links to homepages, downloads, and some individual files, particularly the .SlackBuild files.
- Ubuntu <ftp://ftp.ubuntu.com/ubuntu/pool/> - see the debian notes above.

If everything else fails, try the blfs-support mailing-list.

### 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.

You may also find an rpm2cpio script useful. The Perl version in the linux kernel archives at <http://lkml.indiana.edu/hypermail/linux/kernel/0210.2/att-0093/01-rpm2cpio> works for most source rpms. The rpm2targz script will use an rpm2cpio script or binary if one is on your path. Note that rpm2cpio will unpack a source rpm in the current directory, giving a tarball, a spec file, and perhaps patches or other files.

## **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-5.0.7](#), 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 prevents it from booting and/or operating normally. For this reason, you *must not* depend on resources from the host being "rescued". To presume that any given partition or hard drive *will* be available is a risky presumption.

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, a rescue device was thought to be 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.

Also, the LFS Community has developed its own LiveCD available at <http://www.linuxfromscratch.org/livecd/>. This LiveCD, is no longer capable of building an entire LFS/BLFS system, but is still a good rescue CD-ROM. If you download the ISO image, use **xorriso** to copy the image to a CD-ROM.

The instructions for using GRUB2 to make a custom rescue CD-ROM are also available in *LFS Chapter 8*.

## 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**. This file is created in a base LFS installation by the Shadow package. If it has been removed or renamed, the **useradd** program uses some internal defaults. You can see the default values by running **/usr/sbin/useradd -D**.

To change these values, simply modify the **/etc/default/useradd** file as the **root** user. An alternative to directly modifying the file is to run **useradd** as the **root** user while supplying the desired modifications on the command line. Information on how to do this can be found in the **useradd** man page.

### /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 1000. 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 Standard Base* recommends that system uid and gid values should be below 100.

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

**Table 3.1. UID/GID Suggested Values**

gdm	21	21
fcron	22	22
systemd-journal		23
apache	23	25
smmsp	26	26
polkitd	27	27
exim	31	31
postfix	32	32
postdrop		33
sendmail	34	
mail		34
vmailman	35	35
news	36	36
kdm	37	37
mysql	40	40
postgres	41	41
ftp	45	45
proftpd	46	46
vsftpd	47	47
rsyncd	48	48
sshd	50	50
stunnel	51	51
svn	56	56
svntest		57
pulse	58	58
pulse-access		59
games	60	60
kvm		61
wireshark		62
scanner		70
colord	71	71
ldap	83	83
avahi	84	84
avahi-autoipd	85	85
netdev		86
ntp	87	87
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.

## About Devices

Although most devices needed by packages in BLFS and beyond are set up properly by udev using the default rules installed by LFS in `/etc/udev/rules.d`, there are cases where the rules must be modified or augmented.

### Multiple Sound Cards

If there are multiple sound cards in a system, the "default" sound card becomes random. The method to establish sound card order depends on whether the drivers are modules or not. If the sound card drivers are compiled into the kernel, control is via kernel command line parameters in `/boot/grub/grub.cfg`. For example, if a system has both an FM801 card and a SoundBlaster PCI card, the following can be appended to the command line:

```
snd-fm801.index=0 snd-ens1371.index=1
```

If the sound card drivers are built as modules, the order can be established in the `/etc/modprobe.conf` file with:

```
options snd-fm801 index=0
options snd-ens1371 index=1
```

## USB Device Issues

USB devices usually have two kinds of device nodes associated with them.

The first kind is created by device-specific drivers (e.g., `usb_storage/sd_mod` or `usblp`) in the kernel. For example, a USB mass storage device would be `/dev/sdb`, and a USB printer would be `/dev/usb/lp0`. These device nodes exist only when the device-specific driver is loaded.

The second kind of device nodes (`/dev/bus/usb/BBB/DDD`, where BBB is the bus number and DDD is the device number) are created even if the device doesn't have a kernel driver. By using these "raw" USB device nodes, an application can exchange arbitrary USB packets with the device, i.e., bypass the possibly-existing kernel driver.

Access to raw USB device nodes is needed when a userspace program is acting as a device driver. However, for the program to open the device successfully, the permissions have to be set correctly. By default, due to security concerns, all raw USB devices are owned by user root and group `usb`, and have 0664 permissions (the read access is needed, e.g., for `lsusb` to work and for programs to access USB hubs). Packages (such as SANE and `libgphoto2`) containing userspace USB device drivers also ship udev rules that change the permissions of the controlled raw USB devices. That is, rules installed by SANE change permissions for known scanners, but not printers. If a package maintainer forgot to write a rule for your device, report a bug to both BLFS (if the package is there) and upstream, and you will need to write your own rule.

There is one situation when such fine-grained access control with pre-generated udev rules doesn't work. Namely, PC emulators such as KVM, QEMU and VirtualBox use raw USB device nodes to present arbitrary USB devices to the guest operating system (note: patches are needed in order to get this to work without the obsolete `/proc/bus/usb` mount point described below). Obviously, maintainers of these packages cannot know which USB devices are going to be connected to the guest operating system. You can either write separate udev rules for all needed USB devices yourself, or use the default catch-all "usb" group, members of which can send arbitrary commands to all USB devices.

Before Linux-2.6.15, raw USB device access was performed not with /dev/bus/usb/BBB/DDD device nodes, but with /proc/bus/usb/BBB/DDD pseudofiles. Some applications (e.g., VMware Workstation) still use only this deprecated technique and can't use the new device nodes. For them to work, use the "usb" group, but remember that members will have unrestricted access to all USB devices. To create the fstab entry for the obsolete usbfss filesystem:

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



### Note

Adding users to the "usb" group is inherently insecure, as they can bypass access restrictions imposed through the driver-specific USB device nodes. For instance, they can read sensitive data from USB hard drives without being in the "disk" group. Avoid adding users to this group, if you can.

## Udev Device Attributes

Fine-tuning of device attributes such as group name and permissions is possible by creating extra udev rules, matching on something like this. The vendor and product can be found by searching the /sys/devices directory entries or using **udevadm info** after the device has been attached. See the documentation in the current udev directory of /usr/share/doc for details.

```
SUBSYSTEM=="usb_device", SYSFS{idVendor}=="05d8", SYSFS{idProduct}=="4002", \
GROUP=="scanner", MODE=="0660"
```



### Note

The above line is used for descriptive purposes only. The scanner udev rules are put into place when installing SANE-1.0.23.

## Devices for Servers

In some cases, it makes sense to disable udev completely and create static devices. Servers are one example of this situation. Does a server need the capability of handling dynamic devices? Only the system administrator can answer that question, but in many cases the answer will be no.

If dynamic devices are not desired, then static devices must be created on the system. In the default configuration, the /etc/rc.d/rcS.d/S10udev boot script mounts a tmpfs partition over the /dev directory. This problem can be overcome by mounting the root partition temporarily:



### Warning

If the instructions below are not followed carefully, your system could become unbootable.

```
mount --bind / /mnt
cp -a /dev/* /mnt/dev
rm /etc/rc.d/rcS.d/{S10udev,S50udev_retry}
umount /mnt
```

At this point, the system will use static devices upon the next reboot. Create any desired additional devices using **mknod**.

If you want to restore the dynamic devices, recreate the `/etc/rc.d/rcS.d/{S10udev,S50udev_retry}` symbolic links and reboot again. Static devices do not need to be removed (console and null are always needed) because they are covered by the `tmpfs` partition. Disk usage for devices is negligible (about 20–30 bytes per entry.)

## 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"

# Setup a red prompt for root and a green one for users.

```

```

NORMAL="\[\e[0m\]"
RED="\[\e[1;31m\]"
GREEN="\[\e[1;32m\]"
if [[ $EUID == 0 ]] ; then
    PS1="$RED\u [ $NORMAL\w$RED ]# $NORMAL"
else
    PS1="$GREEN\u [ $NORMAL\w$GREEN ]\$ $NORMAL"
fi

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

if [ -d ~/bin ] ; then
        pathprepend ~/bin
fi
#if [ $EUID -gt 99 ] ; then
#        pathappend .
#endif
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/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, the umask should be set.
if [ "$(id -gn)" = "$(id -un)" -a $EUID -gt 99 ] ; then
    umask 002
else
    umask 022
fi
EOF
```

## /etc/profile.d/i18n.sh

This script sets an environment variable necessary for native language support. A full discussion on determining this variable can be found on the *LFS Bash Shell Startup Files* page.

```
cat > /etc/profile.d/i18n.sh << "EOF"
# Set up i18n variables
export LANG=<ll>_<CC>.<charmap><@modifiers>
EOF
```

## 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>

# 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.]

NORMAL="\[\e[0m\]"
RED="\[\e[1;31m\]"
GREEN="\[\e[1;32m\]"
if [[ $EUID == 0 ]]; then
    PS1="$RED\u [ $NORMAL\w$RED ]# $NORMAL"
else
    PS1="$GREEN\u [ $NORMAL\w$GREEN ]\$ $NORMAL"
fi

# 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 the global configuration file (`/etc/vimrc`) as well as a user-specific file (`~/.vimrc`). Either or both can be tailored to suit the needs of your particular system.

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
```

Note that the comment tags 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-20130512 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. If you would prefer to download the file instead of creating it by typing or cut-and-pasting, you can find it at <http://anduin.linuxfromscratch.org/files/BLFS/svn/compressdoc> (the file should be installed in the /usr/sbin directory).

```
cat > /usr/sbin/compressdoc << "EOF"
#!/bin/bash
# VERSION: 20080421.1623
#
# 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 McMurchy to shorten line lengths and
# correct grammar errors.
#
# Modified 20060128 by Alexander E. Patrakov for compatibility with Man-DB.
#
# Modified 20060311 by Archaic to use Man-DB manpath utility which is a
# replacement for man --path from Man.
#
# Modified 20080421 by Dan Nicholson to properly execute the correct
# compressdoc when working recursively. This means the same compressdoc
# will be used whether a full path was given or it was resolved from PATH.
#
# Modified 20080421 by Dan Nicholson to be more robust with directories
# that don't exist or don't have sufficient permissions.
#
# Modified 20080421 by Lars Bamberger to (sort of) automatically choose
# a compression method based on the size of the manpage. A couple bug
# fixes were added by Dan Nicholson.
#
# Modified 20080421 by Dan Nicholson to suppress warnings from manpath
# since these are emitted when $MANPATH is set. Removed the TODO for
# using the $MANPATH variable since manpath(1) handles this already.
#
# TODO:
#     - choose a default compress method to be based on the available
#       tool : gzip or bzip2;
#     - 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.

```

```
--automatic
    Compress using either gzip or bzip2, depending on the
    size of the file to be compressed. Files larger than 5
    kB are bzipped, files larger than 1 kB are gzipped and
    files smaller than 1 kB are not compressed.

--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_db.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 compressdoc will use.

dirs
    A list of space-separated _absolute_ pathnames to the
    man directories. When empty, and only then, use manpath
    to parse ${MAN_CONF}/man_db.conf for all valid occurrences
```

of MANDATORY\_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_db.conf, be most silent, search man_db.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
            ;;
        --automatic)
            COMP_SUF=TBD
            COMP_METHOD=$1
            shift
            ;;
    esac
done

```

```
--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 "$MAN_DIR" ]; then
  MAN_DIR=`manpath -q -C "$MAN_CONF"/man_db.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 MANDATORY_MANPATH in ${MAN_CONF}/man_db.conf, abort as well

```

```

if [ -z "$MAN_DIR" ]; then
    echo "No directory specified, and no directory found with `manpath`"
    exit 1
fi

# Check that the specified directories actually exist and are readable
for DIR in $MAN_DIR; do
    if [ ! -d "$DIR" -o ! -r "$DIR" ]; then
        echo "Directory '$DIR' does not exist or is not readable"
        exit 1
    fi
done

# Fake?
if [ "$FAKE" != "no" ]; then
    echo "Actual parameters used:"
    echo -n "Compression.....: "
    case $COMP_METHOD in
        --bzip2|--bz2|-b) echo -n "bzip2";;
        --gzip|--gz|-g) echo -n "gzip";;
        --automatic) echo -n "compressing";;
        --decompress|-d) echo -n "decompressing";;
        *) echo -n "unknown";;
    esac
    echo " ($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_db.conf is....: ${MAN_CONF}/man_db.conf"
    echo -n "Hard-links.....: "
    [ "foo$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}/.."
        if [ ! -w "`pwd`" ]; then
            echo "Directory '`pwd`' is not writable"
            exit 1
        fi
        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 -cvf "${DIR_NAME}.tar" "${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 $MAN_DIR; do
    MEM_DIR=`pwd`
    if [ ! -w "$DIR" ]; then
        echo "Directory '$DIR' is not writable"
        exit 1
    fi
    cd "$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
            # 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
    done
done
exit 0
fi

```

```

# But I need exit in case of error. We must change back to the
# original directory so $0 is resolved correctly.
(cd "$MEM_DIR" && eval "$0" ${COMP_METHOD} ${COMP_LVL} ${LN_OPT} \
${VERBOSE_OPT} ${FORCE_OPT} "${DIR}/${FILE}" ) || exit $?
echo "<- Leaving ${DIR}/${FILE}." > $DEST_FD1

else # !dir
    if ! check_unique "$DIR" "$FILE"; then continue; fi

    # With automatic compression, get the uncompressed file size of
    # the file (dereferencing symlinks), and choose an appropriate
    # compression method.
    if [ "$COMP_METHOD" = "--automatic" ]; then
        declare -i SIZE
        case "$FILE" in
            *.bz2)
                SIZE=$(bzcat "$FILE" | wc -c) ;;
            *.gz)
                SIZE=$(zcat "$FILE" | wc -c) ;;
            *)
                SIZE=$(wc -c < "$FILE") ;;
        esac
        if (( $SIZE >= (5 * 2**10) )); then
            COMP_SUF=.bz2
        elif (( $SIZE >= (1 * 2**10) )); then
            COMP_SUF=.gz
        else
            COMP_SUF=
        fi
    fi

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

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

```

```

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
fi

```

```

;;
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 "Whaaaa... \${DIR}/\$FILE\` is neither a symlink "
  echo "nor a plain file. Please check:"
  ls -l "${DIR}/\$FILE"
  exit 1
fi
fi
done # for FILE
done # for DIR

```

**EOF**

As root, make **compressdoc** executable for all users:

```
chmod -v 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_db.conf`, as `MANDATORY_MANPATH </path>` lines.

Example:

```
...
MANDATORY_MANPATH          /usr/share/man
MANDATORY_MANPATH          /usr/X11R6/man
MANDATORY_MANPATH          /usr/local/man
MANDATORY_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.

# lsb\_release-1.4

## Introduction to lsb\_release

The lsb\_release script gives information about the Linux Standards Base (LSB) status of the distribution.  
This package is known to build and work properly using an LFS-7.3 platform.

### Package Information

- Download (HTTP): [http://sourceforge.net/projects/lsb/files/lsb\\_release/1.4/lsb-release-1.4.tar.gz](http://sourceforge.net/projects/lsb/files/lsb_release/1.4/lsb-release-1.4.tar.gz)
- 
- Download MD5 sum: 30537ef5a01e0ca94b7b8eb6a36bb1e4
- Download size: 12 KB
- Estimated disk space required: 80 KB
- Estimated build time: less than 0.1 SBU

## Installation of lsb\_release

Install lsb\_release by running the following commands:

```
./help2man -N --include ./lsb_release.examples \
--alt_version_key=program_version ./lsb_release > lsb_release.1
```

Now, as the root user:

```
install -v -m 644 lsb_release.1 /usr/share/man/man1/lsb_release.1 &&
install -v -m 755 lsb_release /usr/bin/lsb_release
```

## Contents

<b>Installed Programs:</b>	lsb_release
<b>Installed Library:</b>	None
<b>Installed Directories:</b>	None

## Short Descriptions

**lsb\_release** is a script to give LSB data.

# Chapter 4. Security

Security takes many forms in a computing environment. After some initial discussion, 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. The Network Security Services (NSS) and Netscape Portable Runtime (NSPR) libraries can be installed and shared among the many applications requiring them. 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 tarball 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.

# Vulnerabilities

## About vulnerabilities

All software has bugs. Sometimes, a bug can be exploited, for example to allow users to gain enhanced privileges (perhaps gaining a root shell, or simply accessing or deleting other user's files), or to allow a remote site to crash an application (denial of service), or for theft of data. These bugs are labelled as vulnerabilities.

The main place where vulnerabilities get logged is [cve.mitre.org](http://cve.mitre.org). Unfortunately, many vulnerability numbers (CVE-yyyy-nnnn) are initially only labelled as "reserved" when distributions start issuing fixes. Also, some vulnerabilities apply to particular combinations of **configure** options, or only apply to old versions of packages which have long since been updated in BLFS.

BLFS differs from distributions - there is no BLFS security team, and the editors only become aware of vulnerabilities after they are public knowledge. Sometimes, a package with a vulnerability will not be updated in the book for a long time. Issues can be logged in the Trac system, which might speed up resolution.

The normal way for BLFS to fix a vulnerability is, ideally, to update the book to a new fixed release of the package. Sometimes that happens even before the vulnerability is public knowledge, so there is no guarantee that it will be shown as a vulnerability fix in the Changelog. Alternatively, a **sed** command, or a patch taken from a distribution, may be appropriate.

The bottom line is that you are responsible for your own security, and for assessing the potential impact of any problems.

To keep track of what is being discovered, you may wish to follow the security announcements of one or more distributions. For example, Debian has *Debian security*. Fedora's links on security are at *the Fedora wiki*. details of Gentoo linux security announcements are discussed at *Gentoo security*. and the Slackware archives of security announcements are at *Slackware security*.

The most general English source is perhaps *the Full Disclosure Mailing List*, but please read the comment on that page. If you use other languages you may prefer other sites such as <http://www.heise.de/security> *heise.de* (German) or *cert.hr* (Croatian). These are not linux-specific. There is also a daily update at lwn.net for subscribers (free access to the data after 2 weeks, but their vulnerabilities database at *lwn.net/Vulnerabilities* is unrestricted).

For some packages, subscribing to their 'announce' lists will provide prompt news of newer versions.

# acl-2.2.51

## Introduction to acl

The acl package contains utilities to administer Access Control Lists, which are used to define more fine-grained discretionary access rights for files and directories.

This package is known to build and work properly using an LFS-7.3 platform.

## Package Information

- Download (HTTP): <http://download.savannah.gnu.org/releases/acl/acl-2.2.51.src.tar.gz>
- 
- Download MD5 sum: 3fc0ce99dc5253bdcce4c9cd437bc267
- Download size: 380 KB
- Estimated disk space required: 5.5 MB
- Estimated build time: 0.1 SBU

## acl Dependencies

### Required

attr-2.4.46

## Installation of acl

Install acl by running the following commands:

```
sed -i -e 's|@pkg_name@|&@pkg_version@|' \
    include/builddefs.in &&

INSTALL_USER=root \
INSTALL_GROUP=root \
./configure --prefix=/usr --libdir=/lib --libexecdir=/usr/lib &&
make
```

For meaningful results, the tests need to be carried out on a file system that supports extended attributes. It is also required that Coreutils is re-installed after acl is installed so that the extra acl bit displays correctly on a **ls** command.

Now, as the **root** user:

```
make install install-dev install-lib
chmod -v 0755 /lib/libacl.so.1.1.0
rm -v /lib/libacl.{a,la,so}
ln -sfv ../../lib/libacl.so.1 /usr/lib/libacl.so
sed -i "s|libdir='/lib'|libdir='/usr/lib'|" /usr/lib/libacl.la &&
install -v -m644 doc/*.txt /usr/share/doc/acl-2.2.51
```

You should now re-install *Coreutils* and proceed to run the test suite.

There are three sets of tests that come with this package. Issue the following to execute all three: **make tests root-tests ext-tests**.

## Command Explanations

**sed -i... include/builddefs.in:** This command modifies the documentation directory so that it is a versioned directory.

**sed -i ... /usr/lib/libacl.la:** This command corrects the location of the installed static library as referenced in the libtool archive.

## Configuring acl

### Configuration Information

There is no configuration to acl itself, but to get any use out of acl, a filesystem needs to support access control lists.

One way to achieve this is to add the acl option to an ext3 filesystem in the `/etc/fstab` file as shown below:

```
# file system  mount-point  type      options                      dump  fsck
#
/dev/sda1      /           ext3      defaults,acl,user_xattr  0     2
```

## Contents

<b>Installed Programs:</b>	chacl, getfacl, and setfacl
<b>Installed Library:</b>	libacl.{so,a}
<b>Installed Directories:</b>	/usr/{include/acl,share/doc/acl-2.2.51}

## Short Descriptions

<b>chacl</b>	changes the access control list of a file or directory.
<b>getfacl</b>	gets file access control lists.
<b>setfacl</b>	sets file access control lists.
<b>libacl.{so,a}</b>	contains the acl API functions.

## attr-2.4.46

### Introduction to attr

The attr package contains utilities to administer the extended attributes on filesystem objects.

This package is known to build and work properly using an LFS-7.3 platform.

### Package Information

- Download (HTTP): <http://download.savannah.gnu.org/releases/attr/attr-2.4.46.src.tar.gz>
- 
- Download MD5 sum: db557c17fd4a4f785333ecda08654010
- Download size: 332 KB
- Estimated disk space required: 3.5 MB
- Estimated build time: 0.1 SBU

### Installation of attr

Install attr by running the following commands:

```
sed -i -e 's|@pkg_name@|&@pkg_version@|' include/builddefs.in &&
INSTALL_USER=root \
INSTALL_GROUP=root \
./configure --prefix=/usr --libdir=/lib --libexecdir=/usr/lib --disable-static &&
make
```

There are three sets of tests that come with this package. Issue the following to execute all three: **make tests root-tests ext-tests**. For meaningful results, the tests need to be carried out on a file system that supports extended attributes.

Now, as the root user:

```
make install install-dev install-lib &&
chmod -v 0755 /lib/libattr.so.1.1.0           &&
rm -v /lib/libattr.{a,la,so}                   &&
sed -i 's@/lib@/usr/lib@' /usr/lib/libattr.la &&
ln -sfv ../../lib/libattr.so.1 /usr/lib/libattr.so
```

### Command Explanations

**sed ... include/builddefs.in:** This command modifies the documentation directory so that it is a versioned directory.

**--disable-static:** This switch prevents installation of static versions of the libraries.

**sed -i ... /usr/lib/libattr.la:** This command corrects the location of the installed library as referenced in the libtool archive.

### Configuring attr

#### Configuration Information

There is no configuration to attr itself, but to get any use out of attr, a filesystem needs to support extended attributes.

One way to achieve this is to add the user\_xattr option to an ext3 filesystem in the /etc/fstab file as shown below:

# file system	mount-point	type	options	dump	fsck
				order	
/dev/sda1	/	ext3	defaults,acl,user_xattr	0	2

## Contents

<b>Installed Programs:</b>	attr, getfattr, and setfattr
<b>Installed Library:</b>	libattr.so
<b>Installed Directories:</b>	/usr/{include/share/doc/attr-2.4.46}

## Short Descriptions

<b>attr</b>	extends attributes on filesystem objects.
<b>getfattr</b>	gets the extended attributes of filesystem objects.
<b>setfattr</b>	sets the extended attributes of filesystem objects.
<b>libattr.so</b>	contains the attr API functions.

# Certificate Authority Certificates

The Public Key Infrastructure is used for many security issues in a Linux system. In order for a certificate to be trusted, it must be signed by a trusted agent called a Certificate Authority (CA). The certificates loaded by this section are from the list on the Mozilla version control system and formats it into a form used by OpenSSL-1.0.1e. The certificates can also be used by other applications either directly or indirectly through openssl.

This package is known to build and work properly using an LFS-7.3 platform.

## Introduction to Certificate Authorities

### Package Information

- CA Certificate Download: [http://mxr.mozilla.org/mozilla/source/security/nss/lib/ckfw/builtins/certdata.txt?  
raw=1](http://mxr.mozilla.org/mozilla/source/security/nss/lib/ckfw/builtins/certdata.txt?raw=1)
- CA Bundle size: 1.2 MB
- Estimated disk space required: 1.2 MB
- Estimated build time: less than 0.1 SBU

## Certificate Authority Certificates Dependencies

### Required

OpenSSL-1.0.1e

### Optional

Wget-1.14

```

# Used to generate PEM encoded files from Mozilla certdata.txt.
# Run as ./mkcrt.pl > certificate.crt
#
# Parts of this script courtesy of RedHat (mkcabundle.pl)
#
# This script modified for use with single file data (tempfile.cer) extracted
# from certdata.txt, taken from the latest version in the Mozilla NSS source.
# mozilla/security/nss/lib/ckfw/builtins/certdata.txt
#
# Authors: DJ Lucas
#          Bruce Dubbs
#
# Version 20120211

my $certdata = './tempfile.cer';

open( IN, "cat $certdata|" )
    || die "could not open $certdata";

my $incert = 0;

while ( <IN> )
{
    if ( /^CKA_VALUE MULTILINE_OCTAL/ )
    {
        $incert = 1;
        open( OUT, "|openssl x509 -text -inform DER -fingerprint" )
            || die "could not pipe to openssl x509";
    }

    elsif ( /^END/ && $incert )
    {
        close( OUT );
        $incert = 0;
        print "\n\n";
    }

    elsif ($incert)
    {
        my @bs = split( /\// );
        foreach my $b (@bs)
        {
            chomp $b;
            printf( OUT "%c", oct($b) ) unless $b eq '';
        }
    }
}
EOF

chmod +x /bin/make-cert.pl

```

```

    fi
done

# Dump to a temp file with the name of the file as the beginning line number
sed -n "${certbegin},${certend}p" "${certdata}" > "${TEMPDIR}/certs/${certbegin}"
done

unset CERTBEGINLIST CERTDATA CERTENDLIST certbegin certend

mkdir -p certs
rm certs/*      # Make sure the directory is clean

for tempfile in ${TEMPDIR}/certs/*.tmp; do
    # Make sure that the cert is trusted...
    grep "CKA_TRUST_SERVER_AUTH" "${tempfile}" | \
        egrep "TRUST_UNKNOWN|NOT_TRUSTED" > /dev/null

    if test "${?}" = "0"; then
        # Throw a meaningful error and remove the file
        cp "${tempfile}" tempfile.cer
        perl ${CONVERTSCRIPT} > tempfile.crt
        keyhash=$(openssl x509 -noout -in tempfile.crt -hash)
        echo "Certificate ${keyhash} is not trusted! Removing..."
        rm -f tempfile.cer tempfile.crt "${tempfile}"
        continue
    fi

    # If execution made it to here in the loop, the temp cert is trusted
    # Find the cert data and generate a cert file for it

    cp "${tempfile}" tempfile.cer
    perl ${CONVERTSCRIPT} > tempfile.crt
    keyhash=$(openssl x509 -noout -in tempfile.crt -hash)
    mv tempfile.crt "certs/${keyhash}.pem"
    rm -f tempfile.cer "${tempfile}"
    echo "Created ${keyhash}.pem"
done

# Remove blacklisted files
# MD5 Collision Proof of Concept CA
if test -f certs/8f111d69.pem; then
    echo "Certificate 8f111d69 is not trusted! Removing..."
    rm -f certs/8f111d69.pem
fi

# Finally, generate the bundle and clean up.
cat certs/*.pem > ${BUNDLE}
rm -r "${TEMPDIR}"
EOF

chmod +x /bin/make-ca.sh

```

```

# Make sure the date is parsed correctly on all systems
function mydate()
{
    local y=$( echo $1 | cut -d" " -f4 )
    local M=$( echo $1 | cut -d" " -f1 )
    local d=$( echo $1 | cut -d" " -f2 )
    local m

    if [ ${d} -lt 10 ]; then d="0${d}"; fi

    case $M in
        Jan) m="01";;
        Feb) m="02";;
        Mar) m="03";;
        Apr) m="04";;
        May) m="05";;
        Jun) m="06";;
        Jul) m="07";;
        Aug) m="08";;
        Sep) m="09";;
        Oct) m="10";;
        Nov) m="11";;
        Dec) m="12";;
    esac

    certdate="${y}${m}${d}"
}

OPENSSL=/usr/bin/openssl
DIR=/etc/ssl/certs

if [ $# -gt 0 ]; then
    DIR="$1"
fi

certs=$( find ${DIR} -type f -name "*.pem" -o -name "*.crt" )
today=$( date +%Y%m%d )

for cert in $certs; do
    notafter=$( $OPENSSL x509 -enddate -in "${cert}" -noout )
    date=$( echo ${notafter} | sed 's/^notAfter=//' )
    mydate "$date"

    if [ ${certdate} -lt ${today} ]; then
        echo "${cert} expired on ${certdate}! Removing..."
        rm -f "${cert}"
    fi
done
EOF

chmod +x /bin/remove-expired-certs.sh

```

The following commands will fetch the certificates and convert them to the correct format. If desired, a web browser may be used instead of wget but the file will need to be saved with the name certdata.txt. These commands can be repeated as necessary to update the CA Certificates.

```
certhost='http://mxr.mozilla.org' &&
certdir='/mozilla/source/security/nss/lib/ckfw/builtins' &&
url="$certhost$certdir/certdata.txt?raw=1" &&

wget --output-document certdata.txt $url &&
unset certhost certdir url &&
make-ca.sh &&
remove-expired-certs.sh certs
```

Now, as the root user:

```
SSLDIR=/etc/ssl &&
install -d ${SSLDIR}/certs &&
cp -v certs/*.pem ${SSLDIR}/certs &&
c_rehash &&
install BLFS-ca-bundle*.crt ${SSLDIR}/ca-bundle.crt &&
unset SSUDIR
```

Finally, clean up the current directory:

```
rm -r certs BLFS-ca-bundle*
```

## Contents

<b>Installed Programs:</b>	make-ca.sh, make-cert.pl and remove-expired-certs.sh
<b>Installed Libraries:</b>	None
<b>Installed Directories:</b>	/etc/ssl/certs

## Short Descriptions

<b>make-ca.sh</b>	is a bash script that reformats the certdata.txt file for use by openssl.
<b>make-cert.pl</b>	is a utility perl script that converts a single binary certificate (.der format) into .pem format.
<b>remove-expired-certs.sh</b>	is a utility perl script that removes expired certificates from a directory. The default directory is /etc/ssl/certs.

# ConsoleKit-0.4.6

## Introduction to ConsoleKit

The ConsoleKit package is a framework for keeping track of the various users, sessions, and seats present on a system. It provides a mechanism for software to react to changes of any of these items or of any of the metadata associated with them.

This package is known to build and work properly using an LFS-7.2 platform.

## Package Information

- Download (HTTP): <http://anduin.linuxfromscratch.org/sources/BLFS/svn/c/ConsoleKit-0.4.6.tar.xz>
- 
- Download MD5 sum: 6aaadf5627d2f7587aa116727e2fc1da
- Download size: 356 KB
- Estimated disk space required: 8.0 MB
- Estimated build time: 0.3 SBU

## ConsoleKit Dependencies

### Required

acl-2.2.51, D-Bus GLib Bindings-0.100.2 and Xorg Libraries

### Recommended

Linux-PAM-1.1.6 and Polkit-0.111



### Warning

If you intend **NOT** to install polkit, you will need to manually edit the ConsoleKit.conf file to lock down the service. Failure to do so may be a huge SECURITY HOLE.

### Optional

xmldt-0.0.25

## Installation of ConsoleKit

Install ConsoleKit by running the following commands:

```
./configure --prefix=/usr \
            --sysconfdir=/etc \
            --localstatedir=/var \
            --libexecdir=/usr/lib/ConsoleKit \
            --enable-udev-acl \
            --enable-pam-module &&
make
```

This package does not come with a test suite.

Now, as the root user:

```
make install
```

## Command Explanations

--enable-udev-acl: This switch enables building of the **udev-acl** tool, which is used to allow normal users to access device nodes normally only accessible to **root**.

--enable-pam-module: This switch enables building of the ConsoleKit PAM module which is needed for ConsoleKit to work correctly with PAM. Remove if Linux PAM is **NOT** installed.

--enable-docbook-docs: Use this switch if **xmldoc** is installed and you wish to build the API documentation.

## Configuring ConsoleKit

### PAM Module Configuration

If you use Linux PAM you need to configure Linux PAM to activate ConsoleKit upon user login. This can be achieved by editing the **/etc/pam.d/system-session** file as the **root** user:

```
cat >> /etc/pam.d/system-session << "EOF"
# Begin ConsoleKit addition

session optional pam_loginuid.so
session optional pam_ck_connector.so nox11

# End ConsoleKit addition
EOF
```

You will also need a helper script that creates a file in **/var/run/console** named as the currently logged in user and that contains the D-Bus address of the session. You can create the script by running the following commands as the **root** user:

```
cat > /usr/lib/ConsoleKit/run-session.d/pam-foreground-compat.ck << "EOF"
#!/bin/sh
TAGDIR=/var/run/console

[ -n "$CK_SESSION_USER_UID" ] || exit 1
[ "$CK_SESSION_IS_LOCAL" = "true" ] || exit 0

TAGFILE="$TAGDIR/`getent passwd $CK_SESSION_USER_UID | cut -f 1 -d:`"

if [ "$1" = "session_added" ]; then
    mkdir -p "$TAGDIR"
    echo "$CK_SESSION_ID" >> "$TAGFILE"
fi

if [ "$1" = "session_removed" ] && [ -e "$TAGFILE" ]; then
    sed -i "\%^$CK_SESSION_ID\$%d" "$TAGFILE"
    [ -s "$TAGFILE" ] || rm -f "$TAGFILE"
fi
EOF
chmod -v 755 /usr/lib/ConsoleKit/run-session.d/pam-foreground-compat.ck
```

See `/usr/share/doc/ConsoleKit/spec/ConsoleKit.html` for more configuration.

## Contents

<b>Installed Programs:</b>	ck-history, ck-launch-session, ck-list-sessions, ck-log-system-restart, ck-log-system-start, ck-log-system-stop and console-kit-daemon
<b>Installed Libraries:</b>	<code>libck-connector.so</code> and <code>pam_ck_connector.so</code>
<b>Installed Directories:</b>	<code>/etc/ConsoleKit</code> , <code>/usr/include/ConsoleKit</code> , <code>/usr/lib/ConsoleKit</code> , <code>/usr/share/doc/ConsoleKit</code> and <code>/var/log/ConsoleKit</code>

# CrackLib-2.8.22

## 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.

This package is known to build and work properly using an LFS-7.3 platform.

## Package Information

- Download (HTTP): <http://downloads.sourceforge.net/cracklib/cracklib-2.8.22.tar.gz>
- Download (FTP): <ftp://mirror.ovh.net/gentoo-distfiles/distfiles/cracklib-2.8.22.tar.gz>
- Download MD5 sum: 463177b5c29c7a598c991e12a4898e06
- Download size: 620 KB
- Estimated disk space required: 5.2 MB
- Estimated build time: less than 0.1 SBU

## Additional Downloads

- Recommended word list for English-speaking countries (size: 4.5 MB; md5sum: 7fa6ba0cd50e7f9ccaf4707c810b14f1): <http://downloads.sourceforge.net/cracklib/cracklib-words-20080507.gz>

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.

## CrackLib Dependencies

### Optional

Python-2.7.5

## Installation of CrackLib

Install CrackLib by running the following commands:

```
./configure --prefix=/usr \
            --with-default-dict=/lib/cracklib/pw_dict \
            --disable-static &&
make
```

Now, as the root user:

```
make install &&
mv -v /usr/lib/libcrack.so.2* /lib &&
ln -v -sf ../../lib/libcrack.so.2.8.1 /usr/lib/libcrack.so
```

Issue the following commands as the root user to install the recommended word list and create the CrackLib dictionary. Other word lists (text based, one word per line) can also be used by simply installing them into /usr/share/dict and adding them to the **create-cracklib-dict** command.

```
install -v -m644 -D ../cracklib-words-20080507.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 &&
install -v -m755 -d /lib/cracklib &&
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 by issuing the following command:

```
make test
```



### Important

If you are installing CrackLib after your LFS system has been completed and you have the Shadow package installed, you must reinstall Shadow-4.1.5.1 if you wish to provide strong password support on your system. If you are now going to install the Linux-PAM-1.1.6 package, you may disregard this note as Shadow will be reinstalled after the Linux-PAM installation.

## Command Explanations

**--with-default-dict=/lib/cracklib/pw\_dict**: This parameter forces the installation of the CrackLib dictionary to the /lib hierarchy.

**--disable-static**: This switch prevents installation of static versions of the libraries.

**mv -v /usr/lib/libcrack.so.2\* /lib** and **ln -v -sf ../../lib/libcrack.so.2.8.1 ...**: These two commands move the libcrack.so.2.8.1 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

<b>Installed Programs:</b>	cracklib-check, cracklib-format, cracklib-packer, cracklib-unpacker and create-cracklib-dict
<b>Installed Libraries:</b>	libcraclib.so and the _cracklibmodule.so Python module
<b>Installed Directories:</b>	/lib/cracklib, /usr/share/dict and /usr/share/cracklib

## Short Descriptions

<b>create-cracklib-dict</b>	is used to create the CrackLib dictionary from the given word list(s).
<b>libcraclib.so</b>	provides a fast dictionary lookup method for strong password enforcement.

# Cyrus SASL-2.1.26

## 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.

This package is known to build and work properly using an LFS-7.3 platform.

## Package Information

- 
- Download (FTP): <ftp://ftp.cyrusimap.org/cyrus-sasl/cyrus-sasl-2.1.26.tar.gz>
- Download MD5 sum: a7f4e5e559a0e37b3ffc438c9456e425
- Download size: 5.0 MB
- Estimated disk space required: 30 MB
- Estimated build time: 0.5 SBU

## Additional Downloads

- Required patch: <http://www.linuxfromscratch.org/patches/blfs/svn/cyrus-sasl-2.1.26-fixes-1.patch>

## Cyrus SASL Dependencies

### Required

OpenSSL-1.0.1e

### Recommended

Berkeley DB-5.3.21

### Optional

Linux-PAM-1.1.6, MIT Kerberos V5-1.11.2, MySQL-5.6.11, OpenJDK-1.7.0.9, OpenLDAP-2.4.35, PostgreSQL-9.2.4, SQLite-3.7.16.2, *krb4* and *Dmalloc*

## Installation of Cyrus SASL

Install Cyrus SASL by running the following commands:

```
patch -Npl -i ../cyrus-sasl-2.1.26-fixes-1.patch &&
autoreconf -fi &&
pushd saslauthd
autoreconf -fi &&
popd
./configure --prefix=/usr \
            --sysconfdir=/etc \
            --with-dbpath=/var/lib/sasl/sasldb2 \
            --with-saslauthd=/var/run/saslauthd &&
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 -dm755 /usr/share/doc/cyrus-sasl-2.1.26 &&
install -v -m644 doc/{*.html,txt,fig},ONEWS,TODO} \
    saslauthd/LDAP_SASLAUTHD /usr/share/doc/cyrus-sasl-2.1.26 &&
install -v -dm700 /var/lib/sasl
```

## Command Explanations

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

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

**--with-dblib=gdbm**: This switch forces GDBM to be used instead of Berkeley DB.

**--with-ldap**: This switch enables the OpenLDAP support.

**--enable-ldapdb**: This switch enables the LDAPDB authentication backend. There is a circular dependency with this parameter. See <http://wiki.linuxfromscratch.org/blfs/wiki/cyrus-sasl> for a solution to this problem.

**--enable-java**: This switch enables compiling of the Java support libraries.

**--enable-login**: This option enables unsupported LOGIN authentication.

**--enable-ntlm**: This option enables unsupported NTLM authentication.

**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** or using the sasldb plugin. If you're not going to be running the daemon or using the plugins, you may omit the creation of this directory.

## Configuring Cyrus SASL

### Config Files

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

### Configuration Information

See <file:///usr/share/doc/cyrus-sasl-2.1.26/sysadmin.html> for information on what to include in the application configuration files.

See [file:///usr/share/doc/cyrus-sasl-2.1.26/LDAP\\_SASLAUTHD](file:///usr/share/doc/cyrus-sasl-2.1.26/LDAP_SASLAUTHD) for configuring **saslauthd** with OpenLDAP.

See <file:///usr/share/doc/cyrus-sasl-2.1.26/gssapi.html> for configuring **saslauthd** with Kerberos.

## Init Script

If you need to run the **saslauthd** daemon at system startup, install the `/etc/rc.d/init.d/saslauthd` init script included in the `blfs-bootscripts-20130512` package using the following command:

```
make install-saslauthd
```

### Note

You'll need to modify `/etc/sysconfig/saslauthd` and replace the `AUTHMECH` parameter with your desired authentication mechanism.

## Contents

**Installed Programs:** pluginviewer, saslauthd, sasldblistusers2, saslpasswd2 and testsaslauthd

**Installed Library:** libsasl2.so

**Installed Directories:** /usr/include/sasl, /usr/lib/sasl2, /usr/share/doc/cyrus-sasl-2.1.26 and /var/lib/sasl

## Short Descriptions

**pluginviewer** is used to list loadable SASL plugins and their properties.

**saslauthd** is the SASL authentication server.

**sasldblistusers2** is used to list the users in the SASL password database `sasldb2`.

**saslpasswd2** is used to set and delete a user's SASL password and mechanism specific secrets in the SASL password database `sasldb2`.

**testsaslauthd** is a test utility for the SASL authentication server.

**libsasl2.so** is a general purpose authentication library for server and client applications.

# GnuPG-1.4.13

## Introduction to GnuPG

The GnuPG package contains a public/private key encryptor. This is useful for signing files or emails as proof of identity and preventing tampering with the contents of the file or email. For a more enhanced version of GnuPG which supports S/MIME, see the GnuPG-2.0.20 package.

This package is known to build and work properly using an LFS-7.2 platform.

## Package Information

- Download (HTTP): <http://anduin.linuxfromscratch.org/sources/BLFS/svn/g/gnupg-1.4.13.tar.bz2>
- Download (FTP): <ftp://ftp.gnupg.org/gcrypt/gnupg/gnupg-1.4.13.tar.bz2>
- Download MD5 sum: c74249db5803f76f17fee9a201c0189f
- Download size: 3.6 MB
- Estimated disk space required: 49 MB
- Estimated build time: 0.4 SBU

## GnuPG Dependencies

### Optional

OpenLDAP-2.4.35, libusb-compat-0.1.4, cURL-7.30.0, an MTA, and *docbook-to-man*

## Installation of GnuPG

Install GnuPG by running the following commands:

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

If you have texlive-20120701 installed and you wish to create documentation in alternate formats, issue the following command:

```
make -C doc pdf html
```

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

Note that if you have already installed GnuPG 2, the instructions below will overwrite /usr/share/man/man1/gpg-zip.1. Now, as the **root** user:

```
make install &&

install -v -m755 -d /usr/share/doc/gnupg-1.4.13 &&
cp      -v          /usr/share/gnupg/FAQ \
                  /usr/share/doc/gnupg-1.4.13 &&
install -v -m644    doc/{highlights-1.4.txt,OpenPGP,samplekeys.asc,DETAILS} \
                  /usr/share/doc/gnupg-1.4.13
```

If you created alternate formats of the documentation, install it using the following command as the **root** user:

```
cp -v -R doc/gnupg1.{html,pdf} /usr/share/doc/gnupg-1.4.13
```

## Command Explanations

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

## Contents

<b>Installed Programs:</b>	gpg, gpg-zip, gpgsplit, and gpgv
<b>Installed Libraries:</b>	None
<b>Installed Directories:</b>	/usr/lib/gnupg, /usr/share/gnupg and /usr/share/doc/gnupg-1.4.13

## Short Descriptions

<b>gpg</b>	is the backend (command-line interface) for this OpenPGP implementation.
<b>gpg-zip</b>	shell script that implements a gpg-ized version of <b>tar</b> .
<b>gpgsplit</b>	separates key rings.
<b>gpgv</b>	is a verify only version of <b>gpg</b> .

# GnuPG-2.0.20

## Introduction to GnuPG 2

The GnuPG 2 package is GNU's tool for secure communication and data storage. It can be used to encrypt data and to create digital signatures. It includes an advanced key management facility and is compliant with the proposed OpenPGP Internet standard as described in RFC2440 and the S/MIME standard as described by several RFCs. GnuPG 2 is the stable version of GnuPG integrating support for OpenPGP and S/MIME. It does not conflict with an installed GnuPG-1.4.13 OpenPGP-only version.

This package is known to build and work properly using an LFS-7.3 platform.

### Package Information

- 
- Download (FTP): <ftp://ftp.gnupg.org/gcrypt/gnupg/gnupg-2.0.20.tar.bz2>
- Download MD5 sum: 9d18ee71bb0b10d40d1c8a393bdd7a89
- Download size: 4.1 MB
- Estimated disk space required: 90 MB
- Estimated build time: 0.9 SBU

### GnuPG 2 Dependencies

#### Required

Pth-2.0.7, Libassuan-2.1.0, libgcrypt-1.5.2, and Libksba-1.3.0

#### Recommended

PIN-Entry-0.8.3 (Run-time requirement for most of the package's functionality)

#### Optional

OpenLDAP-2.4.35, libusb-compat-0.1.4, cURL-7.30.0, *GNU adns*, and an MTA

## Installation of GnuPG 2

Install GnuPG 2 by running the following commands:

```
./configure --prefix=/usr \
            --libexecdir=/usr/lib/gnupg2 \
            --docdir=/usr/share/doc/gnupg-2.0.20 &&
make &&

makeinfo --html --no-split -o doc/gnupg_nochunks.html doc/gnupg.texi &&
makeinfo --plaintext          -o doc/gnupg.txt                  doc/gnupg.texi
```

If you have texlive-20120701 installed and you wish to create documentation in alternate formats, issue the following commands:

```
make -C doc pdf ps html
```

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

Note that if you have already installed GnuPG, the instructions below will overwrite `/usr/share/man/man1/gpg-zip.1`. Now, as the `root` user:

```
make install &&

install -v -m755 -d /usr/share/doc/gnupg-2.0.20/html &&
install -v -m644 doc/gnupg_nochunks.html \
           /usr/share/doc/gnupg-2.0.20/gnupg.html &&
install -v -m644 doc/*.{texi,texinfo} doc/gnupg.txt \
           /usr/share/doc/gnupg-2.0.20
```

If you created alternate formats of the documentation, install it using the following command as the `root` user:

```
install -v -m644 doc/gnupg.html/* \
           /usr/share/doc/gnupg-2.0.20/html &&
install -v -m644 doc/gnupg.{pdf,dvi,ps} \
           /usr/share/doc/gnupg-2.0.20
```

## Command Explanations

`--libexecdir=/usr/lib/gnupg2`: This switch creates a `gnupg` directory in `/usr/lib` instead of `/usr/libexec`.

`--docdir=/usr/share/doc/gnupg-2.0.20`: This switch changes the default docdir to `/usr/share/doc/gnupg-2.0.20`.

`--enable-symcryptrun`: This switch enables building the `symcryptrun` program.

## Contents

<b>Installed Programs:</b>	addgnupghome, applygnupgdefaults, gpg-agent, gpg-connect-agent, gpg2, gpgconf, gpgkey2ssh, gpparsemail, gpgsm, gpgsm-gencert.sh, gpgv2, kbxutil, scdaemon, symcryptrun, and watchgnupg
<b>Installed Libraries:</b>	None
<b>Installed Directories:</b>	<code>/usr/lib/gnupg2</code> , <code>/usr/share/gnupg</code> and <code>/usr/share/doc/gnupg-2.0.20</code>

## Short Descriptions

<b>addgnupghome</b>	is used to create and populate user's <code>~/.gnupg</code> directories
<b>applygnupgdefaults</b>	is a wrapper script used to run <b>gpgconf</b> with the <code>--apply-defaults</code> parameter on all user's GnuPG home directories.
<b>gpg-agent</b>	is a daemon used to manage secret (private) keys independently from any protocol. It is used as a backend for <b>gpg</b> and <b>gpgsm</b> as well as for a couple of other utilities.
<b>gpg-connect-agent</b>	is a utility used to communicate with a running <b>gpg-agent</b> .
<b>gpg2</b>	is the OpenPGP part of the GNU Privacy Guard (GnuPG). It is a tool used to provide digital encryption and signing services using the OpenPGP standard.
<b>gpgconf</b>	is a utility used to automatically and reasonably safely query and modify configuration files in the <code>~/.gnupg</code> home directory. It is designed not to be invoked manually by the user, but automatically by graphical user interfaces.

<b>gpgparsemail</b>	is a utility currently only useful for debugging. Run it with <code>--help</code> for usage information.
<b>gpgsm</b>	is a tool similar to <b>gpg</b> used to provide digital encryption and signing services on X.509 certificates and the CMS protocol. It is mainly used as a backend for S/MIME mail processing.
<b>gpgsm-gencert.sh</b>	is a simple tool used to interactively generate a certificate request which will be printed to stdout.
<b>gpgv2</b>	is a verify only version of <b>gpg2</b> .
<b>kbxutil</b>	is used to list, export and import Keybox data.
<b>scdaemon</b>	is a daemon used to manage smartcards. It is usually invoked by <b>gpg-agent</b> and in general not used directly.
<b>symcryptrun</b>	is a simple symmetric encryption tool.
<b>watchgnupg</b>	is used to listen to a Unix Domain socket created by any of the GnuPG tools.

# GnuTLS-3.2.0

## Introduction to GnuTLS

The GnuTLS package contains libraries and userspace tools which provide a secure layer over a reliable transport layer. Currently the GnuTLS library implements the proposed standards by the IETF's TLS working group. Quoting from the TLS protocol specification:

“The TLS protocol provides communications privacy over the Internet. The protocol allows client/server applications to communicate in a way that is designed to prevent eavesdropping, tampering, or message forgery.”

GnuTLS provides support for TLS 1.1, TLS 1.0 and SSL 3.0 protocols, TLS extensions, including server name and max record size. Additionally, the library supports authentication using the SRP protocol, X.509 certificates and OpenPGP keys, along with support for the TLS Pre-Shared-Keys (PSK) extension, the Inner Application (TLS/IA) extension and X.509 and OpenPGP certificate handling.

This package is known to build and work properly using an LFS-7.3 platform.

## Package Information

- 
- Download (FTP): <ftp://ftp.gnutls.org/gcrypt/gnutls/v3.2/gnutls-3.2.0.tar.xz>
- Download MD5 sum: e0cba4ddd923420026ff9739b3bc069a
- Download size: 4.9 MB
- Estimated disk space required: 130 MB
- Estimated build time: 0.8 SBU (additional 3.0 SBU if running the testsuite)

## GnuTLS Dependencies

### Required

Nettle-2.7

### Recommended

Certificate Authority Certificates and libtasn1-3.3

### Optional

GTK-Doc-1.18, Guile-2.0.9, libidn-1.26, p11-kit-0.18.2, *Unbound* (to build the DANE library and requires *ldns*), and *Valgrind* (used during the test suite)

Note that if you do not install libtasn1-3.3, an older version shipped in the GnuTLS tarball will be used instead.

## Installation of GnuTLS

Install GnuTLS by running the following commands:

```
./configure --prefix=/usr      \
            --disable-static \
            --with-default-trust-store-file=/etc/ssl/ca-bundle.crt &&
make
```

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

Now, as the root user:

```
make install
```

If you did not pass the `--enable-gtk-doc` parameter to the **configure** script, install the API documentation to the `/usr/share/gtk-doc/html/gnutls` directory using the following command as the root user:

```
make -C doc/reference install-data-local
```

## Command Explanations

`--with-default-trust-store-file=/etc/ssl/ca-bundle.crt`: This switch tells **configure** where to find the CA Certificates.

`--disable-static`: This switch prevents installation of static versions of the libraries.

`--enable-gtk-doc`: Use this parameter if GTK-Doc is installed and you wish to rebuild and install the API documentation.

## Contents

<b>Installed Programs:</b>	certtool, crywrap, danetool, gnutls-cli, gnutls-cli-debug, gnutls-serv, ocsptool, p11tool, psktool and srptool
<b>Installed Libraries:</b>	libgnutls.so, libgnutls-openssl.so, libgnutls-xssl.so and libgnutlsxx.so
<b>Installed Directories:</b>	/usr/include/gnutls and /usr/share/gtk-doc/html/gnutls

## Short Descriptions

<b>certtool</b>	is used to generate X.509 certificates, certificate requests, and private keys.
<b>crywrap</b>	is a simple wrapper that waits for TLS/SSL connections, and proxies them to an unencrypted location.
<b>danetool</b>	is a tool used to generate and check DNS resource records for the DANE protocol.
<b>gnutls-cli</b>	is a simple client program to set up a TLS connection to some other computer.
<b>gnutls-cli-debug</b>	is a simple client program to set up a TLS connection to some other computer and produces very verbose progress results.
<b>gnutls-serv</b>	is a simple server program that listens to incoming TLS connections.
<b>ocsptool</b>	is a program that can parse and print information about OCSP requests/responses, generate requests and verify responses.
<b>p11tool</b>	is a program that allows handling data from PKCS #11 smart cards and security modules.
<b>psktool</b>	is a simple program that generates random keys for use with TLS-PSK.
<b>srptool</b>	is a simple program that emulates the programs in the Stanford SRP (Secure Remote Password) libraries using GnuTLS.
<b>libgnutls.so</b>	contains the core API functions and X.509 certificate API functions.

# GPGME-1.4.1

## Introduction to GPGME

The GPGME package is a C language library that allows to add support for cryptography to a program. It is designed to make access to public key crypto engines like GnuPG or GpgSM easier for applications. GPGME provides a high-level crypto API for encryption, decryption, signing, signature verification and key management.

This package is known to build and work properly using an LFS-7.3 platform.

## Package Information

- 
- Download (FTP): <ftp://ftp.gnupg.org/gcrypt/gpgme/gpgme-1.4.1.tar.bz2>
- Download MD5 sum: 07f1c0eb6596a94efa3ffb75e74bfbba
- Download size: 940 KB
- Estimated disk space required: 23 MB
- Estimated build time: 0.3 SBU

## GPGME Dependencies

### Required

Libassuan-2.1.0

### Optional

GnuPG-1.4.13 or GnuPG-2.0.20 (used during the testsuite)

## Installation of GPGME

Install GPGME by running the following commands:

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

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

Now, as the root user:

```
make install
```

## Contents

<b>Installed Program:</b>	gpgme-config
<b>Installed Libraries:</b>	libgpgme-pthread.so and libgpgme.so
<b>Installed Directory:</b>	/usr/share/common-lisp/source/gpgme

## Short Descriptions

libgpgme-pthread.so	contains the GPGME API functions for applications using pthread.
libgpgme.so	contains the GPGME API functions.

# Iptables-1.4.18

## Introduction to Iptables

The next part of this chapter deals with firewalls. The principal firewall tool for Linux is Iptables. You will need to install Iptables if you intend on using any form of a firewall.

This package is known to build and work properly using an LFS-7.3 platform.

### Package Information

- Download (HTTP): <http://www.netfilter.org/projects/iptables/files/iptables-1.4.18.tar.bz2>
- Download (FTP): <ftp://ftp.netfilter.org/pub/iptables/iptables-1.4.18.tar.bz2>
- Download MD5 sum: a819199d5ec013b82da13a8ffba857e
- Download size: 532 KB
- Estimated disk space required: 20 MB
- Estimated build time: 0.3 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 Networking Support  $\Rightarrow$  Networking Options  $\Rightarrow$  Network Packet Filtering Framework.

## Installation of Iptables



### Note

The installation below does not include building some specialized extension libraries which require the raw headers in the Linux source code. If you wish to build the additional extensions (if you aren't sure, then you probably don't), you can look at the `INSTALL` file to see an example of how to change the `KERNEL_DIR=` parameter to point at the Linux source code. Note that if you upgrade the kernel version, you may also need to recompile Iptables and that the BLFS team has not tested using the raw kernel headers.

For some non-x86 architectures, the raw kernel headers may be required. In that case, modify the `KERNEL_DIR=` parameter to point at the Linux source code.

Install Iptables by running the following commands:

```
./configure --prefix=/usr \
            --exec-prefix= \
            --bindir=/usr/bin \
            --with-xtlibdir=/lib/xtables \
            --with-pkgconfigdir=/usr/lib/pkgconfig \
            --enable-libipq \
            --enable-devel &&
make
```

This package does not come with a test suite.

Now, as the root user:

```
make install &&
ln -sfv ../../sbin/xtables-multi /usr/bin/iptables-xml &&
for file in libip4tc libip6tc libipq libiptc libxtables
do
    ln -sfv ../../lib/`readlink /lib/${file}.so` /usr/lib/${file}.so &&
    rm -v /lib/${file}.so &&
    mv -v /lib/${file}.la /usr/lib &&
    sed -i "s@libdir='@&/usr@g" /usr/lib/${file}.la
done
```

## Command Explanations

**--exec-prefix=**: Ensure all binaries and libraries end up in / directory tree.

**--with-xtlibdir=/lib/xtables**: Ensure all Iptables modules are installed in the /lib/xtables directory.

**--with-pkgconfigdir=/usr/lib/pkgconfig**: Ensure all the pkgconfig files are in the standard location.

**--enable-libipq**: This switch enables building of libipq.so which can be used by some packages outside of BLFS.

**--enable-devel**: This switch enables installation of Iptables development headers that can be used by some packages outside of BLFS.

**ln -sfv ../../sbin/xtables-multi /usr/bin/iptables-xml**: Ensure the symbolic link for **iptables-xml** is relative.

## 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-20130512 package.

```
make install-iptables
```

## Contents

<b>Installed Programs:</b>	ip6tables, ip6tables-restore, ip6tables-save, iptables, iptables-restore, iptables-save, iptables-xml and xtables-multi
<b>Installed Libraries:</b>	libip4tc.so, libip6tc.so, libipq.so, libiptc.so and libxtables.so
<b>Installed Directories:</b>	/lib/xtables and /usr/include/libiptc

## Short Descriptions

<b>iptables</b>	is used to set up, maintain, and inspect the tables of IP packet filter rules in the Linux kernel.
<b>iptables-restore</b>	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.

**iptables-xml**

is used to convert the output of **iptables-save** to an XML format. Using the `iptables.xslt` stylesheet converts the XML back to the format of **iptables-restore**.

**ip6tables\***

are a set of commands for IPV6 that parallel the iptables commands above.

# 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.iptables

# Insert connection-tracking modules
# (not needed if built into the kernel)
modprobe nf_conntrack
modprobe xt_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
echo 0 > /proc/sys/net/ipv4/conf/default/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/default/accept_redirects

# Do not send Redirect Messages
echo 0 > /proc/sys/net/ipv4/conf/all/send_redirects
echo 0 > /proc/sys/net/ipv4/conf/default/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
echo 1 > /proc/sys/net/ipv4/conf/default/rp_filter

# Log packets with impossible addresses.
echo 1 > /proc/sys/net/ipv4/conf/all/log_martians
echo 1 > /proc/sys/net/ipv4/conf/default/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 conntrack --ctstate 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 [104].

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.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 nf_conntrack
modprobe nf_conntrack_ftp
modprobe xt_conntrack
modprobe xt_LOG
modprobe xt_state

# 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/default/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/default/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 conntrack --ctstate ESTABLISHED,RELATED -j ACCEPT
iptables -A FORWARD -i ! ppp+ -m conntrack --ctstate 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 conntrack --ctstate 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 conntrack --ctstate 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) insert these rules at the top of the chain:

```
iptables -I INPUT 0 -p tcp -m conntrack --ctstate INVALID \
-j LOG --log-prefix "FIREWALL: INVALID"
iptables -I INPUT 1 -p tcp -m conntrack --ctstate 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.linuxsecurity.com/docs/*  
*www.little-idiot.de/firewall (German & outdated, but very comprehensive)*  
*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.insecure.org/reading.html*

# libcap2-2.22

## Introduction to libcap2

The libcap2 package implements the user-space interfaces to the POSIX 1003.1e capabilities available in Linux kernels. These capabilities are a partitioning of the all powerful root privilege into a set of distinct privileges.

This package is known to build and work properly using an LFS-7.3 platform.

## Package Information

- Download (HTTP): [http://ftp.de.debian.org/debian/pool/main/libc/libcap2/libcap2\\_2.22.orig.tar.gz](http://ftp.de.debian.org/debian/pool/main/libc/libcap2/libcap2_2.22.orig.tar.gz)
- Download (FTP): [ftp://ftp.de.debian.org/debian/pool/main/libc/libcap2/libcap2\\_2.22.orig.tar.gz](ftp://ftp.de.debian.org/debian/pool/main/libc/libcap2/libcap2_2.22.orig.tar.gz)
- Download MD5 sum: b4896816b626bea445f0b3849bdd4077
- Download size: 72 KB
- Estimated disk space required: 1.3 MB
- Estimated build time: less than 0.1 SBU

## libcap2 Dependencies

### Required

attr-2.4.46

### Optional

Linux-PAM-1.1.6

## Installation of libcap2

Install libcap2 by running the following commands:

```
make
```

This package does not come with a test suite.

If you want to disable installing the static library, use this sed:

```
sed -i '/install.*STALIBNAME/ s/^/#/' libcap/Makefile
```

Now, as the root user:

```
make RAISE_SETFCAP=no install
```

## Command Explanations

**RAISE\_SETFCAP=no**: This parameter skips trying to use setcap on itself. This avoids an installation error if the kernel or file system do not support extended capabilities.

## Contents

<b>Installed Programs:</b>	capsh, getcap, getpcaps, and setcap
<b>Installed Library:</b>	libcap.{so,a}
<b>Installed Directories:</b>	None

## Short Descriptions

<b>capsh</b>	is a shell wrapper to explore and constrain capability support.
<b>getcap</b>	examines file capabilities.
<b>getpcaps</b>	displays the capabilities on the queried process(es).
<b>setcap</b>	sets file file capabilities.
<b>libcap2.{so,a}</b>	contains the libcap2 API functions.

# liboauth-1.0.1

## Introduction to liboauth

liboauth is a collection of POSIX-C functions implementing the OAuth Core RFC 5849 standard. Liboauth provides functions to escape and encode parameters according to OAuth specification and offers high-level functionality to sign requests or verify OAuth signatures as well as perform HTTP requests.

This package is known to build and work properly using an LFS-7.3 platform.

## Package Information

- Download (HTTP): <http://downloads.sourceforge.net/liboauth/liboauth-1.0.1.tar.gz>
- 
- Download MD5 sum: 46881d24bc7107dc0c66ef250f03d95e
- Download size: 492 KB
- Estimated disk space required: 3.5 MB
- Estimated build time: less than 0.1 SBU

## liboauth Dependencies

### Required

cURL-7.30.0 and OpenSSL-1.0.1e or NSS-3.14.3

### Optional

Doxygen-1.8.4 (to build documentation).

## Installation of liboauth

Install liboauth by running the following commands:

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

If you have Doxygen-1.8.4, issue **make dox** to build documentation.

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

Now, as the root user:

```
make install
```

If you have built documentation previously, install it with following commands as the root user:

```
mkdir -pv /usr/share/doc/liboauth-1.0.1 &&
cp -rv doc/html/* /usr/share/doc/liboauth-1.0.1
```

## Command Explanations

**--disable-static**: This switch prevents installation of static versions of the libraries.

**--enable-nss**: Use this switch if you want to use Mozilla NSS instead of OpenSSL.

## Contents

<b>Installed Programs:</b>	None
<b>Installed Library:</b>	liboauth.so
<b>Installed Directory:</b>	/usr/share/doc/liboauth-1.0.1

## Short Descriptions

`liboauth.so` provides functions to escape and encode strings according to OAuth specifications and offers high-level functionality built on top to sign requests or verify signatures using either NSS or OpenSSL for calculating the hash/signatures.

# libpwquality-1.2.1

## Introduction to libpwquality

The libpwquality package contains a library used for password quality checking and generation of random passwords that pass the checks.

This package is known to build and work properly using an LFS-7.2 platform.

## Package Information

- Download (HTTP): <https://fedorahosted.org/releases/l/i/libpwquality/libpwquality-1.2.1.tar.bz2>
- 
- Download MD5 sum: beb56c9028a713d936e04cc3c50c541d
- Download size: 352 KB
- Estimated disk space required: 4.5 MB
- Estimated build time: less than 0.1 SBU

## libpwquality Dependencies

### Required

CrackLib-2.8.22

### Optional

Linux-PAM-1.1.6 and Python-2.7.5

## Installation of libpwquality

Install libpwquality by running the following commands:

```
./configure --prefix=/usr \
            --sysconfdir=/etc \
            --with-securedir=/lib/security \
            --disable-python-bindings \
            --disable-static &&
make
```

This package does not come with a test suite.

Now, as the root user:

```
make install
```

## Command Explanations

**--disable-python-bindings:** This switch disables building of the optional Python bindings. Remove it if you have installed Python.

**--disable-static:** This switch prevents installation of static versions of the libraries.

## Contents

<b>Installed Programs:</b>	pwmake and pwscore
<b>Installed Libraries:</b>	libpwquality.so and pam_pwquality.so
<b>Installed Directories:</b>	None

## Short Descriptions

<b>pwmake</b>	is a simple configurable tool for generating random and relatively easily pronounceable passwords.
<b>pwscore</b>	is a simple tool for checking quality of a password.
<b>libpwquality.so</b>	contains API functions for checking the password quality.
<b>pam_pwquality.so</b>	is a Linux PAM module used to perform password quality checking.

# Linux-PAM-1.1.6

## Introduction to Linux PAM

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

This package is known to build and work properly using an LFS-7.2 platform.

### Package Information

- Download (HTTP): <http://linux-pam.org/library/Linux-PAM-1.1.6.tar.bz2>
- 
- Download MD5 sum: 7b73e58b7ce79ffa321d408de06db2c4
- Download size: 1.1 MB
- Estimated disk space required: 28 MB
- Estimated build time: 0.3 SBU

## Additional Downloads

### Optional Documentation

- Download (HTTP): <http://linux-pam.org/documentation/Linux-PAM-1.1.6-docs.tar.bz2>
- Download MD5 sum: 43d19ccf40c1feb074e29922626f4971
- Download size 144 KB

## Linux PAM Dependencies

### Optional

Berkeley DB-5.3.21, CrackLib-2.8.22, libtirpc-0.2.3 and *Prelude*

### Optional (To Rebuild the Documentation)

docbook-xml-4.5, docbook-xsl-1.77.1, fop-1.1, libxslt-1.1.28 and w3m-0.5.3

## Installation of Linux PAM

If you downloaded the documentation, unpack the tarball by issuing the following command.

```
tar -xf ../Linux-PAM-1.1.6-docs.tar.bz2 --strip-components=1
```

Install Linux PAM by running the following commands:

```
./configure --prefix=/usr \
            --sysconfdir=/etc \
            --docdir=/usr/share/doc/Linux-PAM-1.1.6 \
            --disable-nis &&
make
```

To test the results, a configuration file must be created. This file will be removed after the tests have completed. Ensure there are no errors produced by the tests before continuing the installation. First create the configuration file by issuing the following commands as the `root` user:

```
install -v -m755 -d /etc/pam.d &&

cat > /etc/pam.d/other << "EOF"
auth      required      pam_deny.so
account   required      pam_deny.so
password  required      pam_deny.so
session   required      pam_deny.so
EOF
```

Now run the tests by issuing **make check**.

Remove the configuration file created earlier by issuing the following command as the `root` user:

```
rm -rfv /etc/pam.d
```

Now, as the `root` user:

```
make install &&
chmod -v 4755 /sbin/unix_chkpwd
```

## Command Explanations

**--disable-nis**: This switch disables building of the Network Information Service/Yellow Pages support in `pam_unix` and `pam_access` modules. Remove it if you have installed `libtirpc-0.2.3`.

**chmod -v 4755 /sbin/unix\_chkpwd**: The `unix_chkpwd` helper program must be setuid so that non-root processes can access the shadow file.

## Configuring Linux-PAM

### Config Files

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

### Configuration Information

Configuration information is placed in `/etc/pam.d/`. Below is an example file:

```
# 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
```

The PAM man page (**man pam**) provides a good starting point for descriptions of fields and allowable entries. The *Linux-PAM System Administrators' Guide* is recommended for additional information.

Refer to <http://debian.securedservers.com/kernel/pub/linux/libs/pam/modules.html> for a list of various third-party modules available.



## Important

You should now reinstall the Shadow-4.1.5.1 package.

## Contents

<b>Installed Program:</b>	mkhomedir_helper, pam_tally, pam_tally2, pam_timestamp_check, unix_chkpwd and unix_update
<b>Installed Libraries:</b>	libpam.so, libpamc.so and libpam_misc.so
<b>Installed Directories:</b>	/etc/security, /lib/security, /usr/include/security and /usr/share/doc/Linux-PAM-1.1.6

## Short Descriptions

<b>mkhomedir_helper</b>	is a helper binary that creates home directories.
<b>pam_tally</b>	is used to interrogate and manipulate the login counter file.
<b>pam_tally2</b>	is used to interrogate and manipulate the login counter file, but does not have some limitations that <b>pam_tally</b> does.
<b>pam_timestamp_check</b>	is used to check if the default timestamp is valid
<b>unix_chkpwd</b>	is a helper binary that verifies the password of the current user.
<b>unix_update</b>	is a helper binary that updates the password of a given user.
<b>libpam.so</b>	provides the interfaces between applications and the PAM modules.

# MIT Kerberos V5-1.11.2

## Introduction to MIT Kerberos V5

MIT Kerberos V5 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.

This package is known to build and work properly using an LFS-7.2 platform.

### Package Information

- Download (HTTP): <http://web.mit.edu/kerberos/www/dist/krb5/1.11/krb5-1.11.2-signed.tar>
- 
- Download MD5 sum: d7a63c9c68b65efa71a615c67b6edf70
- Download size: 12 MB
- Estimated disk space required: 140 MB (Additional 20 MB if running the testsuite)
- Estimated build time: 1.5 SBU (additional 3.0 SBU if running the testsuite)

## MIT Kerberos V5 Dependencies

### Optional

DejaGnu-1.5.1 (required to run the testsuite), keyutils-1.5.5, OpenLDAP-2.4.35, Python-2.7.5 (used during the testsuite) and rpcbind-0.2.0 (used during the testsuite)



### Note

Some sort of time synchronization facility on your system (like ntp-4.2.6p5) is required since Kerberos won't authenticate if there is a time difference between a kerberized client and the KDC server.

## Installation of MIT Kerberos V5

MIT Kerberos V5 is distributed in a TAR file containing a compressed TAR package and a detached PGP ASC file. You'll need to unpack the distribution tar file, then unpack the compressed tar file before starting the build.

After unpacking the distribution tarball and if you have GnuPG-1.4.13 installed, you can authenticate the package. First, check the contents of the file `krb5-1.11.2.tar.gz.asc`.

```
gpg --verify krb5-1.11.2.tar.gz.asc krb5-1.11.2.tar.gz
```

You will probably see output similar to:

```
gpg: Signature made Wed Aug  8 22:29:58 2012 GMT using RSA key ID F376813D
gpg: Can't check signature: public key not found
```

You can import the public key with:

```
gpg gpg --keyserver pgp.mit.edu --recv-keys 0xF376813D
```

Now re-verify the package with the first command above. You should get a indication of a good signature, but the key will still not be certified with a trusted signature. Trusting the downloaded key is a separate operation but it is up to you to determine the level of trust.

Build MIT Kerberos V5 by running the following commands:

```
cd src &&
sed -e "s@python2.5/Python.h@& python2.7/Python.h@g" \
    -e "s@-lpython2.5]@&, \n AC_CHECK_LIB(python2.7,main,[PYTHON_LIB=-lpython2.7])" \
    -i configure.in &&
sed -e "s@interp->result@Tcl_GetStringResult(interp)@g" \
    -i kadmin/testing/util/tcl_kadm5.c &&
autoconf &&
./configure CPPFLAGS="-I/usr/include/et -I/usr/include/ss" \
    --prefix=/usr \
    --sysconfdir=/etc \
    --localstatedir=/var/lib \
    --with-system-et \
    --with-system-ss \
    --enable-dns-for-realm &&
make
```

The regression test suite is designed to be run after the installation has been completed.

Now, as the root user:

```
make install &&

for LIBRARY in gssapi_krb5 gssrpc k5crypto kadm5clnt_mit kadm5srv_mit \
    kdb5 kdb_ldap krb5 krb5support verto ; do
    [ -e /usr/lib/lib$LIBRARY.so.*.* ] && chmod -v 755 /usr/lib/lib$LIBRARY.so.*.* &&
done &&

mv -v /usr/lib/libkrb5.so.3*           /lib &&
mv -v /usr/lib/libk5crypto.so.3*        /lib &&
mv -v /usr/lib/libkrb5support.so.0*     /lib &&

ln -v -sf ../../lib/libkrb5.so.3.3      /usr/lib/libkrb5.so      &&
ln -v -sf ../../lib/libk5crypto.so.3.1    /usr/lib/libk5crypto.so  &&
ln -v -sf ../../lib/libkrb5support.so.0.1 /usr/lib/libkrb5support.so &&

mv -v /usr/bin/ksu /bin &&
chmod -v 755 /bin/ksu    &&

install -v -dm755 /usr/share/doc/krb5-1.11.2 &&
cp -vfr ../doc/* /usr/share/doc/krb5-1.11.2 &&

unset LIBRARY
```

To test the installation, you must have DejaGnu-1.5.1 installed and issue: **make check**.

## Command Explanations

**sed -e ...:** First **sed** fixes Python detection and second one fixes build with Tcl 8.6.

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

**--with-system-et:** This switch causes the build to use the system-installed versions of the error-table support software.

**--with-system-ss:** This switch causes the build to use the system-installed versions of the subsystem command-line interface software.

**--localstatedir=/var/lib:** This parameter is used so that the Kerberos variable run-time data is located in /var/lib instead of /usr/var.

**mv -v /usr/bin/ksu /bin:** Moves the **ksu** program to the /bin directory so that it is available when the /usr filesystem is not mounted.

**--with-ldap:** Use this switch if you want to compile OpenLDAP database backend module.

## Configuring MIT Kerberos V5

### Config Files

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

### Configuration Information

#### Kerberos Configuration



#### Tip

You should consider installing some sort of password checking dictionary so that you can configure the installation to only accept strong passwords. A suitable dictionary to use is shown in the CrackLib-2.8.22 instructions. Note that only one file can be used, but you can concatenate many files into one. The configuration file shown below assumes you have installed a dictionary to /usr/share/dict/words.

Create the Kerberos configuration file with the following commands issued by the `root` user:

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

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

[realms]
    <LFS.ORG> = {
        kdc = <belgarath.lfs.org>
        admin_server = <belgarath.lfs.org>
        dict_file = /usr/share/dict/words
    }

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

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

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

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

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

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

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

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

Create the KDC database:

```
kdb5_util create -r <LFS.ORG> -s
```

Now you should populate the database with principals (users). For now, just use your regular login name or `root`.

```
kadmin.local
kadmin: add_policy dict-only
kadmin: addprinc -policy dict-only <loginname>
```

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

```
kadmin: addprinc -randkey host/<belgarath.lfs.org>
```

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

```
kadmin: ktadd host/<belgarath.lfs.org>
```

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

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

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

Attempt to get a ticket with the following command:

```
kinit <loginname>
```

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

```
klist
```

Information about the ticket should be displayed on the screen.

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

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

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

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

## Additional Information

For additional information consult *Documentation for krb5-1.11.2* on which the above instructions are based.

## Init Script

If you want to start Kerberos services at boot, install the /etc/rc.d/init.d/krb5 init script included in the blfs-bootscripts-20130512 package using the following command:

```
make install-krb5
```

## Contents

<b>Installed Programs:</b>	gss-client, gss-server, k5srvutil, kadmin, kadmin.local, kadminmind, kdb5_ldap_util, kdb5_util, kdestroy, kinit, klist, kpasswd, kprop, kpropd, krb5-config, krb5kdc, krb5-send-pr, ksu, kswitch, ktutil, kvno, sclient, sim_client, sim_server, sserver, uuclient and uuserver
<b>Installed Libraries:</b>	libgssapi_krb5.so, libgssrpc.so, libk5crypto.so, libkadm5clnt.so, libkadm5srv.so, libkdb5.so, libkdb_ldap.so, libkrb5.so, libkrb5support.so, and libverto.so
<b>Installed Directories:</b>	/usr/include/gssapi, /usr/include/gssrpc, /usr/include/kadm5, /usr/include/krb5, /usr/lib/krb5, /usr/share/doc/krb5-1.11.2, /usr/share/examples/krb5 and /var/lib/krb5kdc

## Short Descriptions

<b>k5srvutil</b>	is a host keytable manipulation utility.
<b>kadmin</b>	is an utility used to make modifications to the Kerberos database.
<b>kadmind</b>	is a server for administrative access to a Kerberos database.
<b>kdb5_util</b>	is the KDC database utility.
<b>kdestroy</b>	removes the current set of tickets.
<b>kinit</b>	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.
<b>klist</b>	reads and displays the current tickets in the credential cache.
<b>kpasswd</b>	is a program for changing Kerberos 5 passwords.
<b>kprop</b>	takes a principal database in a specified format and converts it into a stream of database records.
<b>kpropd</b>	receives a database sent by <b>kprop</b> and writes it as a local database.
<b>krb5-config</b>	gives information on how to link programs against libraries.
<b>krb5kdc</b>	is the Kerberos 5 server.
<b>ksu</b>	is the super user program using Kerberos protocol. Requires a properly configured /etc/shells and ~/ .k5login containing principals authorized to become super users.
<b>kswitch</b>	makes the specified credential cache the primary cache for the collection, if a cache collection is available.
<b>ktutil</b>	is a program for managing Kerberos keytabs.
<b>kvno</b>	prints keyversion numbers of Kerberos principals.
<b>sclient</b>	used to contact a sample server and authenticate to it using Kerberos 5 tickets, then display the server's response.
<b>sserver</b>	is the sample Kerberos 5 server.
<b>libgssapi_krb5.so</b>	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.
<b>libkadm5clnt.so</b>	contains the administrative authentication and password checking functions required by Kerberos 5 client-side programs.

libkadm5srv.so	contain the administrative authentication and password checking functions required by Kerberos 5 servers.
libkdb5.so	is a Kerberos 5 authentication/authorization database access library.
libkrb5.so	is an all-purpose Kerberos 5 library.

# Nettle-2.7

## Introduction to Nettle

The Nettle package contains the low-level cryptographic library that is designed to fit easily in many contexts.

This package is known to build and work properly using an LFS-7.3 platform.

## Package Information

- Download (HTTP): <http://ftp.gnu.org/gnu/nettle/nettle-2.7.tar.gz>
- Download (FTP): <ftp://ftp.gnu.org/gnu/nettle/nettle-2.7.tar.gz>
- Download MD5 sum: 2caa1bd667c35db71becb93c5d89737f
- Download size: 1.5 MB
- Estimated disk space required: 100 MB
- Estimated build time: 0.5 SBU

## Nettle Dependencies

### Optional

OpenSSL-1.0.1e

## Installation of Nettle

Install Nettle by running the following commands:

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

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

Now, as the root user:

```
make install &&
chmod -v 755 /usr/lib/libhogweed.so.2.4 /usr/lib/libnettle.so.4.6 &&
install -v -m755 -d /usr/share/doc/nettle-2.7 &&
install -v -m644 nettle.html /usr/share/doc/nettle-2.7
```

## Contents

<b>Installed Programs:</b>	nettle-hash, nettle-lfib-stream, pkcs1-conv and SEXP-conv
<b>Installed Libraries:</b>	libhogweed.{so,a} and libnettle.{so,a}
<b>Installed Directory:</b>	/usr/include/nettle

## Short Descriptions

<b>nettle-hash</b>	calculates a hash value using a specified algorithm.
<b>nettle-lfib-stream</b>	outputs a sequence of pseudorandom (non-cryptographic) bytes, using Knuth's lagged fibonacci generator. The stream is useful for testing, but should not be used to generate cryptographic keys or anything else that needs real randomness.

**pkcs1-conv**

converts private and public RSA keys from PKCS #1 format to SEXP format.

**sexp-conv**

converts an s-expression to a different encoding.

# NSS-3.14.3

## Introduction to NSS

The Network Security Services (NSS) package is a set of libraries designed to support cross-platform development of security-enabled client and server applications. Applications built with NSS can support SSL v2 and v3, TLS, PKCS #5, PKCS #7, PKCS #11, PKCS #12, S/MIME, X.509 v3 certificates, and other security standards. This is useful for implementing SSL and S/MIME or other Internet security standards into an application.

This package is known to build and work properly using an LFS-7.2 platform.

## Package Information

- Download (HTTP): [http://ftp.mozilla.org/pub.mozilla.org/security/nss/releases/NSS\\_3\\_14\\_3\\_RTM/src/nss-3.14.3.tar.gz](http://ftp.mozilla.org/pub.mozilla.org/security/nss/releases/NSS_3_14_3_RTM/src/nss-3.14.3.tar.gz)
- Download (FTP): [ftp://ftp.mozilla.org/pub.mozilla.org/security/nss/releases/NSS\\_3\\_14\\_3\\_RTM/src/nss-3.14.3.tar.gz](ftp://ftp.mozilla.org/pub.mozilla.org/security/nss/releases/NSS_3_14_3_RTM/src/nss-3.14.3.tar.gz)
- Download MD5 sum: b326c2be8df277f62fb9c65fb3428148
- Download size: 6.0 MB
- Estimated disk space required: 72 MB
- Estimated build time: 0.8 SBU

## Additional Downloads

- Required patch: <http://www.linuxfromscratch.org/patches/blfs/svn/nss-3.14.3-standalone-1.patch>

## NSS Dependencies

### Required

NSPR-4.9.6

### Recommended

SQLite-3.7.16.2

## Installation of NSS



### Note

This package does not support parallel build.

Install NSS by running the following commands:

```
patch -Np1 -i ../nss-3.14.3-standalone-1.patch &&
cd mozilla/security/nss &&
make nss_build_all BUILD_OPT=1 \
    NSPR_INCLUDE_DIR=/usr/include/nspr \
    USE_SYSTEM_ZLIB=1 \
    ZLIB_LIBS=-lz \
    $([ $(uname -m) = x86_64 ] && echo USE_64=1) \
    $([ -f /usr/include/sqlite3.h ] && echo NSS_USE_SYSTEM_SQLITE=1)
```

This package does not come with a test suite.

Now, as the root user:

```
cd ../../dist &&
install -v -m755 Linux*/lib/*.so /usr/lib &&
install -v -m644 Linux*/lib/{*.chk,libcrmf.a} /usr/lib &&
install -v -m755 -d /usr/include/nss &&
cp -v -RL {public,private}/nss/* /usr/include/nss &&
chmod 644 /usr/include/nss/* &&
install -v -m755 Linux*/bin/{certutil,nss-config,pk12util} /usr/bin &&
install -v -m644 Linux*/lib/pkgconfig/nss.pc /usr/lib/pkgconfig
```

## Command Explanations

**BUILD\_OPT=1**: This option is passed to **make** so that the build is performed with no debugging symbols built into the binaries and the default compiler optimizations are used.

**NSPR\_INCLUDE\_DIR=/usr/include/nspr**: This option sets the location of the nspr headers.

**USE\_SYSTEM\_ZLIB=1**: This option is passed to **make** to ensure that the libssl3.so library is linked to the system installed zlib instead of the in-tree version.

**ZLIB\_LIBS=-lz**: This option provides the linker flags needed to link to the system zlib.

**\$([ \$(uname -m) = x86\_64 ] && echo USE\_64=1)**: The **USE\_64=1** option is *required on x86\_64*, otherwise **make** will try (and fail) to create 32-bit objects. The **[ \$(uname -m) = x86\_64 ]** test ensures it has no effect on a 32 bit system.

**([ -f /usr/include/sqlite3.h ] && echo NSS\_USE\_SYSTEM\_SQLITE=1)**: This tests if sqlite is installed and if so it **echoes** the option **NSS\_USE\_SYSTEM\_SQLITE=1** to **make** so that libsoftokn3.so will link against the system version of sqlite.

## Contents

<b>Installed Programs:</b>	certutil, nss-config and pk12util
<b>Installed Libraries:</b>	libcrmf.a, libfreebl3.so, libnss3.so, libnssckbi.so, libnssdbm3.so, libnsssysinit.so, libnssutil3.so, libsmime3.so, libsoftokn3.so and libssl3.so
<b>Installed Directories:</b>	/usr/include/nss

## Short Descriptions

<b>certutil</b>	is the Mozilla Certificate Database Tool. It is a command-line utility that can create and modify the Netscape Communicator cert8.db and key3.db database files. It can also list, generate, modify, or delete certificates within the cert8.db file and create or change the password, generate new public and private key pairs, display the contents of the key database, or delete key pairs within the key3.db file.
<b>nss-config</b>	is used to determine the NSS library settings of the installed NSS libraries.
<b>pk12util</b>	is a tool for importing certificates and keys from pkcs #12 files into NSS or exporting them. It can also list certificates and keys in such files.

# OpenSSH-6.2p1

## 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. The **ssh** and **scp** commands are secure implementations of **telnet** and **rcp** respectively.

This package is known to build and work properly using an LFS-7.3 platform.

## Package Information

- Download (HTTP): <http://ftp.openbsd.org/pub/OpenBSD/OpenSSH/portable/openssh-6.2p1.tar.gz>
- Download (FTP): <ftp://ftp.openbsd.org/pub/OpenBSD/OpenSSH/portable/openssh-6.2p1.tar.gz>
- Download MD5 sum: 7b2d9dd75b5cf267ea1737ec75500316
- Download size: 1.2 MB
- Estimated disk space required: 32 MB (plus 10MB if running the tests)
- Estimated build time: 0.4 SBU (running the tests takes at least 10 minutes, irrespective of processor speed)

## OpenSSH Dependencies

### Required

OpenSSL-1.0.1e

### Optional

Linux-PAM-1.1.6, X Window System, MIT Kerberos V5-1.11.2, *libedit* (provides a command-line history feature to **sftp**), *OpenSC* and *libsectok*

### Optional Runtime (Used only to gather entropy)

OpenJDK-1.7.0.9, Net-tools-CVS\_20101030 and Sysstat-10.0.5.

## 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 issuing the following commands as the **root** user:

```
install -v -m700 -d /var/lib/sshd &&
chown -v 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
```

Install OpenSSH by running the following commands:

```
./configure --prefix=/usr \
            --sysconfdir=/etc/ssh \
            --datadir=/usr/share/sshd \
            --with-md5-passwords \
            --with-privsep-path=/var/lib/sshd &&
make
```

The testsuite requires an installed copy of **scp** to complete the multiplexing tests. To run the test suite, first copy the **scp** program to /usr/bin, making sure that you back up any existing copy first.

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

Now, as the **root** user:

```
make install &&
install -v -m755 -d /usr/share/doc/openssh-6.2p1 &&
install -v -m644 INSTALL LICENCE OVERVIEW README* \
/usr/share/doc/openssh-6.2p1
```

## Command Explanations

**--sysconfdir=/etc/ssh**: This prevents the configuration files from being installed in /usr/etc.

**--datadir=/usr/share/sshd**: This switch puts the Ssh.bin file (used for SmartCard authentication) in /usr/share/sshd.

**--with-md5-passwords**: This enables the use of MD5 passwords.

**--with-pam**: This parameter enables Linux-PAM support in the build.

**--with-xauth=/usr/bin/xauth**: Set the default location for the **xauth** binary for X authentication. Change the location if **xauth** will be installed to a different path. This can also be controlled from **sshd\_config** with the **XAuthLocation** keyword. You can omit this switch if Xorg is already installed.

**--with-kerberos5=/usr**: This option is used to include Kerberos 5 support in the build.

## 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
```

If you want to be able to log in without typing in your password, first create `~/.ssh/id_rsa` and `~/.ssh/id_rsa.pub` with **ssh-keygen** and then copy `~/.ssh/id_rsa.pub` to `~/.ssh/authorized_keys` on the remote computer that you want to log into. You'll need to change `REMOTE_HOSTNAME` for the hostname of the remote computer and you'll also need to enter your password for the `ssh` command to succeed:

```
ssh-keygen &&
public_key=$(cat ~/.ssh/id_rsa.pub)" &&
ssh REMOTE_HOSTNAME "echo ${public_key} >> ~/.ssh/authorized_keys" &&
unset public_key
```

Once you've got passwordless logins working it's actually more secure than logging in with a password (as the private key is much longer than most people's passwords). If you would like to now disable password logins, as the `root` user:

```
echo "PasswordAuthentication no" >> /etc/ssh/sshd_config &&
echo "ChallengeResponseAuthentication no" >> /etc/ssh/sshd_config
```

If you added LinuxPAM support and you want ssh to use it then you will need to add a configuration file for sshd and enable use of LinuxPAM. Note, ssh only uses PAM to check passwords, if you've disabled password logins these commands are not needed. If you want to use PAM issue the following commands as the `root` user:

```
sed 's@#/login@#/sshd@g' /etc/pam.d/login > /etc/pam.d/sshd &&
chmod 644 /etc/pam.d/sshd &&
echo "UsePAM yes" >> /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-20130512` package.

```
make install-sshd
```

## Contents

<b>Installed Programs:</b>	scp, sftp, sftp-server, slogin, ssh, sshd, ssh-add, ssh-agent, ssh-keygen, ssh-keyscan and ssh-keysign
<b>Installed Libraries:</b>	None
<b>Installed Directories:</b>	<code>/etc/ssh</code> , <code>/var/lib/sshd</code> , <code>/usr/lib/openssh</code> and <code>/usr/share/doc/openssh-6.2p1</code>

## Short Descriptions

<b>scp</b>	is a file copy program that acts like <b>rcp</b> except it uses an encrypted protocol.
<b>sftp</b>	is an FTP-like program that works over the SSH1 and SSH2 protocols.
<b>sftp-server</b>	is an SFTP server subsystem. This program is not normally called directly by the user.
<b>slogin</b>	is a symlink to <b>ssh</b> .
<b>ssh</b>	is an <b>rlogin/rsh</b> -like client program except it uses an encrypted protocol.
<b>sshd</b>	is a daemon that listens for <b>ssh</b> login requests.
<b>ssh-add</b>	is a tool which adds keys to the <b>ssh-agent</b> .

<b>ssh-agent</b>	is an authentication agent that can store private keys.
<b>ssh-keygen</b>	is a key generation tool.
<b>ssh-keyscan</b>	is a utility for gathering public host keys from a number of hosts.
<b>ssh-signkey</b>	is used by <b>ssh</b> to access the local host keys and generate the digital signature required during hostbased authentication with SSH protocol version 2. This program is not normally called directly by the user.

# OpenSSL-1.0.1e

## Introduction to OpenSSL

The OpenSSL package contains management tools and libraries relating to cryptography. These are useful for providing cryptography functions to other packages, such as OpenSSH, email applications and web browsers (for accessing HTTPS sites).

This package is known to build and work properly using an LFS-7.3 platform.

## Package Information

- Download (HTTP): <http://www.openssl.org/source/openssl-1.0.1e.tar.gz>
- Download (FTP): <ftp://ftp.openssl.org/source/openssl-1.0.1e.tar.gz>
- Download MD5 sum: 66bf6f10f060d561929de96f9dfe5b8c
- Download size: 4.3 MB
- Estimated disk space required: 55 MB
- Estimated build time: 1.5 SBU

## Additional Downloads

- Required patch: [http://www.linuxfromscratch.org/patches/blfs/svn/openssl-1.0.1e-fix\\_parallel\\_build-1.patch](http://www.linuxfromscratch.org/patches/blfs/svn/openssl-1.0.1e-fix_parallel_build-1.patch)

## OpenSSL Dependencies

### Optional

bc-1.06.95 (required for full coverage by the test suite during the build) and MIT Kerberos V5-1.11.2

## Installation of OpenSSL

Install OpenSSL with the following commands:

```
patch -Np1 -i ../openssl-1.0.1e-fix_parallel_build-1.patch &&
./config --prefix=/usr \
          --openssldir=/etc/ssl \
          shared \
          zlib-dynamic &&
make
```

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

If you want to disable installing the static libraries, use this sed:

```
sed -i 's# libcrypto.a##;s# libssl.a##' Makefile
```

Now, as the root user:

```
make MANDIR=/usr/share/man MANSUFFIX=ssl install &&
install -dv -m755 /usr/share/doc/openssl-1.0.1e &&
cp -vfr doc/*      /usr/share/doc/openssl-1.0.1e
```

## Command Explanations

*shared*: This parameter forces the creation of shared libraries along with the static libraries.

*zlib-dynamic*: This parameter adds compression/decompression functionality using the `libz` library.

*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 MANSUFFIX=ssl install**: This command installs OpenSSL with the man pages in `/usr/share/man` instead of `/etc/ssl/man` and appends "ssl" suffix to the manual page names to avoid conflicts with manual pages installed by other packages.

## Configuring OpenSSL

### Config Files

`/etc/ssl/openssl.cnf`

### Configuration Information

Most users will want to install Certificate Authority Certificates for validation of downloaded certificates. For example, these certificates can be used by `git-1.8.2.3`, `cURL-7.30.0` or `Wget-1.14` when accessing secure (`https` protocol) sites. To do this, follow the instructions from the Certificate Authority Certificates page.

Users who just want to use OpenSSL for providing functions to other programs such as OpenSSH and web browsers do not need to worry about additional configuration. This is an advanced topic and so those who do need it would normally be expected to either know how to properly update `/etc/ssl/openssl.cnf` or be able to find out how to do it.

## Contents

<b>Installed Programs:</b>	<code>c_rehash</code> and <code>openssl</code>
<b>Installed Libraries:</b>	<code>libcrypto.{so,a}</code> and <code>libssl.{so,a}</code>
<b>Installed Directories:</b>	<code>/etc/ssl</code> , <code>/usr/include/openssl</code> , <code>/usr/lib/engines</code> and <code>/usr/share/doc/openssl-1.0.1e</code>

## Short Descriptions

<b><code>c_rehash</code></b>	is a Perl script that scans all files in a directory and adds symbolic links to their hash values.
<b><code>openssl</code></b>	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 <b>man 1 openssl</b> .
<b><code>libcrypto.{so,a}</code></b>	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.
<b><code>libssl.{so,a}</code></b>	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 <b>man 3 ssl</b> .

# p11-kit-0.18.2

## Introduction to p11-kit

The p11-kit package Provides a way to load and enumerate PKCS #11 (a Cryptographic Token Interface Standard) modules.

This package is known to build and work properly using an LFS-7.3 platform.

## Package Information

- Download (HTTP): <http://p11-glue.freedesktop.org/releases/p11-kit-0.18.2.tar.gz>
- 
- Download MD5 sum: 7bb1703f38fb778054bf57477c78dc8f
- Download size: 952 KB
- Estimated disk space required: 33 MB
- Estimated build time: 0.2 SBU

## p11-kit Dependencies

### Recommended

Certificate Authority Certificates and libtasn1-3.3

### Optional

GTK-Doc-1.18 and libxslt-1.1.28

## Installation of p11-kit

Install p11-kit 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

**--enable-doc**: Use this switch if you have installed GTK-Doc-1.18 and libxslt-1.1.28 and wish to rebuild the documentation and generate manual pages.

## Contents

<b>Installed Program:</b>	p11-kit
<b>Installed Libraries:</b>	libp11-kit.so and p11-kit-proxy.so
<b>Installed Directories:</b>	/etc/pkcs11, /usr/include/p11-kit-1, /usr/lib/p11-kit, /usr/lib/pkcs11, /usr/share/gtk-doc/html/p11-kit and /usr/share/p11-kit

## Short Descriptions

- p11-kit** is a command line tool that can be used to perform operations on PKCS#11 modules configured on the system.
- libp11-kit.so** contains functions used to coordinate initialization and finalization of any PKCS#11 module.
- p11-kit-proxy.so** is the PKCS#11 proxy module.

# Polkit-0.111

## Introduction to Polkit

Polkit is a toolkit for defining and handling authorizations. It is used for allowing unprivileged processes to communicate with privileged processes.

This package is known to build and work properly using an LFS-7.3 platform.

## Package Information

- Download (HTTP): <http://www.freedesktop.org/software/polkit/releases/polkit-0.111.tar.gz>
- 
- Download MD5 sum: 81b116edf986d8e13502929a171f4e0d
- Download size: 1.4 MB
- Estimated disk space required: 17 MB
- Estimated build time: 0.5 SBU

## Polkit Dependencies

### Required

GLib-2.34.3, Intltool-0.50.2 and SpiderMonkey-1.0.0

### Optional (Required if building GNOME)

gobject-introspection-1.34.2

### Optional

docbook-xml-4.5, docbook-xsl-1.77.1, GTK-Doc-1.18, libxslt-1.1.28 and Linux-PAM-1.1.6



### Note

If libxslt-1.1.28 is installed, then docbook-xml-4.5 and docbook-xsl-1.77.1 are required. If you have installed libxslt-1.1.28, but you do not want to install any of the DocBook packages mentioned, you will need to use `--disable-man-pages` in the instructions below.

## Installation of Polkit

There should be a dedicated user and group to take control of the **polkitd** daemon after it is started. Issue the following commands as the `root` user:

```
groupadd -fg 27 polkitd &&
useradd -c "PolicyKit Daemon Owner" -d /etc/polkit-1 -u 27 \
        -g polkitd -s /bin/false polkitd
```

Install Polkit by running the following commands:

```
./configure --prefix=/usr \
            --sysconfdir=/etc \
            --localstatedir=/var \
            --libexecdir=/usr/lib/polkit-1 \
            --with-authfw=shadow \
            --disable-static &&
make
```

To test the results, issue: **make check**. Note that system D-Bus daemon must be running for the testsuite to complete. There is also a warning about ConsoleKit database not present, but that one can be safely ignored.

Now, as the `root` user:

```
make install
```

## Command Explanations

`--with-authfw=shadow`: This parameter configures the package to use the Shadow rather than the Linux PAM Authentication framework. Remove it if you would like to use Linux PAM.

`--disable-static`: This switch prevents installation of static versions of the libraries.

`--enable-gtk-doc`: Use this parameter if GTK-Doc is installed and you wish to rebuild and install the API documentation.

## Configuring Polkit

### PAM Configuration



#### Note

If you did not build Polkit with Linux PAM support, you can skip this section.

If you have built Polkit with Linux PAM support, you need to modify the default PAM configuration file which was installed by default to get Polkit to work correctly with BLFS. Issue the following commands as the `root` user to create the configuration file for Linux PAM:

```
cat > /etc/pam.d/polkit-1 << "EOF"
# Begin /etc/pam.d/polkit-1

auth    include      system-auth
account include      system-account
password include     system-password
session include     system-session

# End /etc/pam.d/polkit-1
EOF
```

## Contents

<b>Installed Programs:</b>	pkaction, pkcheck, pk-example-frobnicate, pkexec, pkttyagent and polkitd
<b>Installed Libraries:</b>	libpolkit-agent-1.so and libpolkit-gobject-1.so
<b>Installed Directories:</b>	/etc/polkit-1, /usr/include/polkit-1, /usr/lib/polkit-1, /usr/share/gtk-doc/html/polkit-1 and /usr/share/polkit-1

## Short Descriptions

<b>pkaction</b>	is used to obtain information about registered PolicyKit actions.
<b>pkcheck</b>	is used to check whether a process is authorized for action.
<b>pkexec</b>	allows an authorized user to execute a command as another user.
<b>pkttyagent</b>	is used to start a textual authentication agent for the subject.
<b>polkitd</b>	provides the org.freedesktop.PolicyKit1 D-Bus service on the system message bus.
<b>libpolkit-agent-1.so</b>	contains the Polkit authentication agent API functions.
<b>libpolkit-gobject-1.so</b>	contains the Polkit authorization API functions.

# Shadow-4.1.5.1

## Introduction to Shadow

Shadow was indeed installed in LFS and there is no reason to reinstall it unless you installed CrackLib or Linux-PAM after your LFS system was completed. If you have installed CrackLib after LFS, then reinstalling Shadow will enable strong password support. If you have installed Linux-PAM, reinstalling Shadow will allow programs such as **login** and **su** to utilize PAM.

This package is known to build and work properly using an LFS-7.2 platform.

## Package Information

- Download (HTTP): <http://pkg-shadow.alioth.debian.org/releases/shadow-4.1.5.1.tar.bz2>
- 
- Download MD5 sum: a00449aa439c69287b6d472191dc2247
- Download size: 2.1 MB
- Estimated disk space required: 38 MB
- Estimated build time: 0.3 SBU

## Shadow Dependencies

### Required

Linux-PAM-1.1.6 or CrackLib-2.8.22

## Installation of Shadow

### Important

The installation commands shown below are for installations where Linux-PAM has been installed (with or without a CrackLib installation) and Shadow is being reinstalled to support the Linux-PAM installation.

If you are reinstalling Shadow to provide strong password support using the CrackLib library without using Linux-PAM, ensure you add the `--with-libcrack` parameter to the **configure** script below and also issue the following command:

```
sed -i 's@DICTPATH.*@DICTPATH\t/lib/cracklib/pw_dict@' etc/login.defs
```

Reinstall Shadow by running the following commands:

```
sed -i 's/groups$(EXEEXT) //' src/Makefile.in &&
find man -name Makefile.in -exec sed -i 's/groups\.1 / /{} \; &&
sed -i -e 's/ ko//' -e 's/ zh_CN zh_TW//' man/Makefile.in &&

sed -i -e 's@#ENCRYPT_METHOD DES@ENCRYPT_METHOD SHA512@' \
-e 's@/var/spool/mail@/var/mail@' etc/login.defs &&

sed -i -e 's@PATH=/sbin:/bin:/usr/sbin:/usr/bin@&:/usr/local/sbin:/usr/local/bin@' \
-e 's@PATH=/bin:/usr/bin@&:/usr/local/bin@' etc/login.defs &&

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

This package does not come with a test suite.

Now, as the `root` user:

```
make install &&
mv -v /usr/bin/passwd /bin
```

## Command Explanations

`sed -i 's/groups$(EXEEXT) //' src/Makefile.in`: This sed is used to suppress the installation of the **groups** program as the version from the Coreutils package installed during LFS is preferred.

`find man -name Makefile.in -exec ... {} \;`: This command is used to suppress the installation of the **groups** man pages so the existing ones installed from the Coreutils package are not replaced.

`sed -i -e '...' -e '...' man/Makefile.in`: This command disables the installation of Chinese and Korean manual pages, since Man-DB cannot format them properly.

`sed -i -e 's@#ENCRYPT_METHOD DES@ENCRYPT_METHOD SHA512@' -e 's@/var/spool/mail@/var/mail@' etc/login.defs`: Instead of using the default 'DES' method, this command modifies the installation to use the more secure 'SHA512' method of hashing passwords, which also allows passwords longer than eight characters. It also changes the obsolete `/var/spool/mail` location for user mailboxes that Shadow uses by default to the `/var/mail` location.

`sed -i -e 's@PATH=/sbin:/bin:/usr/sbin:/usr/bin@&:/usr/local/sbin:/usr/local/bin@' -e 's@PATH=/bin:/usr/bin@&:/usr/local/bin@' etc/login.defs`: This sed expands PATH to `/usr/local/bin` for normal and `root` user and to `/usr/local/sbin` for `root` user only.

`mv -v /usr/bin/passwd /bin`: The **passwd** program may be needed during times when the `/usr` filesystem is not mounted so it is moved into the root partition.

## Configuring Shadow

Shadow's stock configuration for the **useradd** utility may not be desirable for your installation. One default parameter causes **useradd** to create a mailbox file for any newly created user. **useradd** will make the group ownership of this file to the `mail` group with 0660 permissions. If you would prefer that these mailbox files are not created by **useradd**, issue the following command as the `root` user:

```
sed -i 's/yes/no/' /etc/default/useradd
```

# Configuring Linux-PAM to Work with Shadow



## Note

The rest of this page is devoted to configuring Shadow to work properly with Linux-PAM. If you do not have Linux-PAM installed, and you reinstalled Shadow to support strong passwords via the CrackLib library, no further configuration is required.

## Config Files

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

## Configuration Information

Configuring your system to use Linux-PAM can be a complex task. The information below will provide a basic setup so that Shadow's login and password functionality will work effectively with Linux-PAM. Review the information and links on the Linux-PAM-1.1.6 page for further configuration information. For information specific to integrating Shadow, Linux-PAM and CrackLib, you can visit the following link:

- [http://www.deer-run.com/~hal/sysadmin/pam\\_cracklib.html](http://www.deer-run.com/~hal/sysadmin/pam_cracklib.html)

## 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). Issue the following commands as the root user:

```
install -v -m644 /etc/login.defs /etc/login.defs.orig &&
for FUNCTION in FAIL_DELAY FAILLOG_ENAB \
    LASTLOG_ENAB \
    MAIL_CHECK_ENAB \
    OBSCURE_CHECKS_ENAB \
    PORTTIME_CHECKS_ENAB \
    QUOTAS_ENAB \
    CONSOLE MOTD_FILE \
    FTMP_FILE NOLOGINS_FILE \
    ENV_HZ PASS_MIN_LEN \
    SU_WHEEL_ONLY \
    CRACKLIB_DICTPATH \
    PASS_CHANGE_TRIES \
    PASS_ALWAYS_WARN \
    CHFN_AUTH ENCRYPT_METHOD \
    ENVIRON_FILE
do
    sed -i "s/^${FUNCTION}/# &/" /etc/login.defs
done
```

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

As mentioned previously in the Linux-PAM instructions, Linux-PAM has two supported methods for configuration. The commands below assume that you've chosen to use a directory based configuration, where each program has its own configuration file. You can optionally use a single /etc/pam.conf configuration file by using the text from the files below, and supplying the program name as an additional first field for each line.

As the root user, replace the following Linux-PAM configuration files in the /etc/pam.d/ directory (or add the contents to the /etc/pam.conf file) using the following commands:

### 'system-account'

```
cat > /etc/pam.d/system-account << "EOF"
# Begin /etc/pam.d/system-account

account    required    pam_unix.so

# End /etc/pam.d/system-account
EOF
```

### 'system-auth'

```
cat > /etc/pam.d/system-auth << "EOF"
# Begin /etc/pam.d/system-auth

auth    required    pam_unix.so

# End /etc/pam.d/system-auth
EOF
```

### 'system-passwd' (with cracklib)

```
cat > /etc/pam.d/system-password << "EOF"
# Begin /etc/pam.d/system-password

# check new passwords for strength (man pam_cracklib)
password required    pam_cracklib.so    type=Linux retry=3 difok=5 \
               difignore=23 minlen=9 dcredit=1 \
               ucredit=1 lcredit=1 ocredit=1 \
               dictpath=/lib/cracklib/pw_dict

# use sha512 hash for encryption, use shadow, and use the
# authentication token (chosen password) set by pam_cracklib
# above (or any previous modules)
password required    pam_unix.so        sha512 shadow use_authtok

# End /etc/pam.d/system-password
EOF
```



## Note

In its default configuration, owing to credits, pam\_cracklib will allow multiple case passwords as short as 6 characters, even with the *minlen* value set to 11. You should review the pam\_cracklib(8) man page and determine if these default values are acceptable for the security of your system.

### 'system-passwd' (without cracklib)

```
cat > /etc/pam.d/system-password << "EOF"
# Begin /etc/pam.d/system-password

# use sha512 hash for encryption, use shadow, and try to use any previously
# defined authentication token (chosen password) set by any prior module
password required pam_unix.so          sha512 shadow try_first_pass

# End /etc/pam.d/system-password
EOF
```

### 'system-session'

```
cat > /etc/pam.d/system-session << "EOF"
# Begin /etc/pam.d/system-session

session required pam_unix.so

# End /etc/pam.d/system-session
EOF
```

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

# Set failure delay before next prompt to 3 seconds
auth optional pam_faildelay.so delay=3000000

# Check to make sure that the user is allowed to login
auth requisite pam_nologin.so

# Check to make sure that root is allowed to login
# Disabled by default. You will need to create /etc/securetty
# file for this module to function. See man 5 securetty.
#auth required pam_securetty.so

# Additional group memberships - disabled by default
#auth optional pam_group.so

# include the default auth settings
auth include system-auth

# check access for the user
account required pam_access.so

# include the default account settings
account include system-account

# Set default environment variables for the user
session required pam_env.so

# Set resource limits for the user
session required pam_limits.so

# Display date of last login - Disabled by default
#session optional pam_lastlog.so

# Display the message of the day - Disabled by default
#session optional pam_motd.so

# Check user's mail - Disabled by default
#session optional pam_mail.so      standard quiet

# include the default session and password settings
session include system-session
password include system-password

# End /etc/pam.d/login
EOF'
```

**'passwd'**

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

password include system-password

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

**'su'**

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

# always allow root
auth sufficient pam_rootok.so
auth include system-auth

# include the default account settings
account include system-account

# Set default environment variables for the service user
session required pam_env.so

# include system session defaults
session include system-session

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

**'chage'**

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

# always allow root
auth sufficient pam_rootok.so

# include system defaults for auth account and session
auth include system-auth
account include system-account
session include system-session

# Always permit for authentication updates
password required pam_permit.so

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

'chfn', 'chgpasswd', 'chpasswd', 'chsh', 'groupadd', 'groupdel', 'groupmems', 'groupmod', 'newusers', 'useradd', 'userdel' and 'usermod'

```
for PROGRAM in chfn chgpasswd chpasswd chsh groupadd groupdel \
               groupmems groupmod newusers useradd userdel usermod
do
    install -v -m644 /etc/pam.d/chage /etc/pam.d/${PROGRAM}
    sed -i "s/chage/$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. You can also run the test suite from the Linux-PAM package to assist you in determining the problem. If you cannot find and fix the error, you should recompile Shadow adding the --without-libpam switch to the **configure** command 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_warn.so
auth      required      pam_deny.so
account  required      pam_warn.so
account  required      pam_deny.so
password required      pam_warn.so
password required      pam_deny.so
session  required      pam_warn.so
session  required      pam_deny.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:

```
[ -f /etc/login.access ] && mv -v /etc/login.access{,.NOUSE}
```

## 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:

```
[ -f /etc/limits ] && mv -v /etc/limits{,.NOUSE}
```

## Contents

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

# stunnel-4.54

## 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.

This package is known to build and work properly using an LFS-7.2 platform.

## Package Information

- Download (HTTP): <http://mirrors.zerg.biz/stunnel/stunnel-4.54.tar.gz>
- Download (FTP): <ftp://ftp.stunnel.org/stunnel/stunnel-4.54.tar.gz>
- Download MD5 sum: c2b1db99e3ed547214568959a8ed18ac
- Download size: 528 KB
- Estimated disk space required: 5.0 MB
- Estimated build time: 0.1 SBU

## stunnel Dependencies

### Required

OpenSSL-1.0.1e

## Installation of stunnel

The **stunnel** daemon will be run in a **chroot** jail by an unprivileged user. Create the new user and group 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
```



### 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 PRIVATE KEY-----
<many encrypted lines of private key>
-----END PRIVATE KEY-----
-----BEGIN CERTIFICATE-----
<many encrypted lines of certificate>
-----END CERTIFICATE-----
-----BEGIN DH PARAMETERS-----
<encrypted lines of dh parms>
-----END DH PARAMETERS-----
```

Install stunnel by running the following commands:

```
./configure --prefix=/usr \
            --sysconfdir=/etc \
            --localstatedir=/var \
            --disable-libwrap &&
make
```

This package does not come with a test suite.

Now, as the `root` user:

```
make docdir=/usr/share/doc/stunnel-4.54 install
```

## Command Explanations

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

`--localstatedir=/var`: This parameter sets the installation to use `/var/lib/stunnel` instead of creating and using `/usr/var/stunnel`.

`--disable-libwrap`: This parameter is required if you don't have tcpwrappers installed. Remove the parameter if tcpwrappers is installed.

**make docdir=... install**: This command installs the package, changes the documentation installation directory to standard naming conventions 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

As the `root` user, create the directory used for the `.pid` file that is created when the stunnel daemon starts:

```
install -v -m750 -o stunnel -g stunnel -d /var/lib/stunnel/run
```

Next, create a basic /etc/stunnel/stunnel.conf configuration file using the following commands as the root user:

```
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
cert     = /etc/stunnel/stunnel.pem

EOF
chmod -v 644 /etc/stunnel/stunnel.conf
```

Finally, 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-20130512 package.

```
make install-stunnel
```

## Contents

<b>Installed Programs:</b>	stunnel and stunnel3
<b>Installed Library:</b>	libstunnel.so
<b>Installed Directories:</b>	/etc/stunnel, /usr/lib/stunnel, /usr/share/doc/stunnel-4.54 and /var/lib/stunnel

## Short Descriptions

<b>stunnel</b>	is a program designed to work as an SSL encryption wrapper between remote clients and local ({x}inetd-startable) or remote servers.
<b>stunnel3</b>	is a Perl wrapper script to use <b>stunnel</b> 3.x syntax with <b>stunnel</b> >=4.05.
<b>libstunnel.so</b>	contains the API functions required by stunnel.

# Sudo-1.8.6p3

## Introduction to Sudo

The Sudo package allows a system administrator to give certain users (or groups of users) the ability to run some (or all) commands as `root` or another user while logging the commands and arguments.

This package is known to build and work properly using an LFS-7.3 platform.

## Package Information

- Download (HTTP): <http://www.sudo.ws/sudo/dist/sudo-1.8.6p3.tar.gz>
- Download (FTP): <ftp://ftp.twaren.net/Unix/Security/Sudo/sudo-1.8.6p3.tar.gz>
- Download MD5 sum: a7b5c39a904721956eccddd30689250f
- Download size: 1.8 MB
- Estimated disk space required: 19 MB
- Estimated build time: 0.2 SBU

## Sudo Dependencies

### Optional

*AFS*, *FWTK*, *Linux-PAM-1.1.6*, *MIT Kerberos V5-1.11.2*, an MTA (that provides a `sendmail` command), *OpenLDAP-2.4.35*, *Opie* and *SecurID*

## Installation of Sudo

Install Sudo by running the following commands:

```
./configure --prefix=/usr \
            --libexecdir=/usr/lib/sudo \
            --docdir=/usr/share/doc/sudo-1.8.6p3 \
            --with-all-insults \
            --with-env-editor \
            --without-pam \
            --without-sendmail &&
make
```

This package does not come with a test suite.

Now, as the `root` user:

```
make install
```

## Command Explanations

`--with-all-insults`: This switch includes all the sudo insult sets.

`--with-env-editor`: This switch enables use of the environment variable `EDITOR` for `visudo`.

--without-pam: This switch disables the use of PAM authentication. Omit if you have Linux PAM installed.

--without-sendmail: This switch disables the use of sendmail. Remove if you have a sendmail compatible MTA.



### Note

There are many options to sudo's **configure** command. Check the **configure --help** output for a complete list.

## Configuring Sudo

### Config File

/etc/sudoers

### Configuration Information

The **sudoers** file can be quite complicated. It is composed of two types of entries: aliases (basically variables) and user specifications (which specify who may run what). The installation installs a default configuration that has no privileges installed for any user.

One example usage is to allow the system administrator to execute any program without typing a password each time root privileges are needed. This can be configured as:

```
# User alias specification
User_Alias ADMIN = YourLoginId

# Allow people in group ADMIN to run all commands without a password
ADMIN      ALL = NOPASSWD: ALL
```

For details, see **man sudoers**.



### Note

The Sudo developers highly recommend using the **visudo** program to edit the **sudoers** file. This will provide basic sanity checking like syntax parsing and file permission to avoid some possible mistakes that could lead to a vulnerable configuration.

If you've built Sudo with PAM support, issue the following command as the root user to create the PAM configuration file:

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

# include the default auth settings
auth      include      system-auth

# include the default account settings
account   include      system-account

# Set default environment variables for the service user
session   required     pam_env.so

# include system session defaults
session   include      system-session

# End /etc/pam.d/sudo
EOF
chmod 644 /etc/pam.d/sudo
```

## Contents

<b>Installed Programs:</b>	sudo, sudoedit, sudoreplay and visudo
<b>Installed Libraries:</b>	sudoers.so and sudo_noexec.so
<b>Installed Directories:</b>	/usr/lib/sudo and /usr/share/doc/sudo-1.8.6p3

## Short Descriptions

<b>sudo</b>	executes a command as another user as permitted by the /etc/sudoers configuration file.
<b>sudoedit</b>	is a hard link to <b>sudo</b> that implies the -e option to invoke an editor as another user.
<b>visudo</b>	allows for safer editing of the sudoers file.
<b>sudoreplay</b>	is used to play back or list the output logs created by <b>sudo</b> .
<b>sudoers.so</b>	is default sudo security policy module.
<b>sudo_noexec.so</b>	enables support for the "noexec" functionality which prevents a dynamically-linked program being run by sudo from executing another program (think shell escapes).

# Tripwire-2.4.2.2

## Introduction to Tripwire

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

This package is known to build and work properly using an LFS-7.2 platform.

## Package Information

- Download (HTTP): <http://downloads.sourceforge.net/tripwire/tripwire-2.4.2.2-src.tar.bz2>
- 
- Download MD5 sum: 2462ea16fb0b5ae810471011ad2f2dd6
- Download size: 704 KB
- Estimated disk space required: 31 MB
- Estimated build time: 1.3 SBU (includes interactive time during install)

## Tripwire Dependencies

### Required

OpenSSL-1.0.1e

### Optional

An MTA

## Installation of Tripwire

Compile Tripwire by running the following commands:

```
sed -i -e 's@TWDB="${prefix}@TWDB="/var@"' install/install.cfg      &&
sed -i -e 's/!Equal/!this->Equal/' src/cryptlib/algebra.h      &&
sed -i -e '/stdtwadmin.h/i#include <unistd.h>' src/twadmin/twadminincl.cpp &&

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



### Note

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/install.cfg` to use an SMTP server instead. Otherwise the install will fail.

This package does not come with a test suite.

Now, as the root user:

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

## 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.

**sed ... src/cryptlib/algebra.h:** Fix a compilation issue with gcc-4.7.

**sed ... src/twadmin/twadmincl.cpp:** Fix a compilation issue with gcc-4.7.

**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/doc/tripwire:** This command installs the tripwire sample policy files with the other tripwire 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 installation and will need to be updated for your system.

Policy files should be tailored to each individual distribution and/or installation. Some example policy files can be found in /usr/doc/tripwire/ (Note that /usr/doc/ is a symbolic link on LFS systems to /usr/share/doc/).

If desired, copy the policy file you'd like to try into /etc/tripwire/ instead of using the default policy file, twpol.txt. It is, however, recommended that you edit your policy file. Get ideas from the examples above and read /usr/doc/tripwire/policyguide.txt for additional information. twpol.txt is a good policy file for learning about Tripwire 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 edited to your satisfaction you may begin the configuration steps (perform as the root) user:

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

Depending on your system and the contents of the policy file, the initialization phase above can take a relatively long time.

### Usage Information

Tripwire will identify file changes in the critical system files specified in the policy file. Using Tripwire while making frequent changes to these directories will flag all these changes. It is most useful after a system has reached a configuration that the user considers stable.

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.

Reports are stored in binary and, if desired, encrypted. View reports, as the `root` user, with:

```
twprint --print-report -r /var/lib/tripwire/report/<report-name.twr>
```

After you run an integrity check, you should 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 your system name as presented by the command `uname -n` and ends in `.tvr`. These files were created during report creation and the most current one is needed to update the Tripwire database of your system. As the `root` user, type in the following command making the appropriate report name:

```
tripwire --update --twrfile /var/lib/tripwire/report/<report-name.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 `:wq` 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 `:wq`.

A good summary of tripwire operations can be found at <http://va-holladays.no-ip.info:2200/tools/security-docs/tripwire-v1.0.pdf>.

## 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

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

## Short Descriptions

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

# Chapter 5. File Systems and Disk Management

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 other journaling file systems you can use instead of the default LFS extended file system (ext2/3/4). It also provides introductory material on managing disk arrays.

## About initramfs

The only purpose of an initramfs is to mount the root filesystem. The initramfs is a complete set of directories that you would find on a normal root filesystem. It is bundled into a single cpio archive and compressed with one of several compression algorithms.

At boot time, the boot loader loads the kernel and the initramfs image into memory and starts the kernel. The kernel checks for the presence of the initramfs and, if found, mounts it as / and runs /init. The init program is typically a shell script. Note that the boot process takes longer, possibly significantly longer, if an initramfs is used.

For most distributions, kernel modules are the biggest reason to have an initramfs. In a general distribution, there are many unknowns such as file system types and disk layouts. In a way, this is the opposite of LFS where the system capabilities and layout are known and a custom kernel is normally built. In this situation, an initramfs is rarely needed.

There are only four primary reasons to have an initramfs in the LFS environment: loading the rootfs from a network, loading it from an LVM logical volume, having an encrypted rootfs where a password is required, or for the convenience of specifying the rootfs as a LABEL or UUID. Anything else usually means that the kernel was not configured properly.

## Building an initramfs

If you do decide to build an initramfs, the following scripts will provide a basis to do it. The scripts will allow specifying a rootfs via partition UUID or partition LABEL or a rootfs on an LVM logical volume. They do not support an encrypted root file system or mounting the rootfs over a network card. For a more complete capability see *the LFS Hints* or *dracut*.

```
}

init=/sbin/init
root=
rootdelay=
rootfstype=auto
ro="ro"
rootflags=
device=

mount -n -t devtmpfs devtmpfs /dev
mount -n -t proc      proc      /proc
mount -n -t sysfs    sysfs    /sys
mount -n -t tmpfs   tmpfs   /run

read -r cmdline < /proc/cmdline

for param in $cmdline ; do
    case $param in
        init=*)      init=${param#init=} ;;
        root=*)     root=${param#root=} ;;
        rootdelay=*) rootdelay=${param#rootdelay=} ;;
        rootfstype=*) rootfstype=${param#rootfstype=} ;;
        rootflags=*) rootflags=${param#rootflags=} ;;
        ro          ) ro="ro" ;;
        rw          ) ro="rw" ;;
    esac
done

# udevd location depends on version
if [ -x /sbin/udevd ]; then
    UDEV_PATH=/sbin
else
    UDEV_PATH=/lib/udev
fi

${UDEV_PATH}/udevd --daemon --resolve-names=never
udevadm trigger
udevadm settle

if [ -f /etc/mdadm.conf ] ; then mdadm -As
if [ -x /sbin/vgchange ] ; then /sbin/vgchange --noudevsync -a y > /dev/null
if [ -n "$rootdelay" ] ; then sleep "$rootdelay"

do_mount_root

killall -w ${UDEV_PATH}/udevd

exec switch_root /.root "$init" "$@"

EOF
depmod -b $WDIR $KERNEL_VERSION
fi

( cd $WDIR ; find . | cpio -o -H newc --quiet | gzip -9 ) > $INITRAMFS_FILE
```

## Using an initramfs

### Required Runtime Dependency

cpio-2.11

To build an initramfs, run the following as the `root` user:

```
mkinitramfs [KERNEL VERSION]
```

The optional argument is the directory where the appropriate kernel modules are located. This must be a subdirectory of `/lib/modules`. If no modules are specified, then the initramfs is named `initrd.img-no-kmods`. If a kernel version is specified, the initrd is named `initrd.img-$KERNEL_VERSION` and is only appropriate for the specific kernel specified. The output file will be placed in the current directory.

After generating the initrd, copy it to the `/boot` directory.

Now edit `/boot/grub/grub.cfg` and add a new menuentry. Below are several examples.

```
# Generic initramfs and root fs identified by UUID
menuentry "LFS Dev (LFS-7.0-Feb14) initrd, Linux 3.0.4"
{
    linux /vmlinuz-3.0.4-lfs-20120214 root=UUID=54b934a9-302d-415e-ac11-4988408eb0
    initrd /initrd.img-no-kmods
}
```

```
# Generic initramfs and root fs on LVM partition
menuentry "LFS Dev (LFS-7.0-Feb18) initrd lvm, Linux 3.0.4"
{
    linux /vmlinuz-3.0.4-lfs-20120218 root=/dev/mapper/myroot ro
    initrd /initrd.img-no-kmods
}
```

```
# Specific initramfs and root fs identified by LABEL
menuentry "LFS Dev (LFS-7.1-Feb20) initrd label, Linux 3.2.6"
{
    linux /vmlinuz-3.2.6-lfs71-120220 root=LABEL=lfs71 ro
    initrd /initrd.img-3.2.6-lfs71-120220
}
```

Finally, reboot the system and select the desired system.

# Fuse-2.9.2

## Introduction to Fuse

FUSE (Filesystem in Userspace) is a simple interface for userspace programs to export a virtual filesystem to the Linux kernel. Fuse also aims to provide a secure method for non privileged users to create and mount their own filesystem implementations.

This package is known to build and work properly using an LFS-7.3 platform.

## Package Information

- Download (HTTP): <http://downloads.sourceforge.net/fuse/fuse-2.9.2.tar.gz>
- 
- Download MD5 sum: 7d80d0dc9cc2b9199a0c53787c151205
- Download size: 548 KB
- Estimated disk space required: 7.0 MB
- Estimated build time: 0.1 SBU

## Kernel Configuration

Enable the following options in the kernel configuration and recompile the kernel if necessary:

```
File systems  --->
  [*] FUSE (Filesystem in Userspace) support
```

## Installation of Fuse



### Note

After the **configure** script has finished you will see a warning shown below. You can safely disregard this warning.

```
configure: WARNING:
*****
* Please install util-linux version 2.18 or later which supports *
* --fake and --no-canonicalize options in mount and umount      *
*****
```

Install Fuse by running the following commands:

```
./configure --prefix=/usr --disable-static INIT_D_PATH=/tmp/init.d &&
make
```

If you have Doxygen-1.8.4 installed and wish to build the API documentation, issue **doxygen doc/Doxyfile**.

This package does not come with a test suite.

Now, as the root user:

```
make install &&

mv -v /usr/lib/libfuse.so.* /lib &&
ln -sfv ../../lib/libfuse.so.2.9.2 /usr/lib/libfuse.so &&
rm -rf /tmp/init.d &&

install -v -m755 -d /usr/share/doc/fuse-2.9.2 &&
install -v -m644 doc/{how-fuse-works,kernel.txt} \
/usr/share/doc/fuse-2.9.2
```

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

```
install -v -m755 -d /usr/share/doc/fuse-2.9.2/api &&
install -v -m644 doc/html/* \
/usr/share/doc/fuse-2.9.2/api
```

## Command Explanations

*--disable-static*: This switch prevents installation of static versions of the libraries.

*INIT\_D\_PATH=/tmp/init.d*: This parameter installs the bootscript into /tmp/init.d as a bootscript is not required.

**mv -v /usr/lib/libfuse.so.\* /lib**: This moves the FUSE library to the root filesystem so that it is available early in the boot process in case /usr is mounted on a separate partition and ntfs-3g-2013.1.13 is built with a system-installed version of FUSE.

**rm -rf /tmp/init.d**: This removes the unneeded bootscript.

## Configuring fuse

### Config Files

Some options regarding mount policy can be set in the file /etc/fuse.conf. To install the file run the following command as the root user:

```
cat > /etc/fuse.conf << "EOF"
# Set the maximum number of FUSE mounts allowed to non-root users.
# The default is 1000.
#
#mount_max = 1000

# Allow non-root users to specify the 'allow_other' or 'allow_root'
# mount options.
#
#user_allow_other
EOF
```

Additional information about the meaning of the configuration options are found in the man page.

## Contents

<b>Installed Programs:</b>	fusermount, mount.fuse and ulockmgr_server
<b>Installed Libraries:</b>	libfuse.so and libulockmgr.so
<b>Installed Directory:</b>	/usr/include/fuse

## Short Descriptions

<b>fusermount</b>	is a set users ID root program to mount and unmount Fuse filesystems.
<b>mount.fuse</b>	is the command <b>mount</b> would call to mount a Fuse filesystem.
<b>ulockmgr_server</b>	is the Userspace Lock Manager Server for Fuse filesystems.
<b>libfuse.so</b>	contains the FUSE API functions.
<b>libulockmgr.so</b>	contains the Userspace Lock Manager API functions.

# jfsutils-1.1.15

## Introduction to jfsutils

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

This package is known to build and work properly using an LFS-7.3 platform.

### Package Information

- Download (HTTP): <http://jfs.sourceforge.net/project/pub/jfsutils-1.1.15.tar.gz>
- 
- Download MD5 sum: 8809465cd48a202895bc2a12e1923b5d
- Download size: 532 KB
- Estimated disk space required: 8.9 MB
- Estimated build time: 0.1 SBU

## Kernel Configuration

Enable the following option in the kernel configuration and recompile the kernel:

```
File Systems:
  JFS filesystem support: M or Y
```

## Installation of jfsutils

Install jfsutils by running the following commands:

```
sed "s@<unistd.h>@&\n#include <sys/types.h>@g" -i fscklog/extract.c &&
./configure &&
make
```

This package does not come with a test suite.

Now, as the root user:

```
make install
```

## Command Explanations

`sed "s@<unistd.h>@&\n#include <sys/types.h>@g" -i fscklog/extract.c`: Fixes building with Glibc 2.17.

## Contents

<b>Installed Programs:</b>	fsck.jfs, jfs_debugfs, jfs_fsck, jfs_fscklog, jfs_logdump, jfs_mkfs, jfs_tune, mkfs.jfs
<b>Installed Libraries:</b>	None
<b>Installed Directories:</b>	None

## Short Descriptions

<b>fsck.jfs</b>	is used to replay the JFS transaction log, check a JFS formatted device for errors, and fix any errors found.
-----------------	---

<b>jfs_fsck</b>	is a hard link to fsck.jfs.
<b>mkfs.jfs</b>	constructs an JFS file system.
<b>jfs_mkfs</b>	is a hard link to mkfs.jfs.
<b>jfs_debugfs</b>	is a program which can be used to perform various low-level actions on a JFS formatted device.
<b>jfs_fscklog</b>	extracts a JFS fsck service log into a file and/or formats and displays the extracted file.
<b>jfs_logdump</b>	dumps the contents of the journal log from the specified JFS formatted device into output file ./jfslog.dmp.
<b>jfs_tune</b>	adjusts tunable file system parameters on JFS file systems.

# LVM2-2.02.98

## Introduction to LVM2

The LVM2 package is a package that manages logical partitions. It allows spanning of file systems across multiple physical disks and disk partitions and provides for dynamic growing or shrinking of logical partitions.

This package is known to build and work properly using an LFS-7.3 platform.

### Package Information

- 
- Download (FTP): <ftp://sources.redhat.com/pub/lvm2/LVM2.2.02.98.tgz>
- Download MD5 sum: 1ce5b7f9981e1d02dfd1d3857c8d9fbe
- Download size: 1.2 MB
- Estimated disk space required: 20 MB
- Estimated build time: 0.6 SBU

## Kernel Configuration

Enable the following option in the kernel configuration and recompile the kernel:

```
Device Drivers --->
  Multiple devices driver support (RAID and LVM): Y
    Device mapper support: Y or M
    Crypt target support: (optional)
    Snapshot target: (optional)
    Mirror target: (optional)
```

## Installation of LVM2

Install LVM2 by running the following commands:

```
./configure --prefix=/usr      \
            --exec-prefix=   \
            --with-confdir=/etc \
            --enable-applib \
            --enable-cmdlib \
            --enable-pkgconfig \
            --enable-udev_sync &&
make
```

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

Now, as the root user:

```
make install
```

## Command Explanations

**--enable-applib**: This switch enables building of the shared application library.

- enable-cmdlib: This switch enables building of the shared command library. It is required when building the event daemon.
- enable-pkgconfig: This switch enables installation of **pkg-config** support files.
- enable-udev\_sync: This switch enables synchronisation with Udev processing.
- enable-dmeventd: This switch enables building of the Device Mapper event daemon.

## Contents

<b>Installed Programs:</b>	dmsetup, fsadm, lvm, lvmconf, lvmdump, vgimportclone. There are also numerous symbolic links to lvm that implement specific functionality.
<b>Installed Libraries:</b>	libdevmapper.so, liblvm2app.so and liblvm2cmd.so
<b>Installed Directories:</b>	None

## Short Descriptions

<b>dmsetup</b>	is a low level logical volume management tool.
<b>fsadm</b>	is an utility used to resize or check filesystem on a device.
<b>lvm</b>	provides the command-line tools for LVM2. Commands are implemented via symbolic links to this program to manage physical devices (pv*), volume groups (vg*) and logical volumes (lv*).
<b>lvmconf</b>	is a script that modifies the locking configuration in the LVM2 configuration file.
<b>lvmdump</b>	is a tool used to dump various information concerning LVM2.
<b>vgimportclone</b>	is used to import a duplicated VG (e.g. hardware snapshot).
<b>libdevmapper . so</b>	contains the Device Mapper API functions.

# About RAID

The storage technology known as RAID (Redundant Array of Independent Disks) combines multiple physical disks into a logical unit. The drives can generally be combined to provide data redundancy or to extend the size of logical units beyond the capability of the physical disks or both. The technology also allows for providing hardware maintenance without powering down the system.

The types of RAID organization are described in the *RAID Wiki*.

Note that while RAID provides protection against disk failures, it is not a substitute for backups. A file deleted is still deleted on all the disks of a RAID array. Modern backups are generally done via rsync-3.0.9.

There are three major types of RAID implementation: Hardware RAID, BIOS-based RAID, and Software RAID.

## Hardware RAID

Hardware based RAID provides capability through proprietary hardware and data layouts. The control and configuration is generally done via firmware in conjunction with executable programs made available by the device manufacturer. The capabilities are generally supplied via a PCI card, although there are some instances of RAID components integrated in to the motherboard. Hardware RAID may also be available in a stand-alone enclosure.

One advantage of hardware-based RAID is that the drives are offered to the operating system as a logical drive and no operating system dependent configuration is needed.

Disadvantages include difficulties in transferring drives from one system to another, updating firmware, or replacing failed RAID hardware.

## BIOS-based RAID

Some computers offer a hardware-like RAID implementation in the system BIOS. Sometime this is referred to as 'fake' RAID as the capabilities are generally incorporated into firmware without any hardware acceleration.

The advantages and disadvantages of BIOS-based RAID are generally the same as hardware RAID with the additional disadvantage that there is no hardware acceleration.

In some cases, BIOS-based RAID firmware is enabled by default (e.g. some DELL systems). If software RAID is desired, this option must be explicitly disabled in the BIOS.

## Software RAID

Software based RAID is the most flexible form of RAID. It is easy to install and update and provides full capability on all or part of any drives available to the system. In BLFS, the RAID software is found in mdadm-3.2.6.

Configuring a RAID device is straight forward using mdadm. Generally devices are created in the /dev directory as /dev/mdx where x is an integer.

The first step in creating a RAID array is to use partitioning software such as **fdisk** or parted-3.1 to define the partitions needed for the array. Usually, there will be one partition on each drive participating in the RAID array, but that is not strictly necessary. For this example, there will be four disk drives: /dev/sda, /dev/sdb, /dev/sdc, and /dev/sdd. They will be partitioned as follows:

Partition	Size	Type	Use	
sda1:	100 MB	fd Linux raid auto	/boot	(RAID 1) /dev/md0
sda2:	10 GB	fd Linux raid auto	/	(RAID 1) /dev/md1
sda3:	2 GB	83 Linux swap	swap	
sda4	300 GB	fd Linux raid auto	/home	(RAID 5) /dev/md2
sdb1:	100 MB	fd Linux raid auto	/boot	(RAID 1) /dev/md0
sdb2:	10 GB	fd Linux raid auto	/	(RAID 1) /dev/md1
sdb3:	2 GB	83 Linux swap	swap	
sdb4	300 GB	fd Linux raid auto	/home	(RAID 5) /dev/md2
sdc1:	12 GB	fd Linux raid auto	/usr/src	(RAID 0) /dev/md3
sdc2:	300 GB	fd Linux raid auto	/home	(RAID 5) /dev/md2
sdd1:	12 GB	fd Linux raid auto	/usr/src	(RAID 0) /dev/md3
sdd2:	300 GB	fd Linux raid auto	/home	(RAID 5) /dev/md2

In this arrangement, a separate boot partition is created as the first small RAID array and a root filesystem as the second RAID array, both mirrored. The third partition is a large (about 1TB) array for the /home directory. This provides an ability to stripe data across multiple devices, improving speed for both reading and writing large files. Finally, a fourth array is created that concatenates two partitions into a larger device.



### Note

All mdadm commands must be run as the `root` user.

To create these RAID arrays the commands are:

```
/sbin/mdadm -Cv /dev/md0 --level=1 --raid-devices=2 /dev/sda1 /dev/sdb1
/sbin/mdadm -Cv /dev/md1 --level=1 --raid-devices=2 /dev/sda2 /dev/sdb2
/sbin/mdadm -Cv /dev/md3 --level=0 --raid-devices=2 /dev/sdc1 /dev/sdd1
/sbin/mdadm -Cv /dev/md2 --level=5 --raid-devices=4 \
    /dev/sda4 /dev/sdb4 /dev/sdc2 /dev/sdd2
```

The devices created can be examined by device. For example, to see the details of `/dev/md1`, use `/sbin/mdadm --detail /dev/md1`:

```

Version : 1.2
Creation Time : Tue Feb  7 17:08:45 2012
Raid Level : raid1
Array Size : 10484664 (10.00 GiB 10.74 GB)
Used Dev Size : 10484664 (10.00 GiB 10.74 GB)
Raid Devices : 2
Total Devices : 2
Persistence : Superblock is persistent

Update Time : Tue Feb  7 23:11:53 2012
State : clean
Active Devices : 2
Working Devices : 2
Failed Devices : 0
Spare Devices : 0

Name : core2-blfs:0 (local to host core2-blfs)
UUID : fcb944a4:9054aeb2:d987d8fe:a89121f8
Events : 17

Number  Major  Minor  RaidDevice State
      0      8      1          0  active sync  /dev/sda1
      1      8     17          1  active sync  /dev/sdb1

```

From this point, the partitions can be formated with the filesystem of choice (e.g. ext3, ext4, xfsprogs-3.1.10, reiserfsprogs-3.6.21, etc). The formatted partitions can then be mounted. The `/etc/fstab` file can use the devices created for mounting at boot time and the linux command line in `/boot/grub/grub.cfg` can specify `root=/dev/md1`.



### Note

The swap devices should be specified in the `/etc/fstab` file as normal. The kernel normally stripes swap data across multiple swap files and should not be made part of a RAID array.

For further options and management details of RAID devices, refer to `man mdadm`.

Additional details for monitoring RAID arrays and dealing with problems can be found at the *Linux RAID Wiki*.

# mdadm-3.2.6

## Introduction to mdadm

The mdadm package contains administration tools for software RAID.

This package is known to build and work properly using an LFS-7.2 platform.

## Package Information

- Download (HTTP): <http://www.kernel.org/pub/linux/utils/raid/mdadm/mdadm-3.2.6.tar.xz>
- 
- Download MD5 sum: 2afc306135466923fe5020d743bff9a4
- Download size: 364 KB
- Estimated disk space required: 16.4 MB
- Estimated build time: 0.4 SBU

## Kernel Configuration

Enable the following options in the kernel configuration and recompile the kernel, if necessary. Only the RAID types desired are required.

```
File Systems:
Device Drivers:
    Multiple devices driver support (RAID and LVM): Y
    RAID support: Y or M
        Autodetect RAID arrays during kernel boot: Y
        Linear (append) mode: Y or M
        RAID-0 (striping) mode : Y or M
        RAID-1 (mirroring) mode : Y or M
        RAID-10 (mirrored striping) mode: Y or M
        RAID-4/RAID-5/RAID-6 mode : Y or M
```

## Installation of mdadm

Install mdadm by running the following commands:

```
make everything
```

Now, as the root user:

```
make install
```

## Contents

<b>Installed Programs:</b>	mdadm and mdmon
<b>Installed Libraries:</b>	None
<b>Installed Directory:</b>	None

## Short Descriptions

**mdadm** manages MD devices aka Linux Software RAID.

**mdmon** monitors MD external metadata arrays.

# ntfs-3g-2013.1.13

## Introduction to Ntfs-3g

The Ntfs-3g package contains an open source, driver for Windows NTFS file system. This can mount Windows partitions so that they are writeable and allows you edit or delete Windows files from Linux.

This package is known to build and work properly using an LFS-7.2 platform.

## Package Information

- Download (HTTP): [http://tuxera.com/opensource/ntfs-3g\\_ntfsprogs-2013.1.13.tgz](http://tuxera.com/opensource/ntfs-3g_ntfsprogs-2013.1.13.tgz)
- 
- Download MD5 sum: 2d6fb47ddf62b51733227126fe9227fe
- Download size: 1.2 MB
- Estimated disk space required: 24 MB
- Estimated build time: 0.4 SBU

## Ntfs-3g Dependencies

### Optional

Fuse-2.9.2.

## Kernel Configuration

Enable the following options in the kernel configuration and recompile the kernel if necessary:

```
File systems    --->
  [*] FUSE (Filesystem in Userspace) support
```

## Installation of Ntfs-3g

Install Ntfs-3g by running the following commands:

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

This package does not come with a test suite.

Now, as the root user:

```
make install &&
ln -sv ..../bin/ntfs-3g /sbin/mount.ntfs &&
ln -sv /usr/share/man/man8/{ntfs-3g,mount.ntfs}.8
```

If you want ordinary users to be able to mount NTFS partitions you'll need to set mount.ntfs with the root user ID. Note: it is probably unsafe to do this on a computer that needs to be secure (like a server). As the root user:

```
chmod -v 4755 /sbin/mount.ntfs
```

## Command Explanations

*--disable-static*: This switch prevents installation of static versions of the libraries.

--with-fuse=external: Ntfs-3g comes with a version of Fuse which it statically compiles into **lowntfs-3g** and **ntfs-3g**. If you have installed Fuse-2.9.2 use this --with-fuse=external option to dynamically link **lowntfs-3g** and **ntfs-3g** to libfuse.

**ln -sv ..\bin\ntfs-3g /sbin/mount.ntfs**: Creating /sbin/mount.ntfs makes **mount** default to using Ntfs-3g to mount NTFS partitions.

**chmod -v 4755 /sbin/mount.ntfs**: Making mount.ntfs setuid root allows non root users to mount NTFS partitions.

## Using Ntfs-3g

To mount a Windows partition at boot time, put a line like this in /etc/fstab:

```
/dev/sda1 /mnt/windows auto defaults 0 0
```

To allow users to mount a usb stick with an NTFS filesystem on it, put a line similar this (change sdc1 to whatever a usb stick would be on your system) in /etc/fstab:

```
/dev/sdc1 /mnt/usb auto user,noauto,umask=0,utf8 0 0
```

For a user to be able to mount the usb stick they will need to be able to write to `/mnt/usb`, so as the `root` user:

```
chmod -v 777 /mnt/usb
```

## Contents

<b>Installed Programs:</b>	lowntfs-3g, mkfs.ntfs, mkntfs, mount.lowntfs-3g, mount.ntfs, mount.ntfs-3g, ntfs-3g, ntfs-3g.probe, ntfs-3g.secaudit, ntfs-3g.usermap, ntfscat, ntfsclone, ntfscluster, ntfscomp, ntfsscp, ntfsfix, ntfsinfo, ntfslabel, ntfsls, ntfsresize and ntfsundelete
<b>Installed Library:</b>	libntfs-3g.so
<b>Installed Directories:</b>	/usr/include/ntfs-3g and /usr/share/doc/ntfs-3g

## **Short Descriptions**

<b>lowntfs-3g</b>	is similar to ntfs-3g but uses the Fuse low-level interface.
<b>mkfs.ntfs</b>	is a symlink to mkntfs.
<b>mkntfs</b>	creates an NTFS file system.
<b>mount.lowntfs-3g</b>	is a symlink to lowntfs-3g.
<b>mount.ntfs</b>	mounts an NTFS filesystem.
<b>mount.ntfs-3g</b>	is a symbolic link to ntfs-3g.
<b>ntfs-3g</b>	is an NTFS driver, which can create, remove, rename, move files, directories, hard links, and streams; it can read and write files, including streams, sparse files and transparently compressed files; it can handle special files like symbolic links, devices, and FIFOs; moreover it provides standard management of file ownership and permissions, including POSIX ACLs.
<b>ntfs-3g.probe</b>	tests if an NTFS volume is mountable read only or read-write, and exits with a status value accordingly. The volume can be a block device or image file.
<b>ntfs-3g.secaudit</b>	audits NTFS Security Data.

<b>ntfs-3g.usermap</b>	creates the file defining the mapping of Windows accounts to Linux logins for users who owns files which should be visible from both Windows and Linux.
<b>ntfscluster</b>	identifies files in a specified region of an NTFS volume
<b>ntfscp</b>	copies a file to an NTFS volume.
<b>ntfsfix</b>	fixes common errors and forces Windows to check an NTFS partition.
<b>ntffsls</b>	lists directory contents on an NTFS filesystem.
<b>ntfscat</b>	prints NTFS files and streams on the standard output.
<b>ntfsclone</b>	clones an NTFS filesystem.
<b>ntfscmp</b>	compares two NTFS filesystems and tells the differences.
<b>ntfsinfo</b>	dumps a file's attributes.
<b>ntfslabel</b>	displays or changes the label on an ntfs file system.
<b>ntfsresize</b>	resizes an NTFS filesystem without data loss.
<b>ntfsundelete</b>	recovers a deleted file from an NTFS volume.
<b>libntfs-3g.so</b>	contains the Ntfs-3g API functions.

# gptfdisk-0.8.6

## Introduction to gptfdisk

The gptfdisk package is a set of programs for creation and maintenance of GUID Partition Table (GPT) disk drives. A GPT partitioned disk is required for drives greater than 2 TB and is a modern replacement for legacy PC-BIOS partitioned disk drives that use a Master Boot Record (MBR). The main program, **gdisk**, has an interface similar to the classic **fdisk** program.

This package is known to build and work properly using an LFS-7.3 platform.

## Package Information

- Download (HTTP): <http://downloads.sourceforge.net/project/gptfdisk/gptfdisk/0.8.6/gptfdisk-0.8.6.tar.gz>
- 
- Download MD5 sum: f5ec6647d3de43644ad7e99b34f74982
- Download size: 188 KB
- Estimated disk space required: 2.7 MB
- Estimated build time: less than 0.1 SBU

## Additional Downloads

- Recommended Patch: <http://www.linuxfromscratch.org/patches/blfs/svn/gptfdisk-0.8.6-convenience-1.patch>

## gptfdisk Dependencies

### Optional

**popt**-1.16 (required to build **sgdisk**) and **ICU**-51.1 (for Unicode partition names)

## Installation of gptfdisk

The gptfdisk package comes with a rudimentary **Makefile**. First we update it to provide a simple build and install interface. Install gptfdisk by running the following commands:

```
patch -Np1 -i ../../gptfdisk-0.8.6-convenience-1.patch &&
make
```

This package does not come with a test suite.

Now, as the **root** user:

```
make install
```

## Command Explanations

**ICU=1**: Adding this option to the **make** command allows use of Unicode characters in partition names.

**POPT=1**: Adding this option to the **make** command is required to build **sgdisk**. If used, this option needs to be on both the **make** and the **make install** line.

## Contents

**Installed Programs:** cgdisk, gdisk, fixparts, and sgdisk

## Short Descriptions

- cgdisk** is an is a curses-based text-mode tool for manipulating GPT partitions.
- gdisk** is an interactive text-mode tool for manipulating GPT partitions.
- fixparts** repairs mis-formatted MBR based disk partitions.
- sgdisk** is a partition manipulation program for GPT partitions similar to **sfdisk**.

# parted-3.1

## Introduction to parted

The Parted package is a disk partitioning and partition resizing tool.

This package is known to build and work properly using an LFS-7.3 platform.

## Package Information

- Download (HTTP): <http://ftp.gnu.org/gnu/parted/parted-3.1.tar.xz>
- 
- Download MD5 sum: 5d89d64d94bcfefa9ce8f59f4b81bdcb
- Download size: 1.5 MB
- Estimated disk space required: 38 MB
- Estimated build time: 0.5 SBU

## Parted Dependencies

### Recommended

LVM2-2.02.98 (device-mapper, required if building udisks)

## Installation of parted

Install Parted by running the following commands:

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

make -C doc html &&
makeinfo --html -o doc/html doc/parted.texi &&
makeinfo --plaintext -o doc/parted.txt doc/parted.texi
```

If you have texlive-20120701 installed and wish to create PDF and Postscript documentation issue the following commands:

```
texi2pdf -o doc/parted.pdf doc/parted.texi &&
texi2dvi -o doc/parted.dvi doc/parted.texi &&
dvips -o doc/parted.ps doc/parted.dvi
```

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

Now, as the root user:

```
make install &&
install -v -m755 -d /usr/share/doc/parted-3.1/html &&
install -v -m644 doc/html/* \
/usr/share/doc/parted-3.1/html &&
install -v -m644 doc/{FAT,API,parted.{txt,html}} \
/usr/share/doc/parted-3.1
```

Install the optional PDF and Postscript documentation by issuing the following command as the `root` user:

```
install -v -m644 doc/FAT doc/API doc/parted.{pdf,ps,dvi} \
          /usr/share/doc/parted-3.1
```

## Command Explanations

`--disable-static`: This switch prevents installation of static versions of the libraries.

`--disable-device-mapper`: This option disables device mapper support. Add this parameter if you have not installed LVM2.

## Contents

<b>Installed Programs:</b>	parted and partprobe
<b>Installed Library:</b>	libparted.so
<b>Installed Directory:</b>	/usr/include/parted

## Short Descriptions

<b>parted</b>	is a partition manipulation program.
<b>partprobe</b>	informs the OS of partition table changes.
<b>libparted.so</b>	contains the Parted API functions.

# reiserfsprogs-3.6.21

## Introduction to reiserfsprogs

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

This package is known to build using an LFS 7.2 platform but has not been tested.

## Package Information

- 
- Download (FTP): <ftp://anduin.linuxfromscratch.org/BLFS/svn/r/reiserfsprogs-3.6.21.tar.bz2>
- Download MD5 sum: 0639cefac8f8150536cfa7531c2aa2d2
- Download size: 320 KB
- Estimated disk space required: 9.3 MB
- Estimated build time: 0.2 SBU

## Kernel Configuration

Enable the following option in the kernel configuration and recompile the kernel:

```
File Systems:
Reiserfs support: M or Y
```

## Installation of reiserfsprogs

Install reiserfsprogs by running the following commands:

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

This package does not come with a test suite.

Now, as the root user:

```
make install &&
ln -sf reiserfsck /sbin/fsck.reiserfs &&
ln -sf mkreiserfs /sbin/mkfs.reiserfs
```

## Command Explanations

**--sbindir=/sbin:** This ensures that the reiserfsprogs utilities are installed in /sbin.

## Contents

<b>Installed Programs:</b>	debugreiserfs, mkreiserfs, reiserfsck, reiserfstune, and resize_reiserfs
<b>Installed Libraries:</b>	None
<b>Installed Directories:</b>	None

## Short Descriptions

<b>debugreiserfs</b>	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.
----------------------	--

<b>mkreiserfs</b>	creates a ReiserFS file system.
<b>reiserfsck</b>	is used to check or repair a ReiserFS file system.
<b>reiserfstune</b>	is used for tuning the ReiserFS journal. <i>WARNING:</i> Don't use this utility without first reading the man page thoroughly.
<b>resize_reiserfs</b>	is used to resize an unmounted ReiserFS file system.

# sshfs-fuse-2.4

## Introduction to Sshfs Fuse

The Sshfs Fuse package contains a filesystem client based on the SSH File Transfer Protocol. This is useful for mounting a remote computer that you have ssh access to as a local filesystem. This allows you to drag and drop files or run shell commands on the remote files as if they were on your local computer.

This package is known to build and work properly using an LFS-7.3 platform.

## Package Information

- Download (HTTP): <http://downloads.sourceforge.net/fuse/sshfs-fuse-2.4.tar.gz>
- 
- Download MD5 sum: 3c7c3647c52ce84d09486f1da3a3ce24
- Download size: 132 KB
- Estimated disk space required: 2.6 MB
- Estimated build time: 0.1 SBU

## Sshfs Fuse Dependencies

### Required

Fuse-2.9.2, GLib-2.34.3, and OpenSSH-6.2p1.

## Installation of Sshfs Fuse

Install Sshfs Fuse 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
```

## Using Sshfs Fuse

To mount an ssh server you need to be able to log into the server. For example, to mount your home folder on the computer called THINGY on the folder ~/MOUNTPATH (the directory must exist and you must have permissions to write to it):

```
sshfs THINGY:~ ~/MOUNTPATH
```

When you've finished work and want to unmount it again:

```
fusermount -u ~/MOUNTPATH
```

## Contents

<b>Installed Program:</b>	sshfs
<b>Installed Libraries:</b>	None
<b>Installed Directories:</b>	None

## Short Descriptions

**sshfs**      mounts an **ssh** server as a local file system.

# xfsprogs-3.1.10

## Introduction to xfsprogs

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

This package is known to build and work properly using an LFS-7.2 platform.

## Package Information

- Download (HTTP): <http://anduin.linuxfromscratch.org/sources/BLFS/svn/x/xfsprogs-3.1.10.tar.gz>
- Download (FTP): [ftp://oss.sgi.com/projects/xfs/cmd\\_tars/xfsprogs-3.1.10.tar.gz](ftp://oss.sgi.com/projects/xfs/cmd_tars/xfsprogs-3.1.10.tar.gz)
- Download MD5 sum: d6159f7a664d95b4c150d580399d4400
- Download size: 1.4 MB
- Estimated disk space required: 55 MB
- Estimated build time: 0.5 SBU

## Kernel Configuration

Enable the following options in the kernel configuration and recompile the kernel:

```
File Systems:
  XFS filesystem support: M or Y
```

## Installation of xfsprogs

Install xfsprogs by running the following commands:

```
make DEBUG=-DNDEBUG INSTALL_USER=root INSTALL_GROUP=root \
  LOCAL_CONFIGURE_OPTIONS="--enable-readline"
```

This package does not come with a test suite.

Now, as the root user:

```
make install install-dev &&
rm -rfv /lib/libhandle.{a,la,so} &&
ln -sfv ../../lib/libhandle.so.1 /usr/lib/libhandle.so &&
sed -i "s@libdir='/lib@libdir='/usr/lib@g" /usr/lib/libhandle.la
```

## Command Explanations

**make DEBUG=-DNDEBUG**: Turns off debugging symbols.

**INSTALL\_USER=root INSTALL\_GROUP=root**: This sets the owner and group of the installed files.

**LOCAL\_CONFIGURE\_OPTIONS=" . . . "**: This passes extra configuration options to the configure script. The example `--enable-readline` parameter enables linking the XFS programs with the `libreadline.so` library, in order to allow editing interactive commands.

**OPTIMIZER=" . . . "**: Adding this parameter to the end of the **make** command overrides the default optimization settings.

## Contents

<b>Installed Programs:</b>	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_mdrestore, xfs_metadump, xfs_mkfile, xfs_ncheck, xfs_quota, xfs_repair, and xfs_rtcp
<b>Installed Libraries:</b>	libhandle.{so,a}
<b>Installed Directories:</b>	/usr/include/xfs and /usr/share/doc/xfsprogs

## Short Descriptions

<b>fsck.xfs</b>	simply exits with a zero status, since XFS partitions are checked at mount time.
<b>mkfs.xfs</b>	constructs an XFS file system.
<b>xfs_admin</b>	changes the parameters of an XFS file system.
<b>xfs_bmap</b>	prints block mapping for an XFS file.
<b>xfs_check</b>	checks XFS file system consistency.
<b>xfs_copy</b>	copies the contents of an XFS file system to one or more targets in parallel.
<b>xfs_db</b>	is used to debug an XFS file system.
<b>xfs_freeze</b>	suspends access to an XFS file system.
<b>xfs_growfs</b>	expands an XFS file system.
<b>xfs_info</b>	is equivalent to invoking <b>xfs_growfs</b> , but specifying that no change to the file system is to be made.
<b>xfs_io</b>	is a debugging tool like <b>xfs_db</b> , but is aimed at examining the regular file I/O path rather than the raw XFS volume itself.
<b>xfs_logprint</b>	prints the log of an XFS file system.
<b>xfs_mdrestore</b>	restores an XFS metadump image to a filesystem image.
<b>xfs_metadump</b>	copies XFS filesystem metadata to a file.
<b>xfs_mkfile</b>	creates an XFS file, padded with zeroes by default.
<b>xfs_ncheck</b>	generates pathnames from inode numbers for an XFS file system.
<b>xfs_quota</b>	is a utility for reporting and editing various aspects of filesystem quota.
<b>xfs_repair</b>	repairs corrupt or damaged XFS file systems.
<b>xfs_rtcp</b>	copies a file to the real-time partition on an XFS file system.
<b>libhandle.so</b>	contains XFS-specific functions that provide a way to perform certain filesystem operations without using a file descriptor to access filesystem objects.

# 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.

# Bluefish-2.2.4

## Introduction to Bluefish

Bluefish is a GTK+ text editor targeted towards programmers and web designers, with many options to write websites, scripts and programming code. Bluefish supports many programming and markup languages, and it focuses on editing dynamic and interactive websites.

This package is known to build and work properly using an LFS-7.2 platform.

## Package Information

- Download (HTTP): <http://www.bennewitz.com/bluefish/stable/source/bluefish-2.2.4.tar.bz2>
- 
- Download MD5 sum: abc06b90c38c3714f19428d16a5cb311
- Download size: 3.6 MB
- Estimated disk space required: 70 MB
- Estimated build time: 0.8 SBU

## Bluefish Dependencies

### Required

GTK+-2.24.17 or GTK+-3.6.4. If both are installed, **configure** defaults to using GTK+ 3.

### Optional

enchant-1.6.0 (for spell checking), Gucharmap-3.6.1, Jing and PCRE-8.32

## 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
```

## Contents

<b>Installed Program:</b>	bluefish
<b>Installed Libraries:</b>	None
<b>Installed Directories:</b>	/usr/lib/bluefish, /usr/share/bluefish, /usr/share/doc/bluefish and /usr/share/xml/bluefish

## Short Descriptions

**bluefish** is a GTK+ text editor for markup and programming.

# Ed-1.7

## 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.

This package is known to build and work properly using an LFS-7.3 platform.

## Package Information

- Download (HTTP): <http://ftp.gnu.org/pub/gnu/ed/ed-1.7.tar.gz>
- Download (FTP): <ftp://ftp.gnu.org/pub/gnu/ed/ed-1.7.tar.gz>
- Download MD5 sum: 0aa4e2428e325203d0d7c3e86c961b1c
- Download size: 88 KB
- Estimated disk space required: 1.4 MB
- Estimated build time: less than 0.1 SBU

## Installation of Ed

Install Ed by running the following commands:

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

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

Now, as the root user:

```
make install
```

## Contents

<b>Installed Programs:</b>	ed and red
<b>Installed Libraries:</b>	None
<b>Installed Directories:</b>	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.

# Emacs-24.2

## Introduction to Emacs

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

This package is known to build and work properly using an LFS-7.2 platform.

## Package Information

- Download (HTTP): <http://ftp.gnu.org/pub/gnu/emacs/emacs-24.2.tar.bz2>
- Download (FTP): <ftp://ftp.gnu.org/pub/gnu/emacs/emacs-24.2.tar.bz2>
- Download MD5 sum: 1676803a50e8adc817fdaaebb9234f14
- Download size: 40 MB
- Estimated disk space required: 357 MB
- Estimated build time: 4.0 SBU

## Emacs Dependencies

### Optional

X Window System, libjpeg-turbo-1.2.1, libpng-1.6.2, LibTIFF-4.0.3, and *libungif*

## Installation of Emacs

Install Emacs by running the following commands:

```
./configure --prefix=/usr \
            --libexecdir=/usr/lib \
            --localstatedir=/var &&
make bootstrap
```

This package does not come with a test suite.

Now, as the root user:

```
make install &&
chown -v -R root:root /usr/share/emacs/24.2
```

## Command Explanations

--libexecdir=/usr/lib: Place library executables in a Filesystem Hierarchy Standard (FHS) location.

--localstatedir=/var: Create game score files in /var/games/emacs instead of /usr/var/games/emacs.

## Contents

<b>Installed Programs:</b>	ctags, ebrowse, emacs, emacsclient, etags, grep-changelog, and rcs-checkin
<b>Installed Libraries:</b>	None
<b>Installed Directories:</b>	/usr/lib/emacs, /usr/share/emacs and /var/games/emacs

## Short Descriptions

<b>ctags</b>	creates cross-reference tagfile database files for source code.
<b>ebrowse</b>	permits browsing of C++ class hierarchies from within <b>emacs</b> .
<b>emacs</b>	is an editor.
<b>emacsclient</b>	attaches an <b>emacs</b> session to an already running <b>emacsclient</b> instance.
<b>etags</b>	is another program to generate source code cross-reference tagfiles.
<b>grep-changelog</b>	prints entries in Change Logs matching various criteria.
<b>rcs-checkin</b>	is a shell script used to check files into RCS.

# JOE-3.7

## Introduction to JOE

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

This package is known to build and work properly using an LFS-7.2 platform.

## Package Information

- Download (HTTP): <http://downloads.sourceforge.net/joe-editor/joe-3.7.tar.gz>
- Download (FTP): <ftp://mirror.ovh.net/gentoo-distfiles/distfiles/joe-3.7.tar.gz>
- Download MD5 sum: 66de1b073e869ba12abbfcde3885c577
- Download size: 680 KB
- Estimated disk space required: 9 MB
- Estimated build time: 0.2 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

<b>Installed Programs:</b>	jmacs, joe, jpico, jstar, rjoe, and termidx
<b>Installed Libraries:</b>	None
<b>Installed Directories:</b>	/etc/joe, /usr/share/joe, and /usr/share/doc/joe

## Short Descriptions

<b>jmacs</b>	is a symbolic link to <b>joe</b> used to launch Emacs emulation mode.
<b>joe</b>	is a small text editor capable of emulating WordStar, Pico, and Emacs.
<b>jpico</b>	is a symbolic link to <b>joe</b> used to launch Pico emulation mode.
<b>jstar</b>	is a symbolic link to <b>joe</b> used to launch WordStar emulation mode.
<b>rjoe</b>	is a symbolic link to <b>joe</b> 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.

## Nano-2.3.2

### Introduction to Nano

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

This package is known to build and work properly using an LFS-7.3 platform.

### Package Information

- Download (HTTP): <http://ftp.gnu.org/gnu/nano/nano-2.3.2.tar.gz>
- Download (FTP): <ftp://ftp.gnu.org/gnu/nano/nano-2.3.2.tar.gz>
- Download MD5 sum: 6451aeae836471cadea8567c44a46c99
- Download size: 1.7 MB
- Estimated disk space required: 12 MB
- Estimated build time: 0.2 SBU

### Nano Dependencies

#### Optional

S-Lang-2.2.4

### Installation of Nano

Install Nano by running the following commands:

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

This package does not come with a test suite.

Now, as the root user:

```
make install &&
install -v -m644 doc/nanorc.sample /etc &&
install -v -m755 -d /usr/share/doc/nano-2.3.2 &&
install -v -m644 doc/{,man/,texinfo/}*.*.html /usr/share/doc/nano-2.3.2
```

### Command Explanations

--enable-utf8: This switch enables unicode support in Nano.

--with-slang=/usr: This forces Nano to use S-Lang. Use this if installed.

### Configuring nano

#### Config Files

/etc/nanorc and ~/.nanorc

## Configuration Information

Example configuration (create as a system-wide /etc/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 directory. It includes color configurations and has some documentation included in the comments.

## Contents

<b>Installed Programs:</b>	nano and rnano
<b>Installed Libraries:</b>	None
<b>Installed Directories:</b>	/usr/share/nano and /usr/share/doc/nano-2.3.2

## Short Descriptions

- nano** is a small, simple text editor which aims to replace Pico, the default editor in the Pine package.  
**rnano** is a restricted mode for **nano**.

# Vim-7.3

## 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.

This package is known to build and work properly using an LFS-7.2 platform.

## Package Information

- 
- Download (FTP): <ftp://ftp.vim.org/pub/vim/unix/vim-7.3.tar.bz2>
- Download MD5 sum: 5b9510a17074e2b37d8bb38ae09edbf2
- Download size: 8.7 MB
- Estimated disk space required: 97 MB
- Estimated build time: 0.8 SBU

## Additional Downloads

- Optional Patch: <http://www.linuxfromscratch.org/patches/blfs/svn/vim-7.3-fixes-524.patch>
- Translated Vim messages: <ftp://ftp.vim.org/pub/vim/extra/vim-7.2-lang.tar.gz>

## Vim Dependencies

### Recommended

X Window System

### Optional

GTK+-2.24.17 or *LessTif*, Python-2.7.5, Tcl-8.6.0, Ruby-1.9.3-p429, and GPM-1.20.7

## 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 you downloaded the optional set of Vim patches, apply them now:

```
patch -Np1 -i ../vim-7.3-fixes-524.patch
```

If desired, unpack the translated messages archive:

```
tar -xf ../vim-7.2-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 &&
./configure --prefix=/usr --with-features=huge &&
make
```

To test the results, issue: **make test**. The vim test suite outputs a lot of binary data to the screen, which can cause issues with the settings of the current terminal. This can be resolved by redirecting the output to a log file. Even if one of the tests fails to produce the file `test.out` in `src/testdir`, the remaining tests will still be executed. If all goes well, the final message in the log file will be `ALL DONE`. Note: Some color tests expect to be executed under the `xterm` terminal emulator.

Now, as the `root` user:

```
make install
```

By default, Vim's documentation is installed in `/usr/share/vim`. The following symlink allows the documentation to be accessed via `/usr/share/doc/vim-7.3`, making it consistent with the location of documentation for other packages:

```
ln -snfv ..../vim/vim73/doc /usr/share/doc/vim-7.3
```

If you wish to update the runtime files, issue the following command (requires `rsync-3.0.9`):

```
rsync -avzcp --delete --exclude="/dos/" --exclude="/spell/" \
      ftp.nluug.nl::Vim/runtime/ ./runtime/
```

To install the runtime files and regenerate the `tags` file, as the `root` user issue:

```
make -C src installruntime &&
vim -c ":helptags /usr/share/doc/vim-7.3" -c ":q"
```

## Command Explanations

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

`--enable-gui=no`: This will prevent compilation of the GUI. Vim will still link against X, so that some features such as the client-server model or the x11-selection (clipboard) are still available.

`--without-x`: If you prefer not to link Vim against X, use this switch.

`--enable-perlinterp`, `--enable-pythoninterp`, `--enable-tclinterp`, `--enable-rubyinterp`: These options include the Perl, Python, Tcl, or Ruby interpreters that allow using other application code in vim scripts.

## Configuring Vim

### Config Files

`/etc/vimrc` and `~/.vimrc`

## Configuration Information

Vim has an integrated spell checker which you can enable it if you issue the following in a vim window:

```
:setlocal spell spelllang=ru
```

This setting will enable spell checking for the Russian language for the current session.

By default, Vim only installs spell files for the English language. If a spell file is not available for a language, then Vim will call the \$VIMRUNTIME/plugin/spellfile.vim plugin and will try to obtain the \*.spl and optionally \*.sug from the vim ftp server, by using the \$VIMRUNTIME/plugin/netrwPlugin.vim plugin.

Alternatively you can manually download the \*.spl and \*.sug files from: <ftp://ftp.vim.org/pub/vim/runtime/spell/> and save them to ~/.vim/spell or in /usr/share/vim/vim73/spell/.

To find out what's new in Vim-7.3 issue the following command:

```
:help version-7.3
```

For additional information on setting up Vim configuration files, see The vimrc Files and <http://www.vi-improved.org/vimrc.php>.

## Contents

A list of the reinstalled files, along with their short descriptions can be found in the *LFS Vim Installation Instructions*

**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**.

## Other Editors

**pico** is a text editor installed as a part of Re-alpine-2.02.

**mcedit** is a text editor installed as part of mc-4.8.6.

## 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.

# Dash-0.5.7

## Introduction to Dash

Dash is a POSIX compliant shell. It can be installed as /bin/sh or as the default shell for either root or a second user with a userid of 0. It depends on fewer libraries than the Bash shell and is therefore less likely to be affected by an upgrade problem or disk failure. Dash is also useful for checking that a script is completely compatible with POSIX syntax.

This package is known to build and work properly using an LFS-7.2 platform.

## Package Information

- Download (HTTP): <http://gondor.apana.org.au/~herbert/dash/files/dash-0.5.7.tar.gz>
- 
- Download MD5 sum: f6cedb10ae7258adb5ab17a10ae80d51
- Download size: 224 KB
- Estimated disk space required: 3.5 MB
- Estimated build time: 0.1 SBU

## Dash Dependencies

### Optional

*libedit* (command line editor library)

## Installation of Dash

Install Dash by running the following commands:

```
./configure --bindir=/bin --mandir=/usr/share/man &&
make
```

This package does not come with a test suite.

Now, as the root user:

```
make install
```

If you would like to make **dash** the default **sh**, recreate the /bin/sh symlink as the root user:



### Note

If you create the symbolic link from **dash** to **sh**, you will need to reset the link to **bash** to build LFS.

```
ln -svf dash /bin/sh
```

## Command Explanations

--bindir=/bin: This parameter places the **dash** binary into the root filesystem.

--with-libedit: To compile Dash with libedit support.

# Configuring Dash

## Config Files

Dash sources `/etc/profile` and `~/.profile`

## Configuration Information

Update `/etc/shells` to include the Dash shell by issuing the following command as the root user:

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

## Contents

<b>Installed Program:</b>	dash
<b>Installed Libraries:</b>	None
<b>Installed Directories:</b>	None

## Short Description

**dash** is a POSIX compliant shell.

# Tcsh-6.18.01

## Introduction to Tcsh

The Tcsh package contains “an enhanced but completely compatible version of the Berkeley Unix C shell (**csh**)”. This is useful as an alternative shell for those who prefer C syntax to that of the **bash** shell, and also because some programs require the C shell in order to perform installation tasks.

This package is known to build and work properly using an LFS-7.2 platform.

## Package Information

- Download (HTTP): <http://www.sfr-fresh.com/unix/misc/tcsh-6.18.01.tar.gz>
- Download (FTP): <ftp://ftp.astron.com/pub/tcsh/tcsh-6.18.01.tar.gz>
- Download MD5 sum: 6eed09dbd4223ab5b6955378450d228a
- Download size: 912 KB
- Estimated disk space required: 12.6 MB
- Estimated build time: 0.2 SBU

## Installation of Tcsh

Install Tcsh by running the following commands:

```
sed -i -e 's|\$.*|#&|' -e 's|fR/g|m|' tcsh.man2html &&
./configure --prefix=/usr --bindir=/bin &&
make &&
sh ./tcsh.man2html
```

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

Now, as the root user:

```
make install install.man &&
ln -v -sf tcsh    /bin/csh &&
ln -v -sf tcsh.1  /usr/share/man/man1/csh.1 &&
install -v -m755 -d      /usr/share/doc/tcsh-6.18.01/html &&
install -v -m644 tcsh.html/* /usr/share/doc/tcsh-6.18.01/html &&
install -v -m644 FAQ        /usr/share/doc/tcsh-6.18.01
```

## Command Explanations

**sed -i -e 's|\\$.\*|#&|' -e 's|fR/g|m|' tcsh.man2html**: This updates some deprecated Perl code.

**--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

<b>Installed Program:</b>	tcsh
<b>Installed Libraries:</b>	None
<b>Installed Directory:</b>	<code>/usr/share/doc/tcsh-6.18.01</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-5.0.0**

## **Introduction to zsh**

The zsh package contains a command interpreter (shell) usable as an interactive login shell and as a shell script command processor. Of the standard shells, zsh most closely resembles ksh but includes many enhancements.

This package is known to build and work properly using an LFS-7.2 platform.

## **Package Information**

- Download (HTTP): <http://downloads.sourceforge.net/zsh/zsh-5.0.0.tar.bz2>
- 
- Download MD5 sum: e8484468925cec8d9a84b8b04797e764
- Download size: 2.9 MB
- Estimated disk space required: 61 MB (includes installing all documentation)
- Estimated build time: 0.7 SBU

## **Additional Downloads**

- Optional Documentation: <http://downloads.sourceforge.net/zsh/zsh-5.0.0-doc.tar.bz2>
- MD5 sum: b3a026cf02471b66454a2b241a4d92a4

## **zsh Dependencies**

### **Optional**

PCRE-8.32 and libcap2-2.22

## **Installation of zsh**

If you downloaded the optional documentation, unpack it with the following command:

```
tar --strip-components=1 -xvf ../zsh-5.0.0-doc.tar.bz2
```

Install zsh by running the following commands:

```
./configure --prefix=/usr \
            --bindir=/bin \
            --sysconfdir=/etc/zsh \
            --enable-etcdir=/etc/zsh &&
make &&

makeinfo Doc/zsh.texi --html      -o Doc/html          &&
makeinfo Doc/zsh.texi --html --no-split --no-headers \
            -o Doc/zsh.html &&
makeinfo Doc/zsh.texi --plaintext -o Doc/zsh.txt
```

If you have texlive-20120701 installed, you can build PDF format of the documentation by issuing the following command:

```
texi2pdf Doc/zsh.texi -o Doc/zsh.pdf
```

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

Now, as the root user:

```
make install &&
make infodir=/usr/share/info install.info

install -v -m755 -d /usr/share/doc/zsh-5.0.0/html &&
install -v -m644 Doc/html/* \
           /usr/share/doc/zsh-5.0.0/html &&
install -v -m644 Doc/zsh.{html,txt} \
           /usr/share/doc/zsh-5.0.0
```

If you downloaded the optional documentation, install it by issuing the following commands as the root user:

```
make htmldir=/usr/share/doc/zsh-5.0.0/html install.html &&
install -v -m644 Doc/zsh.dvi /usr/share/doc/zsh-5.0.0
```

If you built the PDF format of the documentation, install it by issuing the following command as the root user:

```
install -v -m644 Doc/zsh.pdf \
           /usr/share/doc/zsh-5.0.0
```

## Command Explanations

--sysconfdir=/etc/zsh and --enable-etcdir=/etc/zsh: These parameters are used so that all the zsh configuration files are consolidated into the /etc/zsh directory. Omit these parameters if you wish to retain historical compatibility by having all the files located in the /etc directory.

--bindir=/bin: This parameter places the **zsh** binaries into the root filesystem.

--enable-cap: This parameter enables POSIX capabilities.

--disable-gdbm: This parameter disables the use of the GDBM library.

--enable-pcre: This parameter allows to use the pcre regular expression library in shell builtins.

## Multiple partitions

Linking zsh dynamically against pcre and/or gdbm produces runtime dependencies on libpcre.so and/or libgdbm.so respectively, which both reside in /usr hierarchy. If /usr is a separate mount point and zsh needs to be available in boot time, then its supporting libraries should be in /lib too. You can move the libraries as follows:

```
mv -v /usr/lib/libpcre.so.* /lib &&
ln -v -sf ../../lib/libpcre.so.0 /usr/lib/libpcre.so

mv -v /usr/lib/libgdbm.so.* /lib &&
ln -v -sf ../../lib/libgdbm.so.3 /usr/lib/libgdbm.so
```

Alternatively you can statically link zsh against pcre and gdbm if you modify the config.modules file (you need first to run configure to generate it).

# Configuring zsh

## Config Files

There are a whole host of configuration files for zsh including `/etc/zsh/zshenv`, `/etc/zsh/zprofile`, `/etc/zsh/zshrc`, `/etc/zsh/zlogin` and `/etc/zsh/zlogout`. You can find more information on these in the `zsh(1)` and related manual pages.

## Configuration Information

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

```
cat >> /etc/shells << "EOF"
/bin/zsh
/bin/zsh-5.0.0
EOF
```

## Contents

<b>Installed Programs:</b>	zsh and zsh-5.0.0
<b>Installed Libraries:</b>	Numerous plugin helper modules
<b>Installed Directories:</b>	<code>/etc/zsh</code> , <code>/usr/lib/zsh</code> , <code>/usr/share/doc/zsh-5.0.0</code> and <code>/usr/share/zsh</code>

## 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.

## Chapter 8. Virtualization

Virtualization allows running a complete operating system, or virtual machine (VM), within another operating environment as a task. There are several commercial and open source environments that either emulate another processor or utilize the hardware virtualization features of the host processor.

# qemu-1.4.0

## Introduction to qemu

qemu is a full virtualization solution for Linux on x86 hardware containing virtualization extensions (Intel VT or AMD-V).

This package is known to build and work properly using an LFS-7.3 platform.

## Package Information

- Download (HTTP): <http://wiki.qemu.org/download/qemu-1.4.0.tar.bz2>
- 
- Download MD5 sum: 78f13b774814b6b7ebcaf4f9b9204318
- Download size: 10 MB
- Estimated disk space required: 188 MB
- Estimated build time: 1.5 SBU

## Additional Downloads

- Required Patch: <http://www.linuxfromscratch.org/patches/blfs/svn/qemu-1.4.0-fixes-1.patch>

## Qemu Dependencies

### Required

GLib-2.34.3, Python-2.7.5, SDL-1.2.15, and X Window System

### Optional

ALSA-1.0.27, attr-2.4.46, Check-0.9.10, cURL-7.30.0, EsounD-0.2.41, MesaLib-9.1.3, and Cyrus SASL-2.1.26. Note that this optional dependencies list is not comprehensive. See the output of **./configure --help** for a more complete list.

## KVM Prerequisites

Before building qemu, check to see if your processor supports Virtualization Technology (VT):

```
egrep '^flags.*(vmx|svm)' /proc/cpuinfo
```

If you get any output, you have VT technology (vmx for Intel processors and svm for AMD processors). You then need to go into your system BIOS and ensure it is enabled. After enabling, reboot back to your LFS instance.

## Kernel Configuration

Enable the following options in the kernel configuration and recompile the kernel if necessary:

Virtualization: Y	
Kernel-based Virtual Machine (KVM) support: M or Y	
KVM for Intel processors support: M or Y	
KVM for AMD processors support: M or Y	

The Intel or AMD settings are not both required, but the one matching your system processor is required.

For networking, check that the settings CONFIG\_BRIDGE, CONFIG\_STP, CONFIG\_TUN are enabled and bridge-utils-1.5 is installed.

## Installation of qemu

If xorg is not installed in /usr, then the linker needs to be told where it is. For example:

```
export LIBRARY_PATH=/opt/xorg/lib
```

Install qemu by running the following commands:

```
patch -Np1 -i ../qemu-1.4.0-fixes-1.patch
./configure --prefix=/usr \
             --sysconfdir=/etc \
             --target-list=x86_64-softmmu &&
make
```

To run the built in tests, run **make V=1 check**.

Now, as the root user:

```
make install
```



### Note

For convenience you may want to create a symbolic link to run **qemu-system-x86\_64**:

```
ln -sv qemu-system-x86_64 /usr/bin/qemu
```

## Command Explanations

**--target-list=x86\_64-softmmu**: This option limits the build target to the x86\_64 architecture. For other hardware emulation see the --target-list list in **configure**'s help output. Omitting this option will build all architectures.

## Configuring qemu

To generate an image, run:

```
qemu-img create -f qcow2 vdisk.img 10G
```

Adjust the virtual disk size and image filename as desired. The actual size of the file will be less than specified, but will expand as it is used.



### Note

The following instructions assume you have created the optional symbolic link, **qemu**. Additionally, you must run **qemu** from an X-Windows based terminal.

To install an operating system, download an iso of your choice or use a pre-intalled cdrom device. For the purposes of this example, use Fedora 16 that is downloaded as **Fedora-16-x86\_64-Live-LXDE.iso** in the current directory. Run the following:

```
qemu -enable-kvm -hda vdisk.img \
      -cdrom Fedora-16-x86_64-Live-LXDE.iso \
      -boot d \
      -m 384
```

Follow the normal installation procedures for the chosen distribution. The `-boot` option specifies the boot order of drives as a string of drive letters. Valid drive letters are: a, b (floppy 1 and 2), c (first hard disk), d (first CD-ROM). The `-m` option is the amount of memory to use for the virtual machine. If you have sufficient memory (2G or more), 1G is a reasonable value. For computers with 512MB of RAM it's safe to use `-m 192`, or even `-m 128` (the default). The `-enable-kvm` option allows for hardware acceleration. Without this switch, the emulation is relatively slow.

To run the newly installed operating system, run:

```
qemu -enable-kvm vdisk.img -m 384
```

To add networking to the instance add "`-net nic -net user`" to the command above. `qemu` provides a DHCP server for the VM and, depending on the client system, sets up networking through the host.

One problem with the above networking solution is that it does not provide the ability to connect with the local network. To do that, there are several additional steps that need to be done, all as the `root` user:

- Set up bridging with `bridge-utils-1.5`.
- Allow the host system to forward IP packets.

```
sysctl -w net.ipv4.ip_forward=1
```

To make this permanent, add the command to `/etc/sysctl.conf`:

```
cat >> /etc/sysctl.conf << EOF
net.ipv4.ip_forward=1
EOF
```

- Create scripts for qemu to attach the client network device, usually visible as tap0, to the host bridge.

```
cat >> /etc/qemu-ifup << EOF
#!/bin/bash

switch=br0

if [ -n "\$1" ]; then
    # Add new tap0 interface to bridge
    /sbin/ip link set \$1 up
    sleep 0.5s
    /usr/sbin/brctl addif \$switch \$1
else
    echo "Error: no interface specified"
    exit 1
fi

exit 0
EOF

chmod +x /etc/qemu-ifup
```

```
cat >> /etc/qemu-ifdown << EOF
#!/bin/bash

switch=br0

if [ -n "\$1" ]; then
    # Remove tap0 interface from bridge
    /usr/sbin/brctl delif \$switch \$1
else
    echo "Error: no interface specified"
    exit 1
fi

exit 0
EOF

chmod +x /etc/qemu-ifdown
```



### Note

The backslashes in the above script are for convenience for cut/paste operations. The backslashes should *not* appear in the final scripts.

- Start qemu with "-net nic -net tap" options.
- If a connection, such as ssh, from the local network to the client VM is desired, the client should probably be configured with a static IP address.

## Contents

<b>Installed Program:</b>	qemu-ga, qemu-img, qemu-io, qemu-nbd, qemu-system-x86_64
<b>Installed Libraries:</b>	None
<b>Installed Directories:</b>	/etc/qemu, /usr/share/qemu, /usr/share/doc/qemu

## Short Description

<b>qemu-ga</b>	implements support for QMP (QEMU Monitor Protocol) commands and events that terminate and originate respectively within the guest using an agent built as part of QEMU.
<b>qemu-img</b>	provides commands to manage QEMU disk images.
<b>qemu-io</b>	is a diagnostic and manipulation program for (virtual) memory media. It is still at an early stage of development.
<b>qemu-nbd</b>	exports Qemu disk images using the QEMU Disk Network Block Device (NBD) protocol.
<b>qemu-system-x86_64</b>	is the QEMU PC System emulator.

## **Part III. General Libraries and Utilities**

# Chapter 9. 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 these and some others are listed and it is explained why you may want to install them.

## Apr-1.4.6

### Introduction to Apr

The Apache Portable Runtime (APR) is a supporting library for the Apache web server. It provides a set of application programming interfaces (APIs) that map to the underlying Operating System (OS). Where the OS doesn't support a particular function, APR will provide an emulation. Thus programmers can use the APR to make a program portable across different platforms.

This package is known to build and work properly using an LFS-7.3 platform.

### Package Information

- Download (HTTP): <http://archive.apache.org/dist/apr/apr-1.4.6.tar.bz2>
- Download (FTP): <ftp://ftp.mirrorservice.org/sites/ftp.apache.org/apr/apr-1.4.6.tar.bz2>
- Download MD5 sum: ffee70a111fd07372982b0550bbb14b7
- Download size: 768 KB
- Estimated disk space required: 11 MB
- Estimated build time: 0.2 SBU (1.6 with tests)

### Installation of Apr

Install Apr by running the following commands:

```
./configure --prefix=/usr --disable-static \
--with-installbuilddir=/usr/share/apr-1/build &&
make
```

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

Now, as the **root** user:

```
make install
```

### Command Explanations

**--disable-static**: This stops it from compiling a static version of libapr-1.

### Contents

<b>Installed Program:</b>	apr-1-config
<b>Installed Library:</b>	libapr-1.so
<b>Installed Directories:</b>	/usr/include/apr and /usr/share/apr-1/build

### Short Descriptions

<b>apr-1-config</b>	is a shell script used to retrieve information about the apr library in the system. It is typically used to compile and link against the library.
<b>libapr-1.so</b>	is the Apache Portable Runtime library.

# Aspell-0.60.6.1

## 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.

This package is known to build and work properly using an LFS-7.2 platform.

## Package Information

- Download (HTTP): <http://ftp.gnu.org/gnu/aspell/aspell-0.60.6.1.tar.gz>
- Download (FTP): <ftp://ftp.gnu.org/gnu/aspell/aspell-0.60.6.1.tar.gz>
- Download MD5 sum: e66a9c9af6a60dc46134fdacf6ce97d7
- Download size: 1.8 MB
- Estimated disk space required: 58 MB (Additional 8 MB for EN dictionary)
- Estimated build time: 0.5 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-2.20 (for the dictionaries)

## Installation of Aspell

Install Aspell 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/aspell-0.60.6.1/aspell{,-dev}.html &&
install -v -m644 manual/aspell.html/* \
    /usr/share/doc/aspell-0.60.6.1/aspell.html &&
install -v -m644 manual/aspell-dev.html/* \
    /usr/share/doc/aspell-0.60.6.1/aspell-dev.html
```

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

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

### Short Descriptions

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

# Boost-1.53.0

## Introduction to Boost

Boost provides a set of free peer-reviewed portable C++ source libraries. It includes libraries for linear algebra, pseudorandom number generation, multithreading, image processing, regular expressions and unit testing.

This package is known to build and work properly using an LFS-7.3 platform.

## Package Information

- Download (HTTP): [http://downloads.sourceforge.net/boost/boost\\_1\\_53\\_0.tar.bz2](http://downloads.sourceforge.net/boost/boost_1_53_0.tar.bz2)
- 
- Download MD5 sum: a00d22605d5dbcfb4c9936a9b35bc4c2
- Download size: 54 MB
- Estimated disk space required: 700 MB
- Estimated build time: 3.5 SBU

## Boost Dependencies

### Optional

ICU-51.1 and Python-2.7.5

## Installation of Boost

Install Boost by running the following commands:

```
./bootstrap.sh --prefix=/usr &&
./b2 stage threading=multi link=shared
```

This package does not come with a test suite.

Now, as the `root` user:

```
./b2 install threading=multi link=shared
```

## Command Explanations

`threading=multi`: This parameter ensures that Boost is built with multithreading support.

`link=shared`: This parameter ensures that only shared libraries are created, except for `libboost_exception` and `libboost_exec_monitor` which are created as static. Most people will not need the static libraries, indeed most programs using Boost only use the headers, but omit this parameter if you do need them.

## Contents

**Installed Programs:**

None

**Installed Libraries:**

libboost\_atomic.so, libboost\_chrono.so, libboost\_context.so, libboost\_date\_time.so,  
libboost\_exception.a, libboost\_filesystem.so, libboost\_graph.so,  
libboost\_iostreams.so, libboost\_locale.so, libboost\_math\_c99f.so,  
libboost\_math\_c99l.so, libboost\_math\_c99.so, libboost\_math\_tr1f.so,  
libboost\_math\_tr1l.so, libboost\_math\_tr1.so, libboost\_prg\_exec\_monitor.so,  
libboost\_program\_options.so, libboost\_python.so, libboost\_random.so,  
libboost\_regex.so, libboost\_serialization.so, libboost\_signals.so, libboost\_system.so,  
libboost\_test\_exec\_monitor.a, libboost\_thread.so, libboost\_timer.so,  
libboost\_unit\_test\_framework.so, libboost\_wave.so and libboost\_wserialization.so

**Installed Directory:**

/usr/include/boost

# enchant-1.6.0

## Introduction to enchant

The enchant package provide a generic interface into various existing spell checking libraries.

This package is known to build and work properly using an LFS-7.2 platform.

## Package Information

- Download (HTTP): <http://www.abisource.com/downloads/enchant/1.6.0/enchant-1.6.0.tar.gz>
- Download (FTP): <ftp://ftp.netbsd.org/pub/pkgsrc/distfiles/enchant-1.6.0.tar.gz>
- Download MD5 sum: de11011aff801dc61042828041fb59c7
- Download size: 593 KB
- Estimated disk space required: 17 MB
- Estimated build time: 0.3 SBU

## enchant Dependencies

### Required

GLib-2.34.3

### Recommended

Aspell-0.60.6.1

### Optional

D-Bus GLib Bindings-0.100.2, *Hspell*, *Hunspell*, and *Voikko*

## Installation of enchant

Install enchant 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 enchant

### Config Files

`~/.enchant` and `/usr/share/enchant/enchant.ordering`

### Configuration Information

See more details in the `enchant(1)` manual page.

## Contents

<b>Installed Programs:</b>	enchant and enchant-lsmod
<b>Installed Libraries:</b>	libenchant.{so,a} and various backend libraries
<b>Installed Directories:</b>	/usr/{include/enchant,lib/enchant,share/enchant}

## Short Descriptions

<b>enchant</b>	is a spellchecker
<b>enchant-lsmod</b>	lists available backends, languages, and dictionaries.
<b>libenchant.{so,a}</b>	contains spell checking interface API functions.

# Exempi-2.2.0

## Introduction to Exempi

Exempi is an implementation of XMP (Adobe's Extensible Metadata Platform).

This package is known to build and work properly using an LFS-7.2 platform.

## Package Information

- Download (HTTP): <http://libopenraw.freedesktop.org/download/exempi-2.2.0.tar.bz2>
- 
- Download MD5 sum: f46d96975613593ee17aaf48cd350228
- Download size: 3.3 MB
- Estimated disk space required: 140 MB
- Estimated build time: 1.0 SBU

## Exempi Dependencies

### Required

Boost-1.53.0

## Installation of Exempi

Install Exempi by running the following commands:

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

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

Now, as the root user:

```
make install
```

## Command Explanations

**--disable-static**: This switch prevents installation of static versions of the libraries.

## Contents

<b>Installed Program:</b>	exempi
<b>Installed Library:</b>	libexempi.so
<b>Installed Directory:</b>	/usr/include/exempi-2.0

## Short Descriptions

**libexempi.so** is a library used to parse XMP metadata.

# Expat-2.1.0

## Introduction to Expat

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

This package is known to build and work properly using an LFS-7.3 platform.

## Package Information

- Download (HTTP): <http://downloads.sourceforge.net/expat/expat-2.1.0.tar.gz>
- 
- Download MD5 sum: dd7dab7a5fea97d2a6a43f511449b7cd
- Download size: 552 KB
- Estimated disk space required: 6.0 MB
- Estimated build time: 0.1 SBU

## Installation of Expat

Install Expat by running the following commands:

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

Now, as the root user:

```
make install &&
install -v -m755 -d /usr/share/doc/expat-2.1.0 &&
install -v -m644 doc/*.{html,png,css} /usr/share/doc/expat-2.1.0
```

To test the results, issue: **make check** as an unprivileged user. Note this must be done after the package is installed.

## Command Explanations

**--disable-static**: This switch prevents installation of static versions of the libraries.

## Contents

<b>Installed Program:</b>	xmlwf
<b>Installed Library:</b>	libexpat.so
<b>Installed Directory:</b>	/usr/share/doc/expat-2.1.0

## Short Descriptions

<b>xmlwf</b>	is a non-validating utility to check whether or not XML documents are well formed.
<b>libexpat.so</b>	contains API functions for parsing XML.

# Gamin-0.1.10

## Introduction to Gamin

The Gamin package contains a File Alteration Monitor which is useful for notifying applications of changes to the file system. Gamin is compatible with *FAM*.

This package is known to build using an LFS 7.3 platform but has not been tested.

## Package Information

- Download (HTTP): <http://www.gnome.org/~veillard/gamin/sources/gamin-0.1.10.tar.gz>
- Download (FTP): <ftp://mirror.ovh.net/gentoo-distfiles/distfiles/gamin-0.1.10.tar.gz>
- Download MD5 sum: b4ec549e57da470c04edd5ec2876a028
- Download size: 639 KB
- Estimated disk space required: 6.7 MB
- Estimated build time: 0.1 SBU

## Gamin Dependencies

### Required

GLib-2.34.3

### Optional

Python-2.7.5

## Installation of Gamin

Install Gamin by running the following commands:

```
sed -i 's/G_CONST_RETURN/const/' server/gam_{node,subscription}.{c,h} &&
./configure --prefix=/usr --libexecdir=/usr/sbin --disable-static &&
make
```

To test the results, issue: **make check**. Note that some tests may display errors.

Now, as the root user:

```
make install &&
install -v -m755 -d /usr/share/doc/gamin-0.1.10 &&
install -v -m644 doc/*.{html,fig,gif,txt} /usr/share/doc/gamin-0.1.10
```

## Command Explanations

**sed -i 's/G\_CONST\_RETURN/const/' server/gam\_{node,subscription}.{c,h}**: This sed fixes compiling with Glib 2.32 or greater installed.

**--disable-static**: This switch prevents installation of static versions of the libraries.

# Configuring Gamin

## Configuration Information

No configuration is generally required and the default options should work for most users. See <http://www.gnome.org/~veillard/gamin/config.html> for details.

## Contents

<b>Installed Program:</b>	gam_server
<b>Installed Libraries:</b>	libfam.so, libgamin-1.so, libgamin_shared.a and (if you've installed Python 2) _gamin.so.
<b>Installed Directory:</b>	/usr/share/doc/gamin-0.1.10

## Short Descriptions

- gam\_server** is the file alteration monitor daemon that is started on demand for each user.  
**libgamin.so** contains functions that support the file allocation monitor.  
**libfam.so** contains functions that provide compatibility with FAM.

# GLib-2.34.3

## Introduction to GLib

The GLib package contains a low-level libraries 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.

This package is known to build and work properly using an LFS-7.3 platform.

## Package Information

- Download (HTTP): <http://ftp.gnome.org/pub/gnome/sources/glib/2.34/glib-2.34.3.tar.xz>
- Download (FTP): <ftp://ftp.gnome.org/pub/gnome/sources/glib/2.34/glib-2.34.3.tar.xz>
- Download MD5 sum: a4ca31e258273c3761e3de2edd607661
- Download size: 6.1 MB
- Estimated disk space required: 225 MB
- Estimated build time: 1.6 SBU (additional 5.0 SBU to run the test suite)

## GLib Dependencies

### Required

libffi-3.0.13, pkg-config-0.28 and Python-2.7.5

### Recommended

PCRE-8.32 (built with Unicode properties)

### Optional

attr-2.4.46, D-Bus-1.6.10 (required to run the tests) and GTK-Doc-1.18

## Additional Runtime Dependencies

Quoted directly from the `INSTALL` file; “Some of the mimetype-related functionality in GIO requires the **update-mime-database** and **update-desktop-database** utilities”, which are part of `shared-mime-info-1.1` and `desktop-file-utils-0.21`, respectively.

## Installation of GLib

Install GLib by running the following commands:

```
./configure --prefix=/usr --with-pcre=system &&
make
```

The GLib test suite requires `desktop-file-utils` in order to run. However, `desktop-file-utils` requires GLib in order to compile; therefore, you must first install GLib and then run the test suite.

Now, as the root user:

```
make install
```

You should now install `desktop-file-utils-0.21` and proceed to run the test suite.

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

## Command Explanations

**--with-pcre=system:** This switch causes the build to use a system-provided version of the PCRE library instead of an internal version.

**--enable-gtk-doc:** Use this parameter if GTK-Doc is installed and you wish to rebuild and install the API documentation.

## Contents

<b>Installed Programs:</b>	gdbus, gdbus-codegen, gio-querymodules, glib-compile-resources, glib-compile-schemas, glib-genmarshal, glib-gettextize, glib-mkenums, gobject-query, gresource, gsettings, gtester and gtester-report
<b>Installed Libraries:</b>	libgio-2.0.so, libglib-2.0.so, libgmodule-2.0.so, libgobject-2.0.so and libgthread-2.0.so
<b>Installed Directories:</b>	/usr/include/gio-unix-2.0, /usr/include/glib-2.0, /usr/lib/gdbus-2.0, /usr/lib/gio, /usr/lib/glib-2.0, /usr/share/glib-2.0, /usr/share/gtk-doc/html/gio, /usr/share/gtk-doc/html/glib and /usr/share/gtk-doc/html/gobject

## Short Descriptions

<b>gdbus</b>	is a simple tool used for working with D-Bus objects.
<b>gdbus-codegen</b>	is used to generate code and/or documentation for one or more D-Bus interfaces.
<b>gio-querymodules</b>	is used to create a giomodule.cache file in the listed directories. This file lists the implemented extension points for each module that has been found.
<b>glib-compile-resources</b>	is used to read the resource description from file and the files that it references to create a binary resource bundle that is suitable for use with the GResource API.
<b>glib-compile-schemas</b>	is used to compile all the GSettings XML schema files in directory into a binary file with the name gschemas.compiled that can be used by GSettings.
<b>glib-genmarshal</b>	is a C code marshaller generation utility for GLib closures.
<b>glib-gettextize</b>	is a variant of the gettext internationalization utility.
<b>glib-mkenums</b>	is a C language enum description generation utility.
<b>gobject-query</b>	is a small utility that draws a tree of types.
<b>gresource</b>	offers a simple commandline interface to GResource.
<b>gsettings</b>	offers a simple commandline interface to GSettings.
<b>gtester</b>	is a test running utility.
<b>gtester-report</b>	is a test report formatting utility.
GLib libraries	contain a low-level core libraries for the GIMP Toolkit.

# GLibmm-2.34.1

## Introduction to GLibmm

The GLibmm package is a set of C++ bindings for GLib.

This package is known to build and work properly using an LFS-7.2 platform.

## Package Information

- Download (HTTP): <http://ftp.gnome.org/pub/gnome/sources/glibmm/2.34/glibmm-2.34.1.tar.xz>
- Download (FTP): <ftp://ftp.gnome.org/pub/gnome/sources/glibmm/2.34/glibmm-2.34.1.tar.xz>
- Download MD5 sum: 25dccf8e95abcde034a002b450a43125
- Download size: 5.5 MB
- Estimated disk space required: 145 MB
- Estimated build time: 1.2 SBU

## GLibmm Dependencies

### Required

GLib-2.34.3 and libsigc++-2.2.11

## Installation of GLibmm

Install GLibmm by running the following commands:

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

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

Now, as the root user:

```
make install
```

## Contents

<b>Installed Programs:</b>	None
<b>Installed Libraries:</b>	libgiomm-2.4.so, libglibmm-2.4.so and libglibmm_generate_extra_defs-2.4.so
<b>Installed Directories:</b>	/usr/include/giomm-2.4, /usr/include/glibmm-2.4, /usr/lib/giomm-2.4, /usr/lib/glibmm-2.4, /usr/share/devhelp/books/glibmm-2.4 and /usr/share/doc/glibmm-2.4

## Short Descriptions

**libgiomm-2.4.so** contains the Gio API classes.

**libglibmm-2.4.so** contains the GLib API classes.

# GMime-2.6.15

## Introduction to GMime

The GMime package contains a set of utilities for parsing and creating messages using the Multipurpose Internet Mail Extension (MIME) as defined by the applicable RFCs. See the *GMime web site* for the RFCs resourced. This is useful as it provides an API which adheres to the MIME specification as closely as possible while also providing programmers with an extremely easy to use interface to the API functions.

This package is known to build and work properly using an LFS-7.2 platform.

## Package Information

- Download (HTTP): <http://ftp.gnome.org/pub/gnome/sources/gmime/2.6/gmime-2.6.15.tar.xz>
- Download (FTP): <ftp://ftp.gnome.org/pub/gnome/sources/gmime/2.6/gmime-2.6.15.tar.xz>
- Download MD5 sum: a139ee5870ec4c0bf28fcff8ac0af444
- Download size: 716 KB
- Estimated disk space required: 22 MB
- Estimated build time: 0.3 SBU

## GMime Dependencies

### Required

GLib-2.34.3

### Optional

DocBook-utils-0.6.14, GPGME-1.4.1, GTK-Doc-1.18 and *Gtk#* (requires *Mono*)

## Installation of GMime

Install GMime by running the following commands:

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

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

Now, as the **root** user:

```
make install
```

## Command Explanations

**--disable-static**: This switch prevents installation of static versions of the libraries.

**--enable-smime**: Use this switch if you have installed GPGME-1.4.1 and wish to enable S/MIME support in GMime.

**--enable-gtk-doc**: Use this parameter if GTK-Doc is installed and you wish to rebuild and install the API documentation.

## Contents

<b>Installed Programs:</b>	None
<b>Installed Library:</b>	libgmime-2.6.so
<b>Installed Directories:</b>	/usr/include/gmime-2.6 and /usr/share/gtk-doc/html/gmime

## Short Descriptions

`libgmime-2.6.so` contains API functions used by programs that need to comply to the MIME standards.

# gobject-introspection-1.34.2

## Introduction to GObject Introspection

The GObject Introspection is used to describe the program APIs and collect them in a uniform, machine readable format.

This package is known to build and work properly using an LFS-7.3 platform.

### Package Information

- Download (HTTP): <http://ftp.gnome.org/pub/gnome/sources/gobject-introspection/1.34/gobject-introspection-1.34.2.tar.xz>
- Download (FTP): <ftp://ftp.gnome.org/pub/gnome/sources/gobject-introspection/1.34/gobject-introspection-1.34.2.tar.xz>
- Download MD5 sum: 9dc9822eb2912e9b73e51ae67fe86145
- Download size: 1.1 MB
- Estimated disk space required: 40 MB
- Estimated build time: 0.3 SBU

### Required

GLib-2.34.3

### Optional

Cairo-1.12.14 (required for the tests) and GTK-Doc-1.18

## Installation of GObject Introspection

Install GObject Introspection by running the following commands:

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

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

Now, as the root user:

```
make install
```

## Command Explanations

**--disable-static**: This switch prevents installation of static versions of the libraries.

**--enable-gtk-doc**: Use this parameter if GTK-Doc is installed and you wish to rebuild and install the API documentation.

## Contents

<b>Installed Program:</b>	g-ir-annotation-tool, g-ir-compiler, g-ir-generate and g-ir-scanner
<b>Installed Libraries:</b>	libgirepository-1.0.so
<b>Installed Directories:</b>	/usr/include/gobject-introspection-1.0, /usr/lib/girepository-1.0, /usr/lib/gobject-introspection, /usr/share/gir-1.0, /usr/share/gobject-introspection-1.0 and /usr/share/gtk-doc/html/gi

## Short Descriptions

<b>g-ir-compiler</b>	converts one or more GIR files into one or more typelib.
<b>g-ir-scanner</b>	is a tool which generates GIR XML files by parsing headers and introspecting GObject based libraries.
<b>g-ir-generate</b>	is a GIR generator using the repository API.
<code>libgirepository-1.0.so</code>	provides an API to access to the typelib metadata.

# Gsl-1.15

## Introduction to Gsl

The GNU Scientific Library (GSL) is a numerical library for C and C++ programmers. It provides a wide range of mathematical routines such as random number generators, special functions and least-squares fitting.

This package is known to build and work properly using an LFS-7.2 platform.

## Package Information

- Download (HTTP): <http://ftp.gnu.org/pub/gnu/gsl/gsl-1.15.tar.gz>
- Download (FTP): <ftp://ftp.gnu.org/pub/gnu/gsl/gsl-1.15.tar.gz>
- Download MD5 sum: 494ffefd90eef4ada678c306bab4030b
- Download size: 3.1 MB
- Estimated disk space required: 91 MB
- Estimated build time: 0.9 SBU

## Installation of Gsl

Install Gsl by running the following commands:

```
./configure --prefix=/usr --disable-static &&
make &&
make html
```

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

Now, as the **root** user:

```
make install &&
mkdir /usr/share/doc/gsl-1.15 &&
cp doc/gsl-ref.html/* /usr/share/doc/gsl-1.15
```

## Command Explanations

**--disable-static**: This switch prevents installation of static versions of the libraries.

## Contents

<b>Installed Programs:</b>	gsl-config, gsl-histogram and gsl-randist.
<b>Installed Libraries:</b>	libgslcblas.so and libgsl.so.
<b>Installed Directory:</b>	/usr/include/gsl.

## Short Descriptions

<b>gsl-config</b>	is a shell script to get the version number and compiler flags of the installed Gsl library.
<b>gsl-histogram</b>	is a demonstration program for the GNU Scientific Library that computes a histogram from data taken from stdin.
<b>gsl-randist</b>	is a demonstration program for the GNU Scientific Library that generates random samples from various distributions.

`libgslcblas.so` contains functions that implement a C interface to Basic Linear Algebra Subprograms.  
`libgsl.so.so` contains functions that provide a collection of numerical routines for scientific computing.

# ICU-51.1

## Introduction to ICU

The International Components for Unicode (ICU) package is a mature, widely used set of C/C++ libraries providing Unicode and Globalization support for software applications. ICU is widely portable and gives applications the same results on all platforms.

This package is known to build and work properly using an LFS-7.3 platform.

## Package Information

- Download (HTTP): [http://download.icu-project.org/files/icu4c/51.1/icu4c-51\\_1-src.tgz](http://download.icu-project.org/files/icu4c/51.1/icu4c-51_1-src.tgz)
- 
- Download MD5 sum: 6eef33b229d0239d654983028c9c7053
- Download size: 21 MB
- Estimated disk space required: 285 MB
- Estimated build time: 1.5 SBU

## ICU Dependencies

### Optional

LLVM-3.2 (with Clang)

## Installation of ICU

Install ICU by running the following commands:

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

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

Now, as the root user:

```
make install
```

## Contents

<b>Installed Programs:</b>	derb, genbrk, genccode, gencfu, gencmn, gencnval, gendict, gennorm2, genrb, gensprep, icu-config, icuinfo, icupkg, makeconv, pkgdata and uconv
<b>Installed Libraries:</b>	libcudata.so, libcui18n.so, libicuio.so, libicule.so, libiculx.so, libicutest.so, libicutu.so and libicuuc.so
<b>Installed Directories:</b>	/usr/include/layout, /usr/include/unicode, /usr/lib/icu and /usr/share/icu

## Short Descriptions

<b>derb</b>	disassembles a resource bundle.
<b>genbrk</b>	compiles ICU break iteration rules source files into binary data files.

<b>genccode</b>	generates C or platform specific assembly code from an ICU data file.
<b>genefu</b>	reads in Unicode confusable character definitions and writes out the binary data.
<b>gencmn</b>	generates an ICU memory-mappable data file.
<b>gencnval</b>	compiles the converter's aliases file.
<b>gendict</b>	compiles word list into ICU string trie dictionary.
<b>genrb</b>	compiles a resource bundle.
<b>gensprep</b>	compiles StringPrep data from filtered RFC 3454 files.
<b>icu-config</b>	outputs ICU build options.
<b>icuinfo</b>	outputs configuration information about the current ICU.
<b>icupkg</b>	extracts or modifies an ICU .dat archive.
<b>makeconv</b>	compiles a converter table.
<b>pkgdata</b>	packages data for use by ICU.
<b>uconv</b>	converts data from one encoding to another.
<b>libicudata.so</b>	is the data library.
<b>libicui18n.so</b>	is the internationalization (i18n) library.
<b>libicuio.so</b>	is the ICU I/O (unicode stdio) library.
<b>libicule.so</b>	is the layout engine.
<b>libiculx.so</b>	is the layout extensions engine.
<b>libicutest.so</b>	is the test library.
<b>libicutu.so</b>	is the tool utility library.
<b>libicuuc.so</b>	is the common library.

# ISO Codes-3.42

## Introduction to ISO Codes

The ISO Codes package contains a list of country, language and currency names and it is used as a central database for accessing this data.

This package is known to build and work properly using an LFS-7.3 platform.

### Package Information

- Download (HTTP): <http://pkg-isocodes.alioth.debian.org/downloads/iso-codes-3.42.tar.xz>
- 
- Download MD5 sum: 35c6089108410dcfe03b420b57af0dde
- Download size: 3.6 MB
- Estimated disk space required: 110 MB
- Estimated build time: 0.2 SBU

## Installation of ISO Codes

Install ISO Codes 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

<b>Installed Programs:</b>	None
<b>Installed Libraries:</b>	None
<b>Installed Directory:</b>	/usr/share/xml/iso-codes

# JSON-C-0.11

## Introduction to JSON-C

The JSON-C implements a reference counting object model that allows you to easily construct JSON objects in C, output them as JSON formatted strings and parse JSON formatted strings back into the C representation of JSON objects.

This package is known to build and work properly using an LFS-7.3 platform.

## Package Information

- Download (HTTP): [https://s3.amazonaws.com/json-c\\_releases/releases/json-c-0.11.tar.gz](https://s3.amazonaws.com/json-c_releases/releases/json-c-0.11.tar.gz)
- 
- Download MD5 sum: aa02367d2f7a830bf1e3376f77881e98
- Download size: 548 KB
- Estimated disk space required: 5.0 MB
- Estimated build time: less than 0.1 SBU

## Installation of JSON-C

Install JSON-C by running the following commands:

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

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

Now, as the root user:

```
make install
```

## Command Explanations

**--disable-static**: This switch prevents installation of static versions of the libraries.

## Contents

<b>Installed Programs:</b>	None
<b>Installed Libraries:</b>	libjson-c.so and libjson.so
<b>Installed Directories:</b>	/usr/include/json and /usr/include/json-c

## Short Descriptions

**libjson.so** contains the JSON-C API functions.

**libjson-c.so** contains the JSON-C API functions.

# JSON-GLib-0.16.0

## Introduction to JSON GLib

The JSON GLib package is a library providing serialization and deserialization support for the JavaScript Object Notation (JSON) format described by RFC 4627.

This package is known to build and work properly using an LFS-7.3 platform.

### Package Information

- Download (HTTP): <http://ftp.gnome.org/pub/gnome/sources/json-glib/0.16/json-glib-0.16.0.tar.xz>
- Download (FTP): <ftp://ftp.gnome.org/pub/gnome/sources/json-glib/0.16/json-glib-0.16.0.tar.xz>
- Download MD5 sum: bbca11f32509d6eb3f54d24156e7312d
- Download size: 496 KB
- Estimated disk space required: 13 MB
- Estimated build time: 0.2 SBU

## JSON-GLib Dependencies

### Required

GLib-2.34.3

### Optional (Required if building GNOME)

gobject-introspection-1.34.2

### Optional

GTK-Doc-1.18

## Installation of JSON GLib

Install JSON 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**: Use this parameter if GTK-Doc is installed and you wish to rebuild and install the API documentation.

## Contents

**Installed Programs:**

None

**Installed Library:**

libjson-glib-1.0.so

**Installed Directories:**

/usr/include/json-glib-1.0 and /usr/share/gtk-doc/html/json-glib

## Short Descriptions

`libjson-glib-1.0.so` contains the JSON GLib API functions.

# keyutils-1.5.5

## Introduction to keyutils

Keyutils is a set of utilities for managing the key retention facility in the kernel, which can be used by filesystems, block devices and more to gain and retain the authorization and encryption keys required to perform secure operations.

This package is known to build and work properly using an LFS-7.2 platform.

## Package Information

- Download (HTTP): <http://people.redhat.com/~dhowells/keyutils/keyutils-1.5.5.tar.bz2>
- 
- Download MD5 sum: d759680b2f23c99af95938f5026f25fb
- Download size: 68 KB
- Estimated disk space required: 1.9 MB
- Estimated build time: less than 0.1 SBU

## Installation of keyutils

Install keyutils by running the following commands:

```
make
```

This package does not come with a test suite.

Now, as the `root` user:

```
make install
```

## Contents

<b>Installed Programs:</b>	keyctl, key.dns_resolver, and request-key
<b>Installed Library:</b>	libkeyutils.so.1
<b>Installed Directory:</b>	/usr/share/keyutils

## Short Descriptions

**keyctl** is to control the key management facility in various ways using a variety of subcommands.

**libkeyutils.so.1** contains the keyutils library API instantiation.

# libassuan-2.1.0

## Introduction to libassuan

The libassuan package contains an inter process communication library used by some of the other GnuPG related packages. libassuan's primary use is to allow a client to interact with a non-persistent server. libassuan is not, however, limited to use with GnuPG servers and clients. It was designed to be flexible enough to meet the demands of many transaction based environments with non-persistent servers.

This package is known to build and work properly using an LFS-7.2 platform.

## Package Information

- 
- Download (FTP): <ftp://ftp.gnupg.org/gcrypt/libassuan/libassuan-2.1.0.tar.bz2>
- Download MD5 sum: b3231eec8e567f4f9294474a387378f5
- Download size: 528 KB
- Estimated disk space required: 7.5 MB
- Estimated build time: less than 0.1 SBU

## libassuan Dependencies

### Required

libgpg-error-1.11

### Optional

texlive-20120701

## Installation of libassuan

Install libassuan by running the following commands:

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

If you wish to build documentation, you must have texlive-20120701 installed, then issue the following command:

```
make -C doc pdf ps
```

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

Now, as the **root** user:

```
make install
```

If you built the documentation, install it by running the following commands as the **root** user:

```
install -v -dm755 /usr/share/doc/libassuan-2.1.0 &&
install -v -m644 doc/assuan.{pdf,ps,dvi} \
          /usr/share/doc/libassuan-2.1.0
```

## Contents

<b>Installed Program:</b>	libassuan-config
<b>Installed Library:</b>	libassuan.so
<b>Installed Directory:</b>	/usr/share/doc/libassuan-2.1.0

## Short Descriptions

`libassuan.so` is an inter process communication library which implements the Assuan protocol.

# libatasmart-0.19

## Introduction to libatasmart

The libatasmart package is a disk reporting library. It only supports a subset of the ATA S.M.A.R.T. functionality. This package is known to build and work properly using an LFS-7.3 platform.

### Package Information

- Download (HTTP): <http://0pointer.de/public/libatasmart-0.19.tar.xz>
- 
- Download MD5 sum: 53afe2b155c36f658e121fe6def33e77
- Download size: 248 KB
- Estimated disk space required: 3 MB
- Estimated build time: less than 0.1 SBU

## Installation of libatasmart

Install libatasmart by running the following commands:

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

This package does not come with a test suite.

Now, as the root user:

```
make docdir=/usr/share/doc/libatasmart-0.19 install
```

## Command Explanations

**--disable-static:** This switch prevents installation of static versions of the libraries.

## Contents

<b>Installed Programs:</b>	skdump and sktest
<b>Installed Library:</b>	libatasmart.so
<b>Installed Directory:</b>	/usr/share/doc/libatasmart

## Short Descriptions

<b>skdump</b>	is a utility that reports on the status of the disk.
<b>sktest</b>	is a utility to issue disks tests.
<b>libatasmart.so</b>	contains the ATA S.M.A.R.T API functions.

# libatomic\_ops-7.2d

## Introduction to libatomic\_ops

libatomic\_ops provides implementations for atomic memory update operations on a number of architectures. This allows direct use of these in reasonably portable code. Unlike earlier similar packages, this one explicitly considers memory barrier semantics, and allows the construction of code that involves minimum overhead across a variety of architectures.

This package is known to build and work properly using an LFS-7.2 platform.

## Package Information

- Download (HTTP): [http://www.hpl.hp.com/research/linux/atomic\\_ops/download/libatomic\\_ops-7.2d.tar.gz](http://www.hpl.hp.com/research/linux/atomic_ops/download/libatomic_ops-7.2d.tar.gz)
- 
- Download MD5 sum: e6997db4875909e11b514cd5c3caa3cf
- Download size: 228 KB
- Estimated disk space required: 5.0 MB
- Estimated build time: 0.1 SBU

## Installation of libatomic\_ops

Install libatomic\_ops by running the following commands:

```
sed -i 's#AM_CONFIG_HEADER#AC_CONFIG_HEADERS#' configure.ac &&
sed -i 's#AC_PROG_RANLIB#AC_LIBTOOL_DLOPEN\nAC_PROG_LIBTOOL#' configure.ac &&
sed -i 's#b_L#b_LTL#;s#\.\.a#\.\.la#g;s#\_\_a\_\_la\_\_' src/Makefile.am &&
sed -i 's#\.\.a#\.\.so#g;s#\.\./src/#..\./src/.libs/#g' tests/Makefile.am &&
sed -i 's#pkgdata#doc#' doc/Makefile.am &&
autoreconf -fi &&
./configure --prefix=/usr \
            --docdir=/usr/share/doc/libatomic_ops-7.2d \
            --disable-static &&
make
```

To check the results, issue **LD\_LIBRARY\_PATH=../src/.libs make check**.

Now, as the root user:

```
make install
```

## Command Explanations

**sed -i 's#AM\_CONFIG\_HEADER ...:** This **sed** fixes building with Automake 1.13.

**sed -i 's#AC\_PROG\_RANLIB ...:** These **seds** massage the autotool files so that a shared library is built, the tests pass, and the docs are installed in an appropriate directory.

**autoreconf -fi:** This regenerates the **configure** script and the **Makefile.in** files and installs a missing file.

**--disable-static:** This switch prevents installation of static versions of the libraries.

## Contents

**Installed Programs:** None  
**Installed Libraries:** libatomic\_ops.so and libatomic\_ops\_gpl.so  
**Installed Directory:** /usr/include/libatomic\_ops

## Short Descriptions

`libatomic_ops.so` contains functions for atomic memory operations.

# libcroco-0.6.8

## Introduction to libcroco

The libcroco package contains a standalone CSS2 parsing and manipulation library.

This package is known to build and work properly using an LFS-7.3 platform.

## Package Information

- Download (HTTP): <http://ftp.gnome.org/pub/gnome/sources/libcroco/0.6/libcroco-0.6.8.tar.xz>
- Download (FTP): <ftp://ftp.gnome.org/pub/gnome/sources/libcroco/0.6/libcroco-0.6.8.tar.xz>
- Download MD5 sum: 767e73c4174f75b99695d4530fd9bb80
- Download size: 456 KB
- Estimated disk space required: 11 MB
- Estimated build time: 0.1 SBU

## libcroco Dependencies

### Required

GLib-2.34.3 and libxml2-2.9.1

### Optional

GTK-Doc-1.18

## Installation of libcroco

Install libcroco by running the following commands:

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

To run the test suite, run **LD\_LIBRARY\_PATH=\$(pwd)/src/.libs make test**.

Now, as the **root** user:

```
make install
```

## Command Explanations

**--disable-static**: This switch prevents installation of static versions of the libraries.

**--enable-gtk-doc**: Use this parameter if GTK-Doc is installed and you wish to rebuild and install the API documentation.

## Contents

<b>Installed Programs:</b>	croco-0.6-config and csslint-0.6
<b>Installed Library:</b>	libcroco-0.6.so
<b>Installed Directories:</b>	/usr/include/libcroco-0.6 and /usr/share/gtk-doc/html/libcroco

## Short Descriptions

**csslint-0.6** is used to parse one or more CSS files specified on the command line.  
**libcroco-0.6.so** contains the API functions for CSS2 parsing and manipulation.

# libdaemon-0.14

## Introduction to libdaemon

The libdaemon package is a lightweight C library that eases the writing of UNIX daemons.

This package is known to build and work properly using an LFS-7.2 platform.

## Package Information

- Download (HTTP): <http://0pointer.de/lennart/projects/libdaemon/libdaemon-0.14.tar.gz>
- 
- Download MD5 sum: 509dc27107c21bcd9fbf2f95f5669563
- Download size: 332 KB
- Estimated disk space required: 3 MB
- Estimated build time: 0.1 SBU

## libdaemon Dependencies

### Optional

Doxygen-1.8.4 and Lynx-2.8.8dev.15

## Installation of libdaemon

Install libdaemon by running the following commands:

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

If you have Doxygen installed and wish to build the API documentation, issue the following command:

```
make -C doc doxygen
```

This package does not come with a test suite.

Now, as the root user:

```
make docdir=/usr/share/doc/libdaemon-0.14 install
```

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

```
install -v -m755 -d /usr/share/doc/libdaemon-0.14/api &&
install -v -m644 doc/reference/html/* /usr/share/doc/libdaemon-0.14/api &&
install -v -m644 doc/reference/man/man3/* /usr/share/man/man3
```

## Command Explanations

`--disable-static`: This switch prevents installation of static versions of the libraries.

## Contents

<b>Installed Programs:</b>	None
<b>Installed Library:</b>	libdaemon.so
<b>Installed Directories:</b>	/usr/include/libdaemon and /usr/share/doc/libdaemon-0.14

## Short Descriptions

`libdaemon.so` contains the libdaemon API functions.

# libdbusmenu-qt-0.9.2

## Introduction to libdbusmenu-qt

This library provides a Qt implementation of the DBusMenu specs, which goal is to expose menus on DBus.

This package is known to build and work properly using an LFS-7.2 platform.

## Package Information

- Download (HTTP): <http://launchpad.net/libdbusmenu-qt/trunk/0.9.2/+download/libdbusmenu-qt-0.9.2.tar.bz2>
- 
- Download MD5 sum: 9a49484927669cd2ec91b3bf9ba8b79e
- Download size: 37 KB
- Estimated disk space required: 3.8 MB
- Estimated build time: 0.3 SBU

## libdbusmenu-qt Dependencies

### Required

Qt-4.8.4

### Optional

QJson-0.8.1 (for building the test suite) and Doxygen-1.8.4 (for building the API documentation)

## Installation of libdbusmenu-qt

Install libdbusmenu-qt by running the following commands:

```
mkdir build &&
cd build &&
cmake -DCMAKE_INSTALL_PREFIX=$QTDIR \
      -DWITH_DOC=OFF .. &&
make
```

To test the results (*QJson* must be installed), issue: **make check**.

Now, as the root user:

```
make install
```

## Command Explanations

**-DWITH\_DOC=OFF**: This option is set to avoid building the API documentation. Omit it if you have doxygen installed and want the documentation.

## Contents

<b>Installed Programs:</b>	None
<b>Installed Library:</b>	libdbusmenu-qt.so
<b>Installed Directory:</b>	\$QTDIR/include/dbusmenu-qt

# libdrm-2.4.45

## Introduction to libdrm

libdrm provides core library routines for the X Window System to directly interface with video hardware using the Linux kernel's Direct Rendering Manager (DRM).

This package is known to build and work properly using an LFS-7.3 platform.

## Package Information

- Download (HTTP): <http://dri.freedesktop.org/libdrm/libdrm-2.4.45.tar.bz2>
- 
- Download MD5 sum: 92ce56e7533a9b2fcb5c8f32d305328b
- Download size: 540 KB
- Estimated disk space required: 11 MB
- Estimated build time: 0.2 SBU

## libdrm Dependencies

### Required

Xorg Libraries

### Optional

docbook-xml-4.5, docbook-xsl-1.77.1 and libxslt-1.1.28 (to build manual pages) and *Valgrind*

## Installation of libdrm

Install libdrm by running the following commands:

```
sed -e "/pthread-stubs/d" -i configure.ac &&
autoreconf -fi &&
./configure --prefix=/usr --enable-udev &&
make
```

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

Now, as the root user:

```
make install
```

## Command Explanations

**sed -e "/pthread-stubs/d" -i configure.ac**: This sed removes dependency on libpthread-stubs package which is useless on Linux.

## Contents

<b>Installed Programs:</b>	None
<b>Installed Libraries:</b>	libdrm.so, libdrm_intel.so, libdrm_nouveau.so, libdrm_radeon.so and libkms.so
<b>Installed Directories:</b>	/usr/include/libdrm and /usr/include/libkms

## Short Descriptions

libdrm.so	contains the Direct Rendering Manager API functions.
libdrm_intel.so	contains the Intel specific Direct Rendering Manager functions.
libdrm_nouveau.so	contains the open source nVidia (Nouveau) specific Direct Rendering Manager functions.
libdrm_radeon.so	contains the AMD Radeon specific Direct Rendering Manager functions.
libkms.so	contains API functions necessary for kernel modesetting.

# libESMTP-1.0.6

## 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.

This package is known to build and work properly using an LFS-7.2 platform.

## Package Information

- Download (HTTP): <http://www.stafford.uklinux.net/libesmtp/libesmtp-1.0.6.tar.bz2>
- Download (FTP): <ftp://mirror.ovh.net/gentoo-distfiles/distfiles/libesmtp-1.0.6.tar.bz2>
- Download MD5 sum: bf3915e627fd8f35524a8fdfeed979c8
- Download size: 364 KB
- Estimated disk space required: 7.1 MB
- Estimated build time: 0.1 SBU

## libESMTP Dependencies

### Optional

OpenSSL-1.0.1e

## 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

<b>Installed Program:</b>	libesmtp-config
<b>Installed Libraries:</b>	libesmtp.{so,a} and libESMTP SASL plugins
<b>Installed Directory:</b>	/usr/lib/esmtp-plugins

## Short Descriptions

<b>libesmtp-config</b>	displays version information and the options used to compile libESMTP.
<b>libesmtp.{so,a}</b>	is used to manage submission of electronic mail to a Mail Transport Agent.
<b>libesmtp SASL plugins</b>	are used to integrate libesmtp with SASL authentication.

# libffi-3.0.13

## Introduction to libffi

The libffi library provides a portable, high level programming interface to various calling conventions. This allows a programmer to call any function specified by a call interface description at run time.

This package is known to build and work properly using an LFS-7.3 platform.

## Package Information

- 
- Download (FTP): <ftp://sourceware.org/pub/libffi/libffi-3.0.13.tar.gz>
- Download MD5 sum: 45f3b6dbc9ee7c7dfbbbc5feba571529
- Download size: 828 KB
- Estimated disk space required: 6.2 MB
- Estimated build time: 0.1 SBU

## Additional Downloads

- Required patch: <http://www.linuxfromscratch.org/patches/blfs/svn/libffi-3.0.13-includedir-1.patch>

## libffi Dependencies

### Optional

DejaGnu-1.5.1 (required to run the testsuite)

## Installation of libffi

Install libffi by running the following commands:

```
patch -Np1 -i ../libffi-3.0.13-includedir-1.patch &&
./configure --prefix=/usr --disable-static &&
make
```

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

Now, as the root user:

```
make install
```

## Command Explanations

**--disable-static**: This switch prevents installation of static versions of the libraries.

## Contents

<b>Installed Programs:</b>	None
<b>Installed Library:</b>	libffi.so
<b>Installed Directories:</b>	None

## Short Descriptions

`libffi.so` contains the libffi API functions.

# libgcrypt-1.5.2

## Introduction to libgcrypt

The libgcrypt package contains a general purpose crypto library based on the code used in GnuPG. The library provides a high level interface to cryptographic building blocks using an extendable and flexible API.

This package is known to build and work properly using an LFS-7.3 platform.

## Package Information

- 
- Download (FTP): <ftp://ftp.gnupg.org/gcrypt/libgcrypt/libgcrypt-1.5.2.tar.bz2>
- Download MD5 sum: 668aa1a1aae93f5fccb7eda4be403026
- Download size: 1.5 MB
- Estimated disk space required: 30 MB
- Estimated build time: 0.2 SBU

## libgcrypt Dependencies

### Required

libgpg-error-1.11

### Optional

libcap2-2.22 and Pth-2.0.7

## Installation of libgcrypt

Install libgcrypt by running the following commands:

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

Only **info** documentation is shipped in the package tarball. If you wish to build alternate formats of the documentation, (you must have texlive-20120701 installed to build the PDF and PostScript documentation), then issue the following commands:

```
make -C doc pdf ps html &&
makeinfo --html --no-split -o doc/gcrypt_nochunks.html doc/gcrypt.texi &&
makeinfo --plaintext -o doc/gcrypt.txt doc/gcrypt.texi
```

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

Now, as the **root** user:

```
make install &&
install -v -dm755 /usr/share/doc/libgcrypt-1.5.2 &&
install -v -m644 README doc/{README.apichanges,fips*,libgcrypt*} \
/usr/share/doc/libgcrypt-1.5.2
```

If you built the additional documentation, install it by issuing the following commands as the `root` user:

```
install -v -dm755 /usr/share/doc/libgcrypt-1.5.2/html &&
install -v -m644 doc/gcrypt.html/* \
               /usr/share/doc/libgcrypt-1.5.2/html &&
install -v -m644 doc/gcrypt_nochunks.html \
               /usr/share/doc/libgcrypt-1.5.2 &&
install -v -m644 doc/gcrypt.{pdf,ps,dvi,txt,texi} \
               /usr/share/doc/libgcrypt-1.5.2
```

## Contents

<b>Installed Programs:</b>	dumpsexp, hmac256 and libgcrypt-config
<b>Installed Library:</b>	libgcrypt.so
<b>Installed Directory:</b>	/usr/share/doc/libgcrypt-1.5.2

## Short Descriptions

`libgcrypt.so` contains the cryptographic API functions.

# libglade-2.6.4

## Introduction to libglade

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

This package is known to build and work properly using an LFS-7.3 platform.

## Package Information

- Download (HTTP): <http://ftp.gnome.org/pub/gnome/sources/libglade/2.6/libglade-2.6.4.tar.bz2>
- Download (FTP): <ftp://ftp.gnome.org/pub/gnome/sources/libglade/2.6/libglade-2.6.4.tar.bz2>
- Download MD5 sum: d1776b40f4e166b5e9c107f1c8fe4139
- Download size: 348 KB
- Estimated disk space required: 5 MB
- Estimated build time: 0.1 SBU

## libglade Dependencies

### Required

libxml2-2.9.1 and GTK+-2.24.17

### Optional

Python-2.7.5 and GTK-Doc-1.18

## Installation of libglade

Install libglade by running the following commands:

```
sed -i '/DG_DISABLE_DEPRECATED/d' glade/Makefile.in &&
./configure --prefix=/usr &&
make
```

To test the results, issue: **make check**. One of the tests, test-convert, is known to fail.

Now, as the root user:

```
make install
```

## Command Explanations

**--enable-gtk-doc**: Use this parameter if GTK-Doc is installed and you wish to rebuild and install the API documentation.

**sed -i '/DG\_DISABLE\_DEPRECATED/d'**: Some of the glib functions that libglade uses were declared deprecated in glib-2.30. This sed removes the G\_DISABLE\_DEPRECATED CFLAG.

**--disable-static**: prevent static libraries being built and installed.

## Contents

**Installed Program:** libglade-convert (requires **python**)  
**Installed Library:** libglade-2.0.{so,a}  
**Installed Directories:** /usr/{include/libglade-2.0/glade,share/{gtk-doc/html/libglade, xml/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.

# libgpg-error-1.11

## Introduction to libgpg-error

The libgpg-error package contains a library that defines common error values for all GnuPG components. .

This package is known to build and work properly using an LFS-7.3 platform.

## Package Information

- 
- Download (FTP): <ftp://ftp.gnupg.org/gcrypt/libgpg-error/libgpg-error-1.11.tar.bz2>
- Download MD5 sum: b9fa55b71cae73cb2e44254c2acc4e2c
- Download size: 480 KB
- Estimated disk space required: 5.0 MB
- Estimated build time: less than 0.1 SBU

## Installation of libgpg-error

Install libgpg-error by running the following commands:

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

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

Now, as the root user:

```
make install &&
install -v -m644 -D README /usr/share/doc/libgpg-error-1.11/README
```

## Command Explanations

*--disable-static*: This switch prevents installation of static versions of the libraries.

## Contents

<b>Installed Programs:</b>	gpg-error and gpg-error-config
<b>Installed Library:</b>	libgpg-error.so
<b>Installed Directories:</b>	/usr/share/common-lisp and /usr/share/doc/libgpg-error-1.11

## Short Descriptions

<b>gpg-error</b>	is used to determine libgpg-error error codes.
<b>gpg-error-config</b>	is a utility used to configure and build applications based on the libgpg-error library. It can be used to query the C compiler and linker flags which are required to correctly compile and link the application against the libgpg-error library.
<b>libgpg-error.so</b>	contains the libgpg-error API functions.

# libgsf-1.14.26

## Introduction to libgsf

The libgsf package contains the library used for providing an extensible input/output abstraction layer for structured file formats.

This package is known to build and work properly using an LFS-7.3 platform.

## Package Information

- Download (HTTP): <http://ftp.gnome.org/pub/gnome/sources/libgsf/1.14/libgsf-1.14.26.tar.xz>
- Download (FTP): <ftp://ftp.gnome.org/pub/gnome/sources/libgsf/1.14/libgsf-1.14.26.tar.xz>
- Download MD5 sum: 3c5a4fb16a727c36974078e6d0e9575
- Download size: 520 KB
- Estimated disk space required: 14 MB
- Estimated build time: 0.1 SBU

## libgsf Dependencies

### Required

GLib-2.34.3, Intltool-0.50.2 and libxml2-2.9.1

### Recommended

gdk-pixbuf-2.26.5 (To build gsf-office-thumbnailer)

### Optional

gobject-introspection-1.34.2 and GTK-Doc-1.18

## Installation of libgsf

Install libgsf by running the following commands:

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

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

Now, as the root user:

```
make install
```

## Command Explanations

**--disable-static**: This switch prevents installation of static versions of the libraries.

**--enable-gtk-doc**: Use this parameter if GTK-Doc is installed and you wish to rebuild and install the API documentation.

## Contents

**Installed Programs:** gsf, gsf-office-thumbnailer and gsf-vba-dump  
**Installed Library:** libgsf-1.so  
**Installed Directories:** /usr/include/libgsf-1 and /usr/share/gtk-doc/html/gsf

## Short Descriptions

**gsf** is a simple archive utility, somewhat similar to tar(1).  
**gsf-office-thumbnailer** is used internally by GNOME applications such as Nautilus to generate thumbnails of several types of office application files.  
**gsf-vba-dump** is used to extract Visual Basic for Applications macros from files.  
**libgsf-1.so** contains the libgsf API functions.

# libgusb-0.1.6

## Introduction to libgusb

The libgusb package contains the GObject wrappers for libusb-1.0 that makes it easy to do asynchronous control, bulk and interrupt transfers with proper cancellation and integration into a mainloop.

This package is known to build and work properly using an LFS-7.2 platform.

## Package Information

- Download (HTTP): <http://people.freedesktop.org/~hughsient/releases/libgusb-0.1.6.tar.xz>
- 
- Download MD5 sum: 672058e7a49a38259ab6ea01470c2fa2
- Download size: 260 KB
- Estimated disk space required: 4.2 MB
- Estimated build time: 0.1 SBU

## libgusb Dependencies

### Required

GLib-2.34.3 and libusb-1.0.9

### Recommended

gobject-introspection-1.34.2, udev-Installed LFS Version or udev-extras (from systemd) (for GUdev) and Vala-0.18.1

### Optional

GTK-Doc-1.18

## Installation of libgusb

Install libgusb by running the following commands:

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

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

Now, as the root user:

```
make install
```

## Command Explanations

**--disable-static**: This switch prevents installation of static versions of the libraries.

**--enable-gtk-doc**: Use this parameter if GTK-Doc is installed and you wish to rebuild and install the API documentation.

## Contents

<b>Installed Programs:</b>	None
<b>Installed Library:</b>	libgusb.so
<b>Installed Directories:</b>	/usr/include/gusb-1 and /usr/share/gtk-doc/html/gusb

## Short Descriptions

`libgusb.so` contains the libgusb API functions.

# libical-1.0

## Introduction to libical

The libical package contains an implementation of the iCalendar protocols and data formats.

This package is known to build and work properly using an LFS-7.3 platform.

## Package Information

- Download (HTTP): <http://downloads.sourceforge.net/freeassociation/libical-1.0.tar.gz>
- 
- Download MD5 sum: 4438c31d00ec434f02867a267a92f8a1
- Download size: 1.2 MB
- Estimated disk space required: 20 MB
- Estimated build time: 0.4 SBU

## libical Dependencies

### Required

CMake-2.8.11

## Installation of libical

Install libical by running the following commands:

```
mkdir build &&
cd build &&
cmake -DCMAKE_INSTALL_PREFIX=/usr \
      -DCMAKE_BUILD_TYPE=Release \
      .. &&
make
```

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

Now, as the root user:

```
make install
```

## Command Explanations

**-DCMAKE\_BUILD\_TYPE=Release**: This switch is used to apply higher level of the compiler optimizations.

## Contents

<b>Installed Programs:</b>	None
<b>Installed Libraries:</b>	libical.{so,a}, libicalss.{so,a} and libicalvcal.{so,a}
<b>Installed Directory:</b>	/usr/include/libical

## Short Descriptions

**libical.{so,a}** contains the libical API functions.

`libicalss.{so,a}` is a library that allows you to store iCal component data to disk in a variety of ways.  
`libicalvcal.{so,a}` is a vCard/vCalendar C interface.

# LibIDL-0.8.14

## Introduction to LibIDL

The libIDL package contains libraries for Interface Definition Language files. This is a specification for defining portable interfaces.

This package is known to build and work properly using an LFS-7.2 platform.

### Package Information

- Download (HTTP): <http://ftp.gnome.org/pub/gnome/sources/libIDL/0.8/libIDL-0.8.14.tar.bz2>
- Download (FTP): <ftp://ftp.gnome.org/pub/gnome/sources/libIDL/0.8/libIDL-0.8.14.tar.bz2>
- Download MD5 sum: bb8e10a218fac793a52d404d14adedcb
- Download size: 417 KB
- Estimated disk space required: 5 MB
- Estimated build time: 0.1 SBU

## LibIDL Dependencies

### Required

GLib-2.34.3

### Optional to Build Documentation

texlive-20120701

## Installation of LibIDL

Install libIDL by running the following commands:

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

makeinfo --plaintext -o libIDL2.txt libIDL2.texi
```

If you have Live TeX installed and wish to build alternate forms of the documentation, issue the following command:

```
make pdf ps
```

This package does not come with a test suite.

Now, as the root user:

```
make install

install -v -m755 -d /usr/share/doc/libIDL-0.8.14 &&
install -v -m644 README libIDL2.{txt,txi} \
          /usr/share/doc/libIDL-0.8.14
```

If you built the additional documentation, issue the following command as the root user to install it:

```
install -v -m644 libIDL2.{pdf,dvi,ps} \
          /usr/share/doc/libIDL-0.8.14
```

## Contents

**Installed Program:** libIDL-config-2  
**Installed Library:** libIDL-2.{so,a}  
**Installed Directories:** /usr/include/libIDL-2.0/libIDL and /usr/share/doc/libIDL-0.8.14

## 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.

# libidn-1.26

## Introduction to libidn

libidn is a package designed for internationalized string handling based on the *Stringprep*, *Punycode* and *IDNA* specifications defined by the Internet Engineering Task Force (IETF) Internationalized Domain Names (IDN) working group, used for internationalized domain names. This is useful for converting data from the system's native representation into UTF-8, transforming Unicode strings into ASCII strings, allowing applications to use certain ASCII name labels (beginning with a special prefix) to represent non-ASCII name labels, and converting entire domain names to and from the ASCII Compatible Encoding (ACE) form.

This package is known to build and work properly using an LFS-7.3 platform.

## Package Information

- Download (HTTP): <http://ftp.gnu.org/gnu/libidn/libidn-1.26.tar.gz>
- Download (FTP): <ftp://ftp.gnu.org/gnu/libidn/libidn-1.26.tar.gz>
- Download MD5 sum: 7533d14fbbb6c026a1a9eaa2179ccb69
- Download size: 3.3 MB
- Estimated disk space required: 24 MB
- Estimated build time: 0.3 SBU

## libidn Dependencies

### Optional

Pth-2.0.7, Emacs-24.2, GTK-Doc-1.18, OpenJDK-1.7.0.9, *DotGNU Portable.NET* or *Mono*, and *Valgrind*

## Installation of libidn

Install libidn by running the following commands:

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

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

Now, as the **root** user:

```
make install &&

find doc -name "Makefile*" -delete          &&
rm -rf -v doc/{gdoc,idn.1,stamp-vti,man,texi} &&
mkdir -v        /usr/share/doc/libidn-1.26      &&
cp -r -v doc/* /usr/share/doc/libidn-1.26
```

## Command Explanations

**--disable-static**: This switch prevents installation of static versions of the libraries.

**--enable-gtk-doc**: Use this parameter if GTK-Doc is installed and you wish to rebuild and install the API documentation.

## Contents

**Installed Program:** idn  
**Installed Library:** libidn.so  
**Installed Directories:** /usr/share/doc/libidn-1.26 and /usr/share/gtk-doc/html/libidn

## Short Descriptions

**idn** is a command line interface to the internationalized domain name library.

**libidn.so** contains a generic Stringprep implementation that does Unicode 3.2 NFKC normalization, mapping and prohibition of characters, and bidirectional character handling. Profiles for Nameprep, iSCSI, SASL and XMPP are included as well as support for Punycode and ASCII Compatible Encoding (ACE) via IDNA. A mechanism to define Top-Level Domain (TLD) specific validation tables, and to compare strings against those tables, as well as default tables for some TLDs are included.

# Libksba-1.3.0

## Introduction to Libksba

The Libksba package contains a library used to make X.509 certificates as well as making the CMS (Cryptographic Message Syntax) easily accessible by other applications. Both specifications are building blocks of S/MIME and TLS. The library does not rely on another cryptographic library but provides hooks for easy integration with Libgcrypt.

This package is known to build and work properly using an LFS-7.2 platform.

## Package Information

- 
- Download (FTP): <ftp://ftp.gnupg.org/gcrypt/libksba/libksba-1.3.0.tar.bz2>
- Download MD5 sum: cd86fad9c9d360b2cf80449f8a4a4075
- Download size: 616 KB
- Estimated disk space required: 9.1 MB
- Estimated build time: 0.1 SBU

## Libksba Dependencies

### Required

libgpg-error-1.11

## Installation of Libksba

Install Libksba by running the following commands:

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

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

Now, as the **root** user:

```
make install
```

## Contents

<b>Installed Program:</b>	ksba-config
<b>Installed Library:</b>	libksba.{so,a}
<b>Installed Directory:</b>	None

## Short Descriptions

<b>ksba-config</b>	is a utility used to configure and build applications based on the libksba(3) library. It can be used to query the C compiler and linker flags which are required to correctly compile and link the application against the libksba(3) library.
<b>libksba.{so,a}</b>	contains the cryptographic API functions.

# libsigc++-2.2.11

## Introduction to libsigc++

The libsigc++ package implements a typesafe callback system for standard C++.

This package is known to build and work properly using an LFS-7.2 platform.

## Package Information

- Download (HTTP): <http://ftp.gnome.org/pub/gnome/sources/libsigc++/2.2/libsigc++-2.2.11.tar.xz>
- Download (FTP): <ftp://ftp.gnome.org/pub/gnome/sources/libsigc++/2.2/libsigc++-2.2.11.tar.xz>
- Download MD5 sum: 815d0c6d61601f51bbcaef6826606b0
- Download size: 3.2 MB
- Estimated disk space required: 36 MB
- Estimated build time: less than 0.1 SBU

## Installation of libsigc++

Install libsigc++ by running the following commands:

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

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

Now, as the root user:

```
make install
```

## Contents

<b>Installed Programs:</b>	None
<b>Installed Library:</b>	libsigc-2.0.so
<b>Installed Directory:</b>	/usr/include/sigc++-2.0, /usr/lib/sigc++-2.0, /usr/share/share/devhelp/books/libsigc++-2.0 and /usr/share/doc/libsigc++-2.0

## Short Descriptions

**libsigc-2.0.so** contains the libsigc++ API methods.

# libtasn1-3.3

## Introduction to libtasn1

libtasn1 is a highly portable C library that encodes and decodes DER/BER data following an ASN.1 schema.

This package is known to build and work properly using an LFS-7.3 platform.

### Package Information

- Download (HTTP): <http://ftp.gnu.org/gnu/libtasn1/libtasn1-3.3.tar.gz>
- Download (FTP): <ftp://ftp.gnu.org/gnu/libtasn1/libtasn1-3.3.tar.gz>
- Download MD5 sum: 2bdd687f487c50a0382b99553866a6e0
- Download size: 2.0 MB
- Estimated disk space required: 11 MB
- Estimated build time: 0.1 SBU

### libtasn1 Dependencies

#### Optional

GTK-Doc-1.18 and *Valgrind*

## Installation of libtasn1

Install libtasn1 by running the following commands:

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

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

Now, as the root user:

```
make install
```

If you did not pass the **--enable-gtk-doc** parameter to the **configure** script, install the API documentation using the following command as the root user:

```
make -C doc/reference install-data-local
```

## Command Explanations

**--disable-static**: This switch prevents installation of static versions of the libraries.

**--enable-gtk-doc**: Use this parameter if GTK-Doc is installed and you wish to rebuild and install the API documentation.

## Contents

<b>Installed Programs:</b>	asn1Coding, asn1Decoding and asn1Parser
<b>Installed Library:</b>	libtasn1.so
<b>Installed Directory:</b>	/usr/share/gtk-doc/html/libtasn1

## Short Descriptions

- asn1Coding** is an ASN.1 DER encoder.
- asn1Decoding** is an ASN.1 DER decoder.
- asn1Parser** is an ASN.1 syntax tree generator for libtasn1.
- libtasn1.so** is a library for Abstract Syntax Notation One (ASN.1) and Distinguish Encoding Rules (DER) manipulation.

# libunique-3.0.2

## Introduction to libunique

The libunique package contains a library for writing single instance applications.

This package is known to build and work properly using an LFS-7.2 platform.

### Package Information

- Download (HTTP): <http://ftp.gnome.org/pub/gnome/sources/libunique/3.0/libunique-3.0.2.tar.xz>
- Download (FTP): <ftp://ftp.gnome.org/pub/gnome/sources/libunique/3.0/libunique-3.0.2.tar.xz>
- Download MD5 sum: a52dfbd0fee80f645b74227ade4f01ee
- Download size: 288 KB
- Estimated disk space required: 5.2 MB
- Estimated build time: 0.2 SBU

## libunique Dependencies

### Required

GTK+-3.6.4

### Recommended

gobject-introspection-1.34.2

### Optional

GTK-Doc-1.18

## Installation of libunique

Install libunique 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: Use this parameter if GTK-Doc is installed and you wish to rebuild and install the API documentation.

## Contents

**Installed Programs:**

None

**Installed Library:**

libunique-3.0.so

**Installed Directories:**

/usr/include/unique-3.0 and /usr/share/gtk-doc/html/unique-3.0

## Short Descriptions

`libunique-3.0.so` contains the libunique API functions for single instance support.

# libunistring-0.9.3

## Introduction to libunistring

libunistring is a library that provides functions for manipulating Unicode strings and for manipulating C strings according to the Unicode standard.

This package is known to build and work properly using an LFS-7.2 platform.

## Package Information

- Download (HTTP): <http://ftp.gnu.org/gnu/libunistring/libunistring-0.9.3.tar.gz>
- Download (FTP): <ftp://ftp.gnu.org/gnu/libunistring/libunistring-0.9.3.tar.gz>
- Download MD5 sum: db8eca3b64163abadf8c40e5cecc261f
- Download size: 2.4 MB
- Estimated disk space required: 51 MB
- Estimated build time: 0.9 SBU

## libunistring Dependencies

### Optional

texlive-20120701 (to rebuild the documentation)

## Installation of libunistring

Install libunistring by running the following commands:

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

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

Now, as the root user:

```
make install
```

## Contents

<b>Installed Programs:</b>	None
<b>Installed Libraries:</b>	libunistring.{a,so}
<b>Installed Directory:</b>	/usr/share/libunistring

## Short Descriptions

<b>libunistring.{a,so}</b>	provides the unicode string library API.
----------------------------	--

# libusb-1.0.9

## Introduction to libusb

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

This package is known to build and work properly using an LFS-7.3 platform.

### Package Information

- Download (HTTP): <http://downloads.sourceforge.net/libusb/libusb-1.0.9.tar.bz2>
- 
- Download MD5 sum: 7f5a02375ad960d4e33a6dae7d63cfcb
- Download size: 416 KB
- Estimated disk space required: 5 MB
- Estimated build time: less than 0.1 SBU

## libusb Dependencies

### Optional

Doxygen-1.8.4

## Installation of libusb

Install libusb by running the following commands:

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

If Doxygen is installed and you wish to build the API documentation, issue the following command:

```
make -C doc docs
```

This package does not come with a test suite.

Now, as the root user:

```
make install
```

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

```
install -v -d -m755 /usr/share/doc/libusb-1.0.9/apidocs &&
install -v -m644 doc/html/* \
           /usr/share/doc/libusb-1.0.9/apidocs
```

## Configuring Libusb

To access raw USB devices (those not treated as a disk by the mass-storage driver), appropriate support must be available in the kernel. Check your kernel configuration for Device Drivers  $\Rightarrow$  USB support  $\Rightarrow$  Support for Host-side USB. Select any USB hardware device drivers you may need on the same page.

For more details on setting up USB devices, see the section called “USB Device Issues”.

## Contents

<b>Installed Programs:</b>	None
<b>Installed Library:</b>	libusb-1.0.so
<b>Installed Directories:</b>	/usr/include/libusb-1.0 and /usr/share/doc/libusb-1.0.9

## Short Descriptions

`libusb-1.0.so` contains API functions used for accessing USB hardware.

# libusb-compat-0.1.4

## Introduction to libusb-compat

The libusb-compat package aims to look, feel and behave exactly like libusb-0.1. It is a compatibility layer needed by packages that have not been upgraded to the libusb-1.0 API.

This package is known to build and work properly using an LFS-7.3 platform.

## Package Information

- Download (HTTP): <http://downloads.sourceforge.net/libusb/libusb-compat-0.1.4.tar.bz2>
- 
- Download MD5 sum: 2ca521fffadd0c28fdf174e6ec73865b
- Download size: 240 KB
- Estimated disk space required: 2.0 MB
- Estimated build time: less than 0.1 SBU

## libusb-compat Dependencies

### Required

libusb-1.0.9 and pkg-config-0.28

## Installation of libusb-compat

Install libusb-compat by running the following commands:

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

This package does not come with a test suite.

Now, as the root user:

```
make install
```

## Contents

<b>Installed Program:</b>	libusb-config
<b>Installed Library:</b>	libusb.so
<b>Installed Directories:</b>	None

## Short Descriptions

**libusb.so** is a library that is compatible with libusb-0.1, but uses libusb-1.0 to provide functionality.

# libxml2-2.9.1

## Introduction to libxml2

The libxml2 package contains libraries and utilities used for parsing XML files.

This package is known to build and work properly using an LFS-7.3 platform.

### Package Information

- Download (HTTP): <http://xmlsoft.org/sources/libxml2-2.9.1.tar.gz>
- Download (FTP): <ftp://xmlsoft.org/libxml2/libxml2-2.9.1.tar.gz>
- Download MD5 sum: 9c0cefef285d5c4a5c80d00904ddab380
- Download size: 5.0 MB
- Estimated disk space required: 100 MB
- Estimated build time: 0.6 SBU

### Additional Downloads

- Optional Testsuite: <http://www.w3.org/XML/Test/xmlts20080827.tar.gz> - This enables **make check** to do complete testing.

## libxml2 Dependencies

### Recommended

Python-2.7.5 (to build and install a Python library module, additionally it is required to run the full suite of tests)



### Note

Some packages which utilize libxml2 (such as GNOME Doc Utils) need the Python module installed to function properly and some packages (such as MesaLib) will not build properly if the Python module is not available.

## Installation of libxml2

If you downloaded the testsuite, issue the following command:

```
tar xf ..../xmlts20080827.tar.gz
```

Install libxml2 by running the following commands:

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

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

Now, as the root user:

```
make install
```

## Command Explanations

**--disable-static**: This switch prevents installation of static versions of the libraries.

--with-history: This switch enables Readline support when running **xmlcatalog** or **xmllint** in shell mode.

## Contents

<b>Installed Programs:</b>	xml2-config, xmlcatalog and xmllint
<b>Installed Libraries:</b>	libxml2.so and optionally, the libxml2mod.so Python module
<b>Installed Directories:</b>	/usr/include/libxml2, /usr/share/doc/libxml2-2.9.1, /usr/share/doc/libxml2- python-2.9.1 and /usr/share/gtk-doc/html/libxml2

## Short Descriptions

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

# libxslt-1.1.28

## Introduction to libxslt

The libxslt package contains XSLT libraries used for extending libxml2 libraries to support XSLT files.

This package is known to build and work properly using an LFS-7.3 platform.

## Package Information

- Download (HTTP): <http://xmlsoft.org/sources/libxslt-1.1.28.tar.gz>
- Download (FTP): <ftp://xmlsoft.org/libxslt/libxslt-1.1.28.tar.gz>
- Download MD5 sum: 9667bf6f9310b957254fdcf6596600b7
- Download size: 3.3 MB
- Estimated disk space required: 40 MB
- Estimated build time: 0.3 SBU

## libxslt Dependencies

### Required

libxml2-2.9.1

### Recommended

docbook-xml-4.5 and docbook-xsl-1.77.1

### Optional

libgcrypt-1.5.2 and Python-2.7.5



### Note

Although it is not a direct dependency, many applications using libxslt will expect docbook-xml-4.5 and docbook-xsl-1.77.1 to be present.

## Installation of libxslt

Install libxslt by running the following commands:

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

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

Now, as the root user:

```
make install
```

## Command Explanations

**--disable-static**: This switch prevents installation of static versions of the libraries.

## Contents

<b>Installed Programs:</b>	xslt-config and xsltproc
<b>Installed Libraries:</b>	libexslt.so, libxslt.so and optionally, libxsltmod.so Python modules
<b>Installed Directories:</b>	/usr/include/libexslt, /usr/include/libxslt, /usr/lib/libxslt-plugins, /usr/share/doc/libxslt-1.1.28, and /usr/share/doc/libxslt-python-1.1.28

## Short Descriptions

<b>xslt-config</b>	is used to find out the pre-processor, linking and compiling flags necessary to use the libxslt libraries in 3rd-party programs.
<b>xsltproc</b>	is used to apply XSLT stylesheets to XML documents.
<b>libexslt.so</b>	is used to provide extensions to XSLT functions.
<b>libxslt.so</b>	provides extensions to the libxml2 libraries to parse files that use the XSLT format.

# LZO-2.06

## 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.

This package is known to build and work properly using an LFS-7.2 platform.

## Package Information

- Download (HTTP): <http://www.oberhumer.com/opensource/lzo/download/lzo-2.06.tar.gz>
- 
- Download MD5 sum: 95380bd4081f85ef08c5209f4107e9f8
- Download size: 572 KB
- Estimated disk space required: 10 MB
- Estimated build time: 0.3 SBU (additional 0.3 SBU to run the tests)

## Installation of LZO

Install LZO by running the following commands:

```
./configure --prefix=/usr \
            --enable-shared \
            --docdir=/usr/share/doc/lzo-2.06 &&
make
```

To test the results, issue: **make check**. All the checks should pass. Now issue **make test** to run the full suite of tests.

Now, as the root user:

```
make install
```

## Contents

<b>Installed Programs:</b>	None
<b>Installed Libraries:</b>	liblzo2.{so,a}
<b>Installed Directories:</b>	/usr/include/lzo and /usr/share/doc/lzo

## Short Descriptions

**liblzo2.{so,a}** is a data compression and decompression library.

# mtdev-1.1.3

## Introduction to mtdev

The mtdev package contains Multitouch Protocol Translation Library which is used to transform all variants of kernel MT (Multitouch) events to the slotted type B protocol.

This package is known to build and work properly using an LFS-7.2 platform.

## Package Information

- Download (HTTP): <http://bitmath.org/code/mtdev/mtdev-1.1.3.tar.bz2>
- 
- Download MD5 sum: 8a236569ad3dd79eaeed45f1935359be
- Download size: 264 KB
- Estimated disk space required: 2.4 MB
- Estimated build time: less than 0.1 SBU

## Installation of mtdev

Install mtdev by running the following commands:

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

This package does not come with a test suite.

Now, as the root user:

```
make install
```

## Command Explanations

*--disable-static*: This switch prevents installation of static versions of the libraries.

## Contents

<b>Installed Program:</b>	mtdev-test
<b>Installed Library:</b>	libmtdev.so
<b>Installed Directories:</b>	None

## Short Descriptions

**libmtdev.so** contains Multitouch Protocol Translation API functions.

# NSPR-4.9.6

## Introduction to NSPR

Netscape Portable Runtime (NSPR) provides a platform-neutral API for system level and libc like functions.

This package is known to build and work properly using an LFS-7.3 platform.

### Package Information

- Download (HTTP): <http://ftp.mozilla.org/pub.mozilla.org/nspr/releases/v4.9.6/src/nspr-4.9.6.tar.gz>
- Download (FTP): <ftp://ftp.mozilla.org/pub.mozilla.org/nspr/releases/v4.9.6/src/nspr-4.9.6.tar.gz>
- Download MD5 sum: 62b1e9d376d503d972f90c3c0031d879
- Download size: 1.2 MB
- Estimated disk space required: 12 MB
- Estimated build time: less than 0.1 SBU

## Installation of NSPR

Install NSPR by running the following commands:

```
cd mozilla/nsprpub &&
sed -ri 's#^(RELEASE_BINS =).*\#\1#' pr/src/misc/Makefile.in &&
sed -i 's#$(LIBRARY)##' config/rules.mk &&
./configure --prefix=/usr \
            --with-mozilla \
            --with-pthreads \
            $([ $(uname -m) = x86_64 ] && echo --enable-64bit) &&
make
```

This package does not come with a test suite.

Now, as the root user:

```
make install
```

## Command Explanations

**--with-mozilla:** This parameter adds Mozilla support to the libraries (required if you want to build any other Mozilla products and link them to these libraries).

**--with-pthreads:** This parameter forces use of the system pthread library.

**\$([ \$(uname -m) = x86\_64 ] && echo --enable-64bit):** The --enable-64bit option is *required* on an x86\_64 system to prevent **configure** failing with a claim that this is a system without pthread support. The [ \$(uname -m) = x86\_64 ] test ensures it has no effect on a 32 bit system.

**sed -ri 's#^(RELEASE\_BINS =).\*\#\1#' pr/src/misc/Makefile.in:** This sed disables installing two unneeded scripts.

**sed -i 's#\$(LIBRARY)##' config/rules.mk:** This sed disables installing the static libraries.

## Contents

<b>Installed Programs:</b>	nspr-config
<b>Installed Libraries:</b>	libnspr4.so, libplc4.so and libplds4.so
<b>Installed Directories:</b>	/usr/include/nspr

## Short Descriptions

<b>nspr-config</b>	provides compiler and linker options to other packages that use NSPR.
<b>libnspr4.so</b>	contains functions that provide platform independence for non-GUI operating system facilities such as threads, thread synchronization, normal file and network I/O, interval timing and calendar time, basic memory management and shared library linking.
<b>libplc4.so</b>	contains functions that implement many of the features offered by libnspr4
<b>libplds4.so</b>	contains functions that provide data structures.

# OpenOBEX-1.7

## Introduction to OpenOBEX

The OpenOBEX package contains a library that implements Object Exchange Protocol used for binary file transfers between devices.

This package is known to build and work properly using an LFS-7.3 platform.

### Package Information

- Download (HTTP): <http://downloads.sourceforge.net/openobex/openobex-1.7-Source.tar.gz>
- 
- Download MD5 sum: 11031f6f0b876bb6259bd27106491528
- Download size: 128 KB
- Estimated disk space required: 5.0 MB
- Estimated build time: 0.1 SBU

## OpenOBEX Dependencies

### Required

BlueZ-4.101, CMake-2.8.11 and libusb-1.0.9

### Optional

Doxxygen-1.8.4, libxslt-1.1.28, OpenJDK-1.7.0.9 and xmlto-0.0.25

## Installation of OpenOBEX

Install OpenOBEX by running the following commands:

```
mkdir build &&
cd build &&
cmake -DCMAKE_INSTALL_PREFIX=/usr \
      -DCMAKE_INSTALL_LIBDIR=lib \
      -DCMAKE_BUILD_TYPE=Release \
      -DCMAKE_INSTALL_CMAKEBASEDIR=/usr/lib/cmake \
      .. &&
make
```

This package does not come with a test suite.

Now, as the root user:

```
make install
```

## Command Explanations

*-DCMAKE\_BUILD\_TYPE=Release*: This switch is used to apply higher level of the compiler optimizations.

## Contents

**Installed Program:** obex-check-device  
**Installed Library:** libopenobex.so  
**Installed Directory:** /usr/include/openobex

## Short Descriptions

`libopenobex.so` contains the OpenOBEX API functions.

# PCRE-8.32

## 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.

This package is known to build and work properly using an LFS-7.3 platform.

## Package Information

- Download (HTTP): <http://downloads.sourceforge.net/pcre/pcre-8.32.tar.bz2>
- Download (FTP): <ftp://ftp.csx.cam.ac.uk/pub/software/programming/pcre/pcre-8.32.tar.bz2>
- Download MD5 sum: 62f02a76bb57a40bc66681760ed511d5
- Download size: 1.3 MB
- Estimated disk space required: 16 MB
- Estimated build time: 0.3 SBU

## PCRE Dependencies

### Optional

*Valgrind*

## Installation of PCRE

Install PCRE by running the following commands:

```
./configure --prefix=/usr \
            --docdir=/usr/share/doc/pcre-8.32 \
            --enable-utf \
            --enable-unicode-properties \
            --enable-pcregrep-libz \
            --enable-pcregrep-libbz2 \
            --disable-static
make
```

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

Now, as the root user:

```
make install      &&
mv -v /usr/lib/libpcre.so.* /lib &&
ln -sfv ../../lib/libpcre.so.1.2.0 /usr/lib/libpcre.so
```

## Command Explanations

--enable-utf: This switch includes the code for handling UTF-8 character strings in the library.

--enable-unicode-properties: This switch enables Unicode properties support. Note: You need this switch if you are going to build GLib-2.34.3 with the **--with-pcre=system** switch.

--enable-pcregrep-libz: This switch adds support to **pcregrep** to read .gz compressed files.  
--enable-pcregrep-libbz2: This switch adds support to **pcregrep** to read .bz2 compressed files.  
--disable-static: This switch prevents installation of static versions of the libraries.  
**mv -v /usr/lib/libpcre.so.\* /lib:** Moves the PCRE library on the root filesystem so that it is available in case **grep** gets reinstalled with PCRE support.

## Contents

<b>Installed Programs:</b>	pcregrep, pcretest and pcre-config
<b>Installed Libraries:</b>	libpcre.so, libpcrecpp.so and libpcreposix.so
<b>Installed Directory:</b>	/usr/share/doc/pcre-8.32

## Short Descriptions

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

# Popt-1.16

## Introduction to Popt

The popt package contains the popt libraries which are used by some programs to parse command-line options. This package is known to build and work properly using an LFS-7.3 platform.

### Package Information

- Download (HTTP): <http://rpm5.org/files/popt/popt-1.16.tar.gz>
- Download (FTP): <ftp://anduin.linuxfromscratch.org/BLFS/svn/p/popt-1.16.tar.gz>
- Download MD5 sum: 3743beefa3dd6247a73f8f7a32c14c33
- Download size: 702 kB
- Estimated disk space required: 8 MB (includes installing documentation)
- Estimated build time: 0.1 SBU

## Installation of Popt

Install popt by running the following commands:

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

If you have Doxygen-1.8.4 installed and wish to build the API documentation, issue **doxygen**.

To test the results, issue:

```
make check
```

Now, as the **root** user:

```
make install
```

If you built the API documentation, install it using the following commands issued by the **root** user:

```
install -v -m755 -d /usr/share/doc/popt-1.16 &&
install -v -m644 doxygen/html/* /usr/share/doc/popt-1.16
```

## Contents

<b>Installed Programs:</b>	None
<b>Installed Library:</b>	libpopt.{so,a}
<b>Installed Directories:</b>	/usr/share/doc/popt-1.16

## Short Descriptions

**libpopt.{so,a}** is used to parse command-line options.

# Pth-2.0.7

## Introduction to Pth

The Pth package contains a very portable POSIX/ANSI-C based library for Unix platforms which provides non-preemptive priority-based scheduling for multiple threads of execution (multithreading) inside event-driven applications. All threads run in the same address space of the server application, but each thread has its own individual program-counter, run-time stack, signal mask and errno variable.

This package is known to build and work properly using an LFS-7.3 platform.

## Package Information

- Download (HTTP): <http://ftp.gnu.org/gnu/pth/pth-2.0.7.tar.gz>
- Download (FTP): <ftp://ftp.gnu.org/gnu/pth/pth-2.0.7.tar.gz>
- Download MD5 sum: 9cb4a25331a4c4db866a31cbe507c793
- Download size: 652 KB
- Estimated disk space required: 5 MB
- Estimated build time: 0.2 SBU

## Installation of Pth



### Caution

Don't add the `--enable-pthread` parameter to the `configure` command below else you will overwrite the pthread library and interface header installed by the Glibc package in LFS.

Install Pth by running the following commands:

```
sed -i 's#$(LOBJS): Makefile##' Makefile.in &&
./configure --prefix=/usr \
            --disable-static \
            --mandir=/usr/share/man &&
make
```

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

Now, as the root user:

```
make install &&
install -v -m755 -d /usr/share/doc/pth-2.0.7 &&
install -v -m644 README PORTING SUPPORT TESTS \
          /usr/share/doc/pth-2.0.7
```

## Command Explanations

**sed -i 's#\$(LOBJS) ...'**: This **sed** fixes a race condition in the `Makefile`. It allows you to run **make** with multiple jobs (e.g., **make -j4**).

**--disable-static**: This option stops it compiling a static version of the library.

**--mandir=/usr/share/man**: This option puts the man pages in `/usr/share/man` and not `/usr/man`.

## Contents

<b>Installed Program:</b>	pth-config
<b>Installed Library:</b>	libpth.so
<b>Installed Directory:</b>	/usr/share/doc/pth-2.0.7

## Short Descriptions

<b>pth-config</b>	is a utility used to configure and build applications based on the pth(3) library. It can be used to query the C compiler and linker flags which are required to correctly compile and link the application against the pth(3) library.
<b>libpth.so</b>	contains the API functions used by the GNU Portable Threads Library.

# Ptlib-2.10.10

## Introduction to Ptlib

The Ptlib (Portable Tools Library) package contains a class library that has its genesis many years ago as PWLib (portable Windows Library), a method to produce applications to run on various platforms.

This package is known to build and work properly using an LFS-7.2 platform.

## Package Information

- Download (HTTP): <http://ftp.gnome.org/pub/gnome/sources/pplib/2.10/pplib-2.10.10.tar.xz>
- Download (FTP): <ftp://ftp.gnome.org/pub/gnome/sources/pplib/2.10/pplib-2.10.10.tar.xz>
- Download MD5 sum: 1fd609e25f101393bb7e42fbf874c174
- Download size: 2.5 MB
- Estimated disk space required: 105 MB
- Estimated build time: 1.0 SBU

## Ptlib Dependencies

### Required

`pkg-config-0.28`

### Recommended

`alsa-lib-1.0.27`, `expat-2.1.0` and `OpenSSL-1.0.1e`

### Optional

`Cyrus SASL-2.1.26`, `libdc1394`, `libraw1394`, `Lua`, `OpenLDAP-2.4.35`, `PulseAudio-3.0`, `SDL-1.2.15`, `unixODBC-2.3.1` and `Video4Linux`

## Installation of Ptlib

Install Ptlib 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 &&
chmod -v 755 /usr/lib/libpt.so.2.10.10
```

## Contents

<b>Installed Program:</b>	<code>ptlib-config</code>
<b>Installed Libraries:</b>	<code>libpt.so</code> and <code>libpt_s.a</code>
<b>Installed Directories:</b>	<code>/usr/include/ptclib</code> , <code>/usr/include/pplib</code> , <code>/usr/lib/pplib-2.10.10</code> and <code>/usr/share/pplib</code>

## Short Descriptions

`libpt.so` contains the Ptlib API functions.

# Qca-2.0.3

## Introduction to Qca

Qca aims to provide a straightforward and cross-platform crypto API, using Qt datatypes and conventions. Qca separates the API from the implementation, using plugins known as Providers.

This package is known to build and work properly using an LFS-7.2 platform.

## Package Information

- Download (HTTP): <http://delta.affinix.com/download/qca/2.0/qca-2.0.3.tar.bz2>
- 
- Download MD5 sum: fc15bd4da22b8096c51fcfe52d2fa309
- Download size: 4.3 MB
- Estimated disk space required: 110 MB
- Estimated build time: 2.2 SBU

## Qca Dependencies

### Required

Qt-4.8.4 and which-2.20

## Installation of Qca

Install Qca by running the following commands:

```
sed -i '217s@set@this->set@' src/botantools/botan/botan/secmem.h &&
./configure --prefix=$QTDIR \
             --certstore-path=/etc/ssl/ca-bundle.crt &&
make
```

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

Now, as the root user:

```
make install
```

## Command Explanations

**sed -i '217s@set@...':** This sed fixes compiling with GCC 4.7.x. It is safe to omit when compiling with older GCC versions.

**--certstore-path=/etc/ssl/ca-bundle.crt:** Causes the build to use the system-installed CA Certificates instead of a bundled copy.

## Contents

<b>Installed Programs:</b>	qcacmd and qcacmd.debug
<b>Installed Libraries:</b>	libqca.so and libqca.so.2.0.3.debug
<b>Installed Directories:</b>	\$QTDIR/include/QtCrypto and \$QTDIR/share/qca

# QJson-0.8.1

## Introduction to QJson

QJson is a Qt-based library that maps JSON data to QVariant objects and vice versa.

This package is known to build and work properly using an LFS-7.3 platform.

## Package Information

- Download (HTTP): <http://downloads.sourceforge.net/qjson/qjson-0.8.1.tar.bz2>
- 
- Download MD5 sum: 323fbac54a5a20c0b8fe45c1ced03e2d
- Download size: 64 KB
- Estimated disk space required: 1.4 MB
- Estimated build time: less than 0.1 SBU

## QJson Dependencies

### Required

Qt-4.8.4 and CMake-2.8.11

## Installation of QJson

Install QJson by running the following commands:

```
mkdir build &&
cd build &&
cmake -DCMAKE_INSTALL_PREFIX=$QTDIR \
      -DCMAKE_BUILD_TYPE=Release \
      .. &&
make
```

This package does not contain a test suite.

Now, as the root user:

```
make install
```

## Contents

<b>Installed Programs:</b>	none
<b>Installed Library:</b>	libqjson.so
<b>Installed Directory:</b>	\$QTDIR/include/json and \$QTDIR/lib/cmake/qjson

## Short Descriptions

**libqjson.so** contains QJson API functions.

# SBC-1.1

## Introduction to SBC

The SBC is a digital audio encoder and decoder used to transfer data to Bluetooth audio output devices like headphones or loudspeakers.

This package is known to build and work properly using an LFS-7.3 platform.

## Package Information

- Download (HTTP): <http://www.kernel.org/pub/linux/bluetooth/sbc-1.1.tar.xz>
- Download (FTP): <ftp://www.kernel.org/pub/linux/bluetooth/sbc-1.1.tar.xz>
- Download MD5 sum: ecadadbfd4b1dfe7b98f446c69126b23
- Download size: 240 KB
- Estimated disk space required: 3.0 MB
- Estimated build time: 0.1 SBU

## SBC Dependencies

### Optional

libsndfile-1.0.25

## Installation of SBC

Install SBC by running the following commands:

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

This package does not come with a test suite.

Now, as the root user:

```
make install
```

## Command Explanations

*--disable-static*: This switch prevents installation of static versions of the libraries.

## Contents

<b>Installed Programs:</b>	sbcdec, sbcenc and sbcinfo
<b>Installed Library:</b>	libsbc.so
<b>Installed Directory:</b>	/usr/include/sbc

## Short Descriptions

**libsbc.so** contains the SBC API functions.

# SLIB-3b3

## Introduction to SLIB

The SLIB package is a portable library for the Scheme programming language. It provides a platform independent framework for using “packages” of Scheme procedures and syntax. Its catalog can be transparently extended to accommodate packages specific to a site, implementation, user or directory. SLIB provides compatibility and utility functions for all standard Scheme implementations including Bigloo, Chez, ELK 3.0, GAMBIT 3.0, Guile, JScheme, MacScheme, MITScheme, PLT Scheme (DrScheme and MzScheme), Pocket Scheme, RScheme, scheme->C, Scheme48, SCM, SCM Mac, scsh, Stk, T3.1, umb-scheme, and VSCM.

This package is known to build and work properly using an LFS-7.2 platform.

## Package Information

- Download (HTTP): <http://groups.csail.mit.edu/mac/ftpdir/scm/slib-3b3.tar.gz>
- 
- Download MD5 sum: 11626eef380de4f56d3082514559beb6
- Download size: 948 KB
- Estimated disk space required: 31 MB (includes building and installing docs)
- Estimated build time: less than 0.1 SBU

## SLIB Dependencies

### Required

Guile-2.0.9.

## Installation of SLIB

Install SLIB by issuing the following commands:

```
sed -i 's|usr/lib|usr/share|' RScheme.init &&
./configure --prefix=/usr --libdir=/usr/share &&

sed -i 's# scm$# guile#;s#ginstall-info#install-info#' Makefile &&
makeinfo -o slib.txt --plaintext slib.texi &&
makeinfo -o slib.html --html --no-split slib.texi
```

This package does not come with a functional test suite.

Now, as the root user:

```
make install &&
ln -v -s ../slib /usr/share/guile &&
guile -c "(use-modules (ice-9 slib)) (require 'printf)" &&
install -v -m755 -d /usr/share/doc/slib-3b3 &&
install -v -m644 ANNOUNCE FAQ README slib.{txt,html} /usr/share/doc/slib-3b3
```

## Command Explanations

**sed -i '\$|usr/lib|usr/share|' RScheme.init:** This command is used to change the `libdir` variable embedded in the script to match the installation.

**--libdir=/usr/share:** This option puts the installed files in `/usr/share/slib` instead of `/usr/lib/slib`.

**ln -v -s ..slib /usr/share/guile:** This command puts a symbolic link to the slib files in Guile's default “Implementation Vicinity”.

**guile -c "(use-modules (ice-9 slib)) (require 'printf)":** This command creates a guile catalog of the slib files.

## Contents

**Installed Program:**

`slib`

**Installed Libraries:**

a Scheme library system

**Installed Directory:**

`/usr/share/slib` and `/usr/share/doc/slib-3b3`

## 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.

# Talloc-2.0.8

## Introduction to Talloc

Talloc provides a hierarchical, reference counted memory pool system with destructors. It is the core memory allocator used in Samba.

This package is known to build and work properly using an LFS-7.2 platform.

## Package Information

- Download (HTTP): <http://samba.org/ftp/talloc/talloc-2.0.8.tar.gz>
- Download (FTP): <ftp://samba.org/pub/talloc/talloc-2.0.8.tar.gz>
- Download MD5 sum: 7857200b58a8617ca18fe2c91296cd93
- Download size: 424 KB
- Estimated disk space required: 6.5 MB
- Estimated build time: 0.3 SBU

## Talloc Dependencies

### Optional

docbook-xml-4.5, docbook-xsl-1.77.1 and libxslt-1.1.28 (To generate man pages) and Python-2.7.5 (To build Python module).

## Installation of Talloc

Install Talloc by running the following commands:

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

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

Now, as the root user:

```
make install
```

## Contents

<b>Installed Programs:</b>	None
<b>Installed Libraries:</b>	libpytalloc-util.so, libtalloc.so and talloc.so (Python Module)
<b>Installed Directories:</b>	None

## Short Descriptions

**libtalloc.so** contains a replacement for the Glibc malloc function.

# telepathy-glib-0.20.2

## Introduction to Telepathy GLib

The Telepathy GLib contains a library used by GLib based Telepathy components. Telepathy is a D-Bus framework for unifying real time communication, including instant messaging, voice calls and video calls. It abstracts differences between protocols to provide a unified interface for applications.

This package is known to build and work properly using an LFS-7.2 platform.

### Package Information

- Download (HTTP): <http://telepathy.freedesktop.org/releases/telepathy-glib/telepathy-glib-0.20.2.tar.gz>
- 
- Download MD5 sum: bfc8a1b94c7a268f15d4d92b83460987
- Download size: 3.7 MB
- Estimated disk space required: 240 MB
- Estimated build time: 1.2 SBU

### Telepathy GLib Dependencies

#### Required

D-Bus GLib Bindings-0.100.2 and libxslt-1.1.28

#### Recommended

gobject-introspection-1.34.2 and Vala-0.18.1

#### Optional

GTK-Doc-1.18

## Installation of Telepathy GLib

Install Telepathy GLib by running the following commands:

```
./configure --prefix=/usr \
            --enable-vala-bindings \
            --disable-static &&
make
```

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

Now, as the **root** user:

```
make install
```

## Command Explanations

**--enable-vala-bindings**: This switch enables building of the Vala bindings. Remove if you don't have Vala-0.18.1 installed.

**--disable-static**: This switch prevents installation of static versions of the libraries.

--enable-gtk-doc: Use this parameter if GTK-Doc is installed and you wish to rebuild and install the API documentation.

## Contents

<b>Installed Programs:</b>	None
<b>Installed Library:</b>	libtelepathy-glib.so
<b>Installed Directories:</b>	/usr/include/telepathy-1.0 and /usr/share/gtk-doc/html/telepathy-glib

## Short Descriptions

**libtelepathy-glib.so** contains the Telepathy GLib API functions.

# telepathy-logger-0.8.0

## Introduction to Telepathy Logger

The Telepathy Logger package is a headless observer client that logs information received by the Telepathy framework. It features pluggable backends to log different sorts of messages in different formats.

This package is known to build and work properly using an LFS-7.2 platform.

## Package Information

- Download (HTTP): <http://telepathy.freedesktop.org/releases/telepathy-logger/telepathy-logger-0.8.0.tar.bz2>
- 
- Download MD5 sum: e513eaa767344821073a0b7bb8b45217
- Download size: 528 KB
- Estimated disk space required: 16 MB
- Estimated build time: 0.2 SBU

## Telepathy Logger Dependencies

### Required

Intltool-0.50.2, SQLite-3.7.16.2 and telepathy-glib-0.20.2

### Recommended

gobject-introspection-1.34.2

### Optional

GTK-Doc-1.18

## Installation of Telepathy Logger

Install Telepathy Logger by running the following commands:

```
./configure --prefix=/usr \
            --libexecdir=/usr/lib/telepathy \
            --disable-static &&
make
```

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

Now, as the root user:

```
make install
```

## Command Explanations

**--disable-static**: This switch prevents installation of static versions of the libraries.

**--enable-gtk-doc**: Use this parameter if GTK-Doc is installed and you wish to rebuild and install the API documentation.

## Contents

<b>Installed Program:</b>	telepathy-logger
<b>Installed Library:</b>	libtelepathy-logger.so
<b>Installed Directories:</b>	/usr/include/telepathy-logger-0.2, /usr/lib/telepathy, /usr/share/gtk-doc/html/telepathy-logger and /usr/share/telepathy

## Short Descriptions

**telepathy-logger** is the Telepathy Logger D-Bus service.

**libtelepathy-logger.so** contains the Telepathy Logger API functions.

# telepathy-farstream-0.6.0

## Introduction to Telepathy Farstream

The Telepathy Farstream is a Telepathy client library that uses Farstream to handle Call channels.

This package is known to build and work properly using an LFS-7.2 platform.

### Package Information

- Download (HTTP): <http://telepathy.freedesktop.org/releases/telepathy-farstream/telepathy-farstream-0.6.0.tar.gz>
- 
- Download MD5 sum: d154350f9f1e3bdb87617c0668481a5
- Download size: 584 KB
- Estimated disk space required: 6.0 MB
- Estimated build time: 0.1 SBU

## Telepathy Farstream Dependencies

### Required

Farstream-0.2.3 and telepathy-glib-0.20.2

### Optional

GTK-Doc-1.18

## Installation of Telepathy Farstream

Install Telepathy Farstream by running the following commands:

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

This package does not come with a test suite.

Now, as the root user:

```
make install
```

## Command Explanations

`--disable-static`: This switch prevents installation of static versions of the libraries.

`--enable-gtk-doc`: Use this parameter if GTK-Doc is installed and you wish to rebuild and install the API documentation.

## Contents

<b>Installed Programs:</b>	None
<b>Installed Library:</b>	libtelepathy-farstream.so
<b>Installed Directories:</b>	/usr/include/telepathy-1.0/telepathy-farstream and /usr/share/gtk-doc/html/telepathy-farstream

## Short Descriptions

`libtelepathy-farstream.so` contains Telepathy Farstream API functions.

# telepathy-mission-control-5.14.1

## Introduction to Telepathy Mission Control

Telepathy Mission Control is an account manager and channel dispatcher for the Telepathy framework, allowing user interfaces and other clients to share connections to real-time communication services without conflicting.

This package is known to build and work properly using an LFS-7.3 platform.

### Package Information

- Download (HTTP): <http://telepathy.freedesktop.org/releases/telepathy-mission-control/telepathy-mission-control-5.14.1.tar.gz>
- 
- Download MD5 sum: e06fb0399ec435e59c74d79a2ace8a2d
- Download size: 1.0 MB
- Estimated disk space required: 25 MB
- Estimated build time: 0.2 SBU

## Telepathy Mission Control Dependencies

### Required

*telepathy-glib-0.20.2*

### Recommended

*libgnome-keyring-3.6.0*, *NetworkManager-0.9.8.0* and *UPower-0.9.20*

### Optional

*GTK-Doc-1.18* and *libaccounts-glib*

## Installation of Telepathy Mission Control

Install Telepathy Mission Control by running the following commands:

```
./configure --prefix=/usr \
            --libexecdir=/usr/lib/telepathy \
            --enable-gnome-keyring \
            --disable-static &&
make
```

This package does not come with a testsuite.

Now, as the root user:

```
make install
```

## Command Explanations

*--disable-static*: This switch prevents installation of static versions of the libraries.

--enable-gtk-doc: Use this parameter if GTK-Doc is installed and you wish to rebuild and install the API documentation.

## Contents

<b>Installed Programs:</b>	mc-tool, mc-wait-for-name and mission-control-5
<b>Installed Library:</b>	libmission-control-plugins.so
<b>Installed Directories:</b>	/usr/include/mission-control-5.5, /usr/lib/telepathy and /usr/share/gtk-doc/html/mission-control-plugins

## Short Descriptions

<b>mc-tool</b>	is a command line tool used to manipulate Mission Control accounts.
<b>mc-wait-for-name</b>	waits for a (D-Bus) bus name that will (after a while) be provided automatically by the desktop session.
<b>mission-control-5</b>	is a D-Bus service which runs on the session bus to implement AccountManager and ChannelDispatcher services described in the Telepathy D-Bus specification.
<b>libmission-control-plugins.so</b>	contains Telepathy Mission Control plugin API functions.

# wv-1.2.9

## Introduction to wv

This package contains tools for reading information from an MS Word document.

This package is known to build using an LFS 7.2 platform but has not been tested.

## Package Information

- Download (HTTP): <http://www.abisource.com/downloads/wv/1.2.9/wv-1.2.9.tar.gz>
- Download (FTP):
- Download MD5 sum: dbccf2e9f747e50c913b7e3d126b73f7
- Download size: 608 KB
- Estimated disk space required: 25 MB
- Estimated build time: 0.4 SBU

## wv Dependencies

### Required

*libgsf-1.14.26, libpng-1.6.2*

### Optional

*libwmf*

## Installation of wv

Install wv by running the following commands:

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

This package does not have a testsuite.

Now, as the root user:

```
make install
```

## Command Explanations

--disable-static: This switch prevents the static library being built.

## Contents

<b>Installed Programs:</b>	wvSummary, and several other wv* programs which are deprecated in favour of abiword: see <a href="http://wvware.sourceforge.net/">http://wvware.sourceforge.net/</a>
<b>Installed Libraries:</b>	libwv-1.2.{so,a}
<b>Installed Directories:</b>	/usr/share/wv/

## Short Descriptions

**wvSummary** displays the summary information from an MS Word document.

`libwv-1.2.{so,a}` provides functions to access MS Word documents.

## Chapter 10. 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.

# AAlib-1.4rc5

## Introduction to AAlib

AAlib is a library to render any graphic into ASCII Art.

This package is known to build and work properly using an LFS-7.2 platform.

## Package Information

- Download (HTTP): <http://downloads.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: 0.1 SBU

## AAlib Dependencies

### Optional

X Window System, S-Lang-2.2.4, and GPM-1.20.7

## Installation of AAlib

Fix a minor problem with the included m4 file:

```
sed -i -e '/AM_PATH_AALIB,/s/AM_PATH_AALIB/[&]/' aalib.m4
```

Install AAlib by running the following commands:

```
./configure --prefix=/usr \
            --infodir=/usr/share/info \
            --mandir=/usr/share/man \
            --disable-static &&
make
```

This package does not come with a test suite.

Now, as the root user:

```
make install
```

## Contents

<b>Installed Programs:</b>	aafire, aainfo, aalib-config, aasavefont, and aatest
<b>Installed Library:</b>	libaa.{so,a}
<b>Installed Directories:</b>	None

## Short Descriptions

**aafire** is little toy of AAlib, rendering an animated fire in ASCII Art.

<b>aainfo</b>	provides information for your current settings related to AAlib.
<b>aalib-config</b>	provides configuration info for AAlib.
<b>aatest</b>	shows the abilities of AAlib in a little test.
<b>libaa.{so,a}</b>	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.

# babl-0.1.10

## Introduction to Babl

The Babl package is a dynamic, any to any, pixel format translation library.

This package is known to build and work properly using an LFS-7.3 platform.

## Package Information

- 
- Download (FTP): <ftp://ftp.gimp.org/pub/babl/0.1/babl-0.1.10.tar.bz2>
- Download MD5 sum: 9e1542ab5c0b12ea3af076a9a2f02d79
- Download size: 440 KB
- Estimated disk space required: 12 MB
- Estimated build time: 0.2 SBU

## Babl Dependencies

### Recommended

pkg-config-0.28

### Optional

gobject-introspection-1.34.2 and Vala-0.18.1

## Installation of Babl

Install Babl 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/gtk-doc/html/babl/graphics &&
install -v -m644 docs/*.{css,html} /usr/share/gtk-doc/html/babl &&
install -v -m644 docs/graphics/*.{html,png,svg} /usr/share/gtk-doc/html/babl/grap
```

## Command Explanations

**install -v -m755 -d /usr/share/gtk-doc/html/babl/graphics**: This and the subsequent commands install the library html documentation under /usr/share/gtk-doc/html where other gtk packages put the programmer-oriented documentation.

**--with-vala**: Use **vapigen** so that vala programs can use this application - not enabled by default, may cause breakage when building gegl.

## Contents

<b>Installed Programs:</b>	None
<b>Installed Libraries:</b>	libbabl.so, and libraries in /usr/lib/babl-0.1/
<b>Installed Directories:</b>	/usr/include/babl-0.1/

## Short Descriptions

`libbabl.so` contains functions to access BablFishes to convert between formats.

# Exiv2-0.23

## Introduction to Exiv2

Exiv2 is a C++ library and a command line utility for managing image metadata.

This package is known to build and work properly using an LFS-7.3 platform.

### Package Information

- Download (HTTP): <http://www.exiv2.org/exiv2-0.23.tar.gz>
- 
- Download MD5 sum: dab67c07bb63a4386d4ea607a8e06eaf
- Download size: 3.4 MB
- Estimated disk space required: 28 MB
- Estimated build time: 1.2 SBU

## Exiv2 Dependencies

### Required

expat-2.1.0

## Installation of Exiv2

Install Exiv2 by running the following commands:

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

This package does not come with a test suite.

Now, as the root user:

```
make install
```

## Command Explanations

**--disable-static**: This switch prevents installation of static versions of the libraries.

## Contents

<b>Installed Program:</b>	exiv2
<b>Installed Library:</b>	libexiv2.so
<b>Installed Directories:</b>	None

## Short Descriptions

**exiv2** is an utility used to dump Exif data.

# FreeType-2.4.12

## Introduction to FreeType2

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

This package is known to build and work properly using an LFS-7.3 platform.

## Package Information

- Download (HTTP): <http://downloads.sourceforge.net/freetype/freetype-2.4.12.tar.bz2>
- Download (FTP): <ftp://mirror.ovh.net/gentoo-distfiles/distfiles/freetype-2.4.12.tar.bz2>
- Download MD5 sum: 3463102764315eb86c0d3c2e1f3ffb7d
- Download size: 1.6 MB
- Estimated disk space required: 30 MB (includes installing additional documentation)
- Estimated build time: 0.3 SBU

## Additional Downloads

### Additional Documentation

- Download (HTTP): <http://downloads.sourceforge.net/freetype/freetype-doc-2.4.12.tar.bz2>
- Download (FTP): <ftp://mirror.ovh.net/gentoo-distfiles/distfiles/freetype-doc-2.4.12.tar.bz2>
- Download MD5 sum: e3955ef324b2ceea74dc849e07fbfb7a
- Download size: 108 KB

## Installation of FreeType2

If you downloaded the additional documentation, unpack it into the source tree using the following command:

```
tar -xf ../freetype-doc-2.4.12.tar.bz2 \
--strip-components=2 -C docs
```

Install FreeType2 by running the following commands:

```
sed -e "s@FT_CFF_HINTING_FREETYPE@FT_CFF_HINTING_ADOBE@" \
-i src/cff/cffobjs.c &&
sed -e "/AUX.*.gxvalid/s@^# @@" -e "/AUX.*.otvalid/s@^# @@" \
-i modules.cfg &&
sed -e "#.*.SUBPIXEL/s@/* @@" -e "#.*.SUBPIXEL/s@ /*@@" \
-i include/freetype/config/ftoption.h &&
./configure --prefix=/usr --disable-static &&
make
```

This package does not come with a test suite.

Now, as the root user:

```
make install &&
install -v -m755 -d /usr/share/doc/freetype-2.4.12 &&
cp -v -R docs/* /usr/share/doc/freetype-2.4.12
```

## Command Explanations

**sed -e ...:** First command enables Adobe CFF Engine, second command enables GX/AAT and OpenType table validation and third command enables Subpixel Rendering and Subpixel Hinting in order to improve font rendering. Note that Subpixel Rendering has patent issues. Be sure to read the 'Other patent issues' part of <http://www.freetype.org/patents.html> before enabling this option.

**--disable-static:** This switch prevents installation of static versions of the libraries.

## Contents

**Installed Program:** freetype-config

**Installed Library:** libfreetype.so

**Installed Directories:** /usr/include/freetype2 and /usr/share/doc/freetype-2.4.12

## Short Descriptions

**freetype-config** is used to get FreeType compilation and linking information.

**libfreetype.so** contains functions for rendering various font types, such as TrueType and Type1.

# Fontconfig-2.10.2

## Introduction to Fontconfig

The Fontconfig package contains a library and support programs used for configuring and customizing font access.

This package is known to build and work properly using an LFS-7.3 platform.

## Package Information

- Download (HTTP): <http://fontconfig.org/release/fontconfig-2.10.2.tar.bz2>
- 
- Download MD5 sum: 2f239690057d1438aa282e051f721d08
- Download size: 1.4 MB
- Estimated disk space required: 16 MB
- Estimated build time: 0.4 SBU

## Fontconfig Dependencies

### Required

FreeType-2.4.12 and either expat-2.1.0 or libxml2-2.9.1

### 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 SGMLSPM-1.1 installed also, or the Fontconfig build will fail.

## Installation of Fontconfig

Install Fontconfig by running the following commands:

```
./configure --prefix=/usr \
            --sysconfdir=/etc \
            --localstatedir=/var \
            --docdir=/usr/share/doc/fontconfig-2.10.2 \
            --disable-docs \
            --disable-static &&
make
```

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

Now, as the root user:

```
make install
```

If you did not remove the `--disable-docs` parameter from the `configure` command, you can install the pre-generated documentation by using the following commands as the `root` user:

```
install -v -dm755 \
    /usr/share/{man/man{3,5},doc/fontconfig-2.10.2/fontconfig-devel} &&
install -v -m644 fc-*/*.1           /usr/share/man/man1 &&
install -v -m644 doc/*.*            /usr/share/man/man3 &&
install -v -m644 doc/fonts-conf.5  /usr/share/man/man5 &&
install -v -m644 doc/fontconfig-devel/* \
    /usr/share/doc/fontconfig-2.10.2/fontconfig-devel &&
install -v -m644 doc/*.{pdf,sgml,txt,html} \
    /usr/share/doc/fontconfig-2.10.2
```

## Command Explanations

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

`--disable-static`: This switch prevents installation of static versions of the libraries.

## Configuring Fontconfig

### Config Files

`/etc/fonts/*`, `/etc/fonts/conf.d/*` and `/usr/share/fontconfig/conf.avail/*`

### Configuration Information

The main configuration file for Fontconfig is `/etc/fonts/fonts.conf`. Generally you do not want to edit this file. It will also read `/etc/fonts/local.conf` and any files in `/etc/fonts/conf.d`. To put a new font directory in the configuration, create (or update) the `/etc/fonts/local.conf` file with your local information or add a new file in `/etc/fonts/conf.d`. The default location of fonts in Fontconfig is:

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

Fontconfig also ships many example configuration files in the `/usr/share/fontconfig/conf.avail` directory. Symlinking specific files to `/etc/fonts/conf.d` will enable them. The default setup is generally good enough for most users. See `/etc/fonts/conf.d/README` for a description of the configuration files.

More information about configuring Fontconfig can be found in the user's manual in `file:///usr/share/doc/fontconfig-2.10.2/fontconfig-user.html`

## Contents

<b>Installed Programs:</b>	fc-cache, fc-cat, fc-list, fc-match, fc-query and fc-scan
<b>Installed Library:</b>	<code>libfontconfig.so</code>
<b>Installed Directories:</b>	<code>/etc/fonts</code> , <code>/usr/include/fontconfig</code> , <code>/usr/share/doc/fontconfig-2.10.2</code> and <code>/var/cache/fontconfig</code>

## Short Descriptions

**fc-cache** is used to create font information caches.

<b>fc-cat</b>	is used to read font information caches.
<b>fc-list</b>	is used to create font lists.
<b>fc-match</b>	is used to match available fonts, or find fonts that match a given pattern.
<b>fc-query</b>	is used to query fonts files and print resulting patterns.
<b>fc-scan</b>	is used to scan font files and directories, and print resulting patterns.
<b>libfontconfig.so</b>	contains functions used by the Fontconfig programs and also by other programs to configure or customize font access.

# FriBidi-0.19.5

## 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.

This package is known to build and work properly using an LFS-7.2 platform.

## Package Information

- Download (HTTP): <http://fribidi.org/download/fribidi-0.19.5.tar.bz2>
- 
- Download MD5 sum: 925bafb97afee8a2fc2d0470c072a155
- Download size: 612 KB
- Estimated disk space required: 6.5 MB
- Estimated build time: 0.1 SBU

## Optional

GLib-2.34.3

## Installation of FriBidi

Install FriBidi by running the following commands:

```
sed -i "s|glib/gstrfuncs\.h|glib.h|" charset/fribidi-char-sets.c &&
sed -i "s|glib/gmem\.h|glib.h|" lib/mem.h &&
./configure --prefix=/usr &&
make
```

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

Now, as the root user:

```
make install
```

## Command Explanations

**sed -i ...:** These commands fix two header files if GLib-2 is linked into the build.

**--with-glib=yes:** Add this option to the **configure** script so that the build will link against the GLib-2 library.

## Contents

<b>Installed Program:</b>	fribidi
<b>Installed Library:</b>	libfribidi.so
<b>Installed Directory:</b>	/usr/include/fribidi

## Short Descriptions

**fribidi** is a command-line interface to the **libfribidi** library and can be used to convert a logical string to visual output.

`libfribidi.so` contains functions used to implement the *Unicode Bidirectional Algorithm*.

# gegl-0.2.0

## Introduction to gegl

This package provides the GEneric Graphics Library, which is a graph based image processing format.

This package is known to build and work properly using an LFS-7.3 platform.

## Package Information

- 
- Download (FTP): <ftp://ftp.gimp.org/pub/gegl/0.2/gegl-0.2.0.tar.bz2>
- Download MD5 sum: 32b00002f1f1e316115c4ed922e1dec8
- Download size: 7.2 MB
- Estimated disk space required: 50 MB
- Estimated build time: 0.9 SBU

## gegl Dependencies

### Required

babl-0.1.10

### Optional

*AsciiDoc*, Cairo-1.12.14, *enscript*, Exiv2-0.23, FFmpeg-1.2.1, gdk-pixbuf-2.26.5, Graphviz-2.30.1, *lensfun*, libjpeg-turbo-1.2.1, *libopenraw*, libpng-1.6.2, librsvg-2.36.4, *libspiro*, *Lua*, *OpenEXR*, Pango-1.32.5, Python-2.7.5, Ruby-1.9.3-p429, SDL-1.2.15, gobject-introspection-1.34.2, Vala-0.18.1, w3m-0.5.3 and *libumfpack*

## Installation of gegl

Install gegl by running the following commands:

```
sed -e '274cerr = avformat_open_input (&p->ic, o->path, NULL, NULL);' \
      -i operations/external/ff-load.c &&
./configure --prefix=/usr &&
make
```

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

Now, as the root user:

```
make install &&
install -v -m644 docs/*.{css,html} /usr/share/gtk-doc/html/gegl &&
install -d -v -m755 /usr/share/gtk-doc/html/gegl/images &&
install -v -m644 docs/images/* /usr/share/gtk-doc/html/gegl/images
```

## Command Explanations

**sed -e '274cerr ...**: Fixes building against FFmpeg 0.11.1.

**install -v -m644/docs/\*/{css,html} ...**: This and the subsequent commands install all the provided documentation instead of only *operations.html* and the stylesheet *gegl.css*.

--without-vala: Do not create a vala API - use this if **vapigen** breaks the build.

--enable-gtk-doc: Use this parameter if GTK-Doc is installed and you wish to rebuild and install the API documentation.

## Contents

**Installed Programs:**

gegl

**Installed Libraries:**

libgegl-0.2.so, and libraries in /usr/lib/gegl-0.2/

**Installed Directories:**

/usr/include/gegl-0.2/

## Short Descriptions

**gegl** is a commandline tool for working with the XML data model.

**libgegl-0.2.so** provides infrastructure to do demand based cached non destructive image editing on larger than RAM buffers.

# giflib-4.1.6

## 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.

This package is known to build and work properly using an LFS-7.3 platform.

## Package Information

- Download (HTTP): <http://downloads.sourceforge.net/giflib/giflib-4.1.6.tar.bz2>
- Download (HTTP) MD5 sum: 7125644155ae6ad33dbc9fc15a14735f
- Download (HTTP) size: 494 KB
- Estimated disk space required: 6.7 MB
- Estimated build time: 0.2 SBU

## giflib Dependencies

### Optional

X Window System and *Utah Raster Toolkit* (or *URT-3.1b*)

## Installation of giflib

Install giflib by running the following commands:

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

This package does not come with a test suite.

Now, as the root user:

```
make install &&
install -v -m755 -d /usr/share/doc/giflib-4.1.6/html &&
install -v -m644 doc/*.png,html \>
/usr/share/doc/giflib-4.1.6/html &&
install -v -m644 doc/*.txt \>
/usr/share/doc/giflib-4.1.6
```

## Command Explanations

**--disable-static:** This switch prevents installation of static versions of the libraries.

## Contents

<b>Installed Programs:</b>	gif2epsn, gif2ps, gif2rgb, gif2x11, gifasm, gifbg, gifburst, gifclip, gifclrmp, gifcolor, gifcomb, gifcompose, giffiltr, giffix, gifflip, gifhisto, gifinfo, gifinter, gifinto, gifovly, gifpos, gifrotat, gifrszie, gifspnge, giftext, gifwedge, icon2gif, raw2gif, rgb2gif, and text2gif
<b>Installed Library:</b>	libgif.so
<b>Installed Directory:</b>	/usr/share/doc/giflib-4.1.6

## Short Descriptions

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

# Harfbuzz-0.9.16

## Introduction to Harfbuzz

The Harfbuzz package contains an OpenType text shaping engine.

This package is known to build and work properly using an LFS-7.3 platform.

## Package Information

- Download (HTTP): <http://www.freedesktop.org/software/harfbuzz/release/harfbuzz-0.9.16.tar.bz2>
- 
- Download MD5 sum: 90855e670c790c1fec4592908be3c0b8
- Download size: 884 KB
- Estimated disk space required: 32 MB
- Estimated build time: 0.3 SBU

## Harfbuzz Dependencies

### Recommended

GLib-2.34.3, ICU-51.1 and FreeType-2.4.12

### Optional

Cairo-1.12.14 and *Graphite2*



### Warning

Recommended dependencies are not strictly required to build the package. However, you might not get expected results at runtime if you don't install them. Please do not report bugs with this package if you *have not* installed the recommended dependencies.

## Installation of Harfbuzz

Install Harfbuzz by running the following commands:

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

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

Now, as the **root** user:

```
make install
```

## Contents

<b>Installed Programs:</b>	hb-ot-shape-closure, hb-shape and hb-view
<b>Installed Library:</b>	libharfbuzz.so
<b>Installed Directory:</b>	/usr/include/harfbuzz

## Short Descriptions

`libharfbuzz.so` contains functions for complex text shaping.

# IJS-0.35

## Introduction to IJS

The IJS package contains a library which implements a protocol for transmission of raster page images.

This package is known to build and work properly using an LFS-7.3 platform.

### Package Information

- Download (HTTP): <http://www.openprinting.org/download/ijsgo/ijsgo/ijsgo-0.35.tar.bz2>
- 
- Download MD5 sum: 896fdcb7a01c586ba6eb81398ea3f6e9
- Download size: 252 KB
- Estimated disk space required: 2.2 MB
- Estimated build time: less than 0.1 SBU

## Installation of IJS

Install IJS by running the following commands:

```
./configure --prefix=/usr \
            --mandir=/usr/share/man \
            --enable-shared \
            --disable-static &&
make
```

This package does not come with a test suite.

Now, as the root user:

```
make install
```

## Command Explanations

**--disable-static:** This switch prevents installation of static versions of the libraries.

## Contents

<b>Installed Programs:</b>	ijs_client_example, ijs-config and ijs_server_example
<b>Installed Library:</b>	libijs.so
<b>Installed Directory:</b>	/usr/include/ijsgo

## Short Descriptions

**ijs-config** is a program that is used to determine the compiler and linker flags that should be used to compile and link programs that use IJS.

**libijs.so** contains the IJS API functions.

# Imlib2-1.4.5

## Introduction to Imlib2

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

This package is known to build and work properly using an LFS-7.3 platform.

### Package Information

- Download (HTTP): <http://downloads.sourceforge.net/enlightenment/imlib2-1.4.5.tar.bz2>
- 
- Download MD5 sum: 859e5fede51ec819f4314eee11da3ea5
- Download size: 880 KB
- Estimated disk space required: 14 MB
- Estimated build time: 0.3 SBU

## Imlib2 Dependencies

### Required

FreeType-2.4.12, libpng-1.6.2, and libjpeg-turbo-1.2.1

### Recommended

X Window System

### Optional

LibTIFF-4.0.3, giflib-4.1.6, and libid3tag

## Installation of Imlib2

Install Imlib2 by running the following commands:

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

This package does not come with a test suite.

Now, as the root user:

```
make install &&
install -v -m755 -d /usr/share/doc/imlib2-1.4.5 &&
install -v -m644 doc/{*.gif,index.html} \
/usr/share/doc/imlib2-1.4.5
```

## Command Explanations

*--disable-static*: This switch prevents installation of static versions of the libraries.

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

## Contents

<b>Installed Programs:</b>	imlib2_bumpmap, imlib2_colorspace, imlib2-config, imlib2_conv, imlib2_grab, imlib2_poly, imlib2_show, imlib2_test, and imlib2_view
<b>Installed Libraries:</b>	libImlib2.so and various filters and image loader modules.
<b>Installed Directories:</b>	/usr/lib/imlib2, /usr/share/doc/imlib2-1.4.5, and /usr/share/imlib2

## Short Descriptions

`libImlib2.so` provides the functions for programs to deal with various image data formats.

# JasPer-1.900.1

## Introduction to JasPer

The JasPer Project is an open-source initiative to provide a free software-based reference implementation of the JPEG-2000 codec.

This package is known to build and work properly using an LFS-7.2 platform.

## Package Information

- Download (HTTP): <http://www.ece.uvic.ca/~mdadams/jasper/software/jasper-1.900.1.zip>
- 
- Download MD5 sum: a342b2b4495b3e1394e161eb5d85d754
- Download size: 1.4 MB
- Estimated disk space required: 11.1 MB (without the static library)
- Estimated build time: 0.3 SBU

## Additional Downloads

- Required patch: [http://www.linuxfromscratch.org/patches/blfs/svn/jasper-1.900.1-security\\_fixes-1.patch](http://www.linuxfromscratch.org/patches/blfs/svn/jasper-1.900.1-security_fixes-1.patch)

## JasPer Dependencies

### Required

UnZip-6.0

### Recommended

libjpeg-turbo-1.2.1, X Window System, and Freeglut-2.8.1

## Installation of JasPer



### Note

The package source is distributed in .zip format and requires **unzip**, but it has been correctly packaged and will create the jasper-1.900.1 directory when you unzip it.

```
patch -Np1 -i ../jasper-1.900.1-security_fixes-1.patch &&
./configure --prefix=/usr --enable-shared &&
make
```

This package does not come with a testsuite.

Now, as the **root** user:

```
make install
```

If you wish to install the PDF files for the Reference Manual and a tutorial on the JPEG-2000 standard, run the following commands as the **root** user:

```
install -v -m755 -d /usr/share/doc/jasper-1.900.1 &&
install -v -m644 doc/*.pdf /usr/share/doc/jasper-1.900.1
```

## Command Explanations

**--enable-shared:** This command causes the shared library to be built.

**--disable-static:** This causes the static library to not be built.

**--x-includes=DIR --x-libraries=DIR:** These tell the **configure** script where to find Xorg if it is not in /usr/X11, /usr/X11R6, or /usr.

## Contents

**Installed Programs:** imgcmp, imginfo, jasper, jiv, and tmrdemo

**Installed Library:** libjasper.{so,a}

**Installed Directories:** /usr/include/jasper and /usr/share/doc/jasper-1.900.1

## Short Descriptions

**imgcmp** compares two images of the same geometry.

**imginfo** displays information about an image.

**jasper** converts images between formats (BMP, JPS, JPC, JPG, PGX, PNM, MIF, and RAS).

**jiv** displays images.

**tmrdemo** is a timer demonstration program.

**libjasper . {so , a }** a library used by programs for reading and writing JPEG2000 format files.

# Little CMS-1.19

## Introduction to Little CMS

The Little CMS library is used by other programs to provide color management facilities.

This package is known to build and work properly using an LFS-7.3 platform.

### Package Information

- Download (HTTP): <http://sourceforge.net/projects/lcms/files/lcms/1.19/lcms-1.19.tar.gz>
- 
- Download MD5 sum: 8af94611baf20d9646c7c2c285859818
- Download size: 927 KB
- Estimated disk space required: 27 MB
- Estimated build time: 0.5 SBU

## Little CMS Dependencies

### Optional

LibTIFF-4.0.3, libjpeg-turbo-1.2.1, and Python-2.7.5 (with *SWIG* also)

## Installation of Little CMS

Install Little CMS 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/lcms-1.19 &&
install -v -m644 README.1ST doc/* \
/usr/share/doc/lcms-1.19
```

## Command Explanations

*--with-python*: Use this parameter if Python and SWIG are installed.

*--disable-static*: This switch prevents installation of static versions of the libraries.

## Contents

<b>Installed Programs:</b>	icc2ps, icclink, icctrans, wtpt and optionally, jpegicc, tiffdiff and tifficc
<b>Installed Libraries:</b>	liblcms.{so,a} and the optional _lcms.{so,a} Python module
<b>Installed Directory:</b>	/usr/share/doc/lcms-1.19

## Short Descriptions

**icc2ps** generates PostScript CRD or CSA from ICC profiles.

<b>icclink</b>	links two or more profiles into a single device link profile.
<b>icctrans</b>	is a color space conversion calculator.
<b>jpegicc</b>	is an ICC profile applier for JPEG files.
<b>tifficc</b>	is an ICC profile applier for TIFF files.
<b>tiffdiff</b>	A TIFF compare utility
<b>wpt</b>	shows media white of profiles, identifying black body locus.
<b>liblcms . { so , a }</b>	is used by the lcms programs as well as other programs to provide color management facilities.

# Little CMS-2.4

## Introduction to Little CMS2

The Little Color Management System is a small-footprint color management engine, with special focus on accuracy and performance. It uses the International Color Consortium standard (ICC), which is the modern standard for color management.

This package is known to build and work properly using an LFS-7.3 platform.

### Package Information

- Download (HTTP): <http://downloads.sourceforge.net/lcms/lcms2-2.4.tar.gz>
- 
- Download MD5 sum: 861ef15fa0bc018f9ddc932c4ad8b6dd
- Download size: 4.1 MB
- Estimated disk space required: 15.6 MB
- Estimated build time: 0.3 SBU

## Installation of Little CMS2

Install Little CMS2 by running the following commands:

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

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

Now, as the **root** user:

```
make install
```

## Command Explanations

**--disable-static**: This switch prevents installation of static versions of the libraries.

## Contents

<b>Installed Programs:</b>	jpgicc, linkicc, psicc, tificc, and transicc
<b>Installed Library:</b>	liblcms2.so
<b>Installed Directories:</b>	None

## Short Descriptions

<b>jpgicc</b>	is the Little CMS ICC profile applier for JPEG.
<b>linkicc</b>	is the Little CMS ICC device link generator
<b>psicc</b>	is the Little CMS ICC PostScript generator.
<b>tificc</b>	is the Little CMS ICC tiff generator.
<b>transicc</b>	is the Little CMS ColorSpace conversion calculator.
<b>liblcms2.so</b>	contains functions implement the lcms2 API.

# libart\_lgpl-2.3.21

## Introduction to libart\_lgpl

The libart\_lgpl package contains the libart libraries. These are useful for high-performance 2D graphics. This package is known to build and work properly using an LFS-7.2 platform.

### Package Information

- Download (HTTP): [http://ftp.gnome.org/pub/gnome/sources/libart\\_lgpl/2.3/libart\\_lgpl-2.3.21.tar.bz2](http://ftp.gnome.org/pub/gnome/sources/libart_lgpl/2.3/libart_lgpl-2.3.21.tar.bz2)
- Download (FTP): [ftp://ftp.gnome.org/pub/gnome/sources/libart\\_lgpl/2.3/libart\\_lgpl-2.3.21.tar.bz2](ftp://ftp.gnome.org/pub/gnome/sources/libart_lgpl/2.3/libart_lgpl-2.3.21.tar.bz2)
- Download MD5 sum: 08559ff3c67fd95d57b0c5e91a6b4302
- Download size: 321 KB
- Estimated disk space required: 5 MB
- Estimated build time: 0.1 SBU

### Additional Downloads

- Required patch: [http://www.linuxfromscratch.org/patches/blfs/svn/libart\\_lgpl-2.3.21-upstream\\_fixes-1.patch](http://www.linuxfromscratch.org/patches/blfs/svn/libart_lgpl-2.3.21-upstream_fixes-1.patch)

## Installation of libart\_lgpl

Install libart\_lgpl by running the following commands:

```
patch -Np1 -i ../libart_lgpl-2.3.21-upstream_fixes-1.patch &&
./configure --prefix=/usr &&
make
```

This package does not come with a test suite.

Now, as the root user:

```
make install
```

## Contents

<b>Installed Program:</b>	libart2-config
<b>Installed Library:</b>	libart_lgpl_2.{so,a}
<b>Installed Directory:</b>	/usr/include/libart-2.0/libart_lgpl

## 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.

# libexif-0.6.21

## 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.

This package is known to build and work properly using an LFS-7.2 platform.

## Package Information

- Download (HTTP): <http://downloads.sourceforge.net/libexif/libexif-0.6.21.tar.bz2>
- 
- Download MD5 sum: 27339b89850f28c8f1c237f233e05b27
- Download size: 1.4 MB
- Estimated disk space required: 17 MB
- Estimated build time: 0.2 SBU

## libexif Dependencies

### Optional (to Build Documentation)

Doxygen-1.8.4 and Graphviz-2.30.1

## Installation of libexif

Install libexif by running the following commands:

```
./configure --prefix=/usr \
            --with-doc-dir=/usr/share/doc/libexif-0.6.21 \
            --disable-static &&
make
```

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

Now, as the root user:

```
make install
```

Documentation was built and installed if you have the dependencies shown above installed. If you don't have the dependencies installed, there is a compressed tarball in the source tree doc directory that can be unpacked into /usr/share/doc/libexif-0.6.21.

## Command Explanations

**--disable-static**: This switch prevents installation of static versions of the libraries.

## Contents

<b>Installed Programs:</b>	None
<b>Installed Library:</b>	libexif.so
<b>Installed Directories:</b>	/usr/include/libexif and /usr/share/doc/libexif-0.6.21

## Short Descriptions

`libexif.so` contains functions used for parsing, editing, and saving EXIF data.

# libjpeg-turbo-1.2.1

## Introduction to libjpeg-turbo

libjpeg-turbo is a fork of the original IJG libjpeg which uses SIMD to accelerate baseline JPEG compression and decompression. libjpeg is a library that implements JPEG image encoding, decoding and transcoding.

This package is known to build and work properly using an LFS-7.3 platform.

## Package Information

- Download (HTTP): <http://downloads.sourceforge.net/libjpeg-turbo/libjpeg-turbo-1.2.1.tar.gz>
- 
- Download MD5 sum: f61e60ff01381ece4d2fe65eeb52669e
- Download size: 1.7 MB
- Estimated disk space required: 15 MB
- Estimated build time: 0.4 SBU

## libjpeg-turbo Dependencies

### Required

NASM-2.10.07

## Installation of libjpeg-turbo

Install libjpeg-turbo by running the following commands:

```
./configure --prefix=/usr \
            --mandir=/usr/share/man \
            --with-jpeg8 \
            --disable-static &&
make
```

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

Now, as the root user:

```
docsdir=/usr/share/doc/libjpeg-turbo-1.2.1 &&
make docdir=$docsdir examedir=$docsdir install &&
unset docsdir
```

## Command Explanations

**--with-jpeg8**: This switch enables compatibility with libjpeg version 8.

**--disable-static**: This switch prevents installation of static versions of the libraries.

## Contents

<b>Installed Programs:</b>	cjpeg, djpeg, jpegtran, rdjpgcom, tjbench and wrjpgcom
<b>Installed Libraries:</b>	libjpeg.so and libturbojpeg.so
<b>Installed Directories:</b>	/usr/share/doc/libjpeg-turbo-1.2.1

## Short Descriptions

<b>cjpeg</b>	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.
<b>djpeg</b>	decompresses image files from JPEG/JFIF format to either PPM (PBMPLUS color format), PGM (PBMPLUS gray-scale format), BMP, or Targa format.
<b>jpegtran</b>	is used for lossless transformation of JPEG files.
<b>rdjpgcom</b>	displays text comments from within a JPEG file.
<b>wrjpgcom</b>	inserts text comments into a JPEG file.
<b>libjpeg.so</b>	contains functions used for reading and writing JPEG images.

# libmng-1.0.10

## 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.

This package is known to build and work properly using an LFS-7.2 platform.

## Package Information

- Download (HTTP): <http://downloads.sourceforge.net/libmng/libmng-1.0.10.tar.bz2>
- 
- Download MD5 sum: eaf1476a3bb29f6190bca660e6abef16
- Download size: 840 KB
- Estimated disk space required: 7.9 MB
- Estimated build time: 0.1 SBU

## libmng Dependencies

### Required

libjpeg-turbo-1.2.1 and Little CMS-1.19

## Installation of libmng

Install libmng by running the following commands:

```
cp makefiles/makefile.linux Makefile      &&
sed -i -e 's/unroll-loops/& -fPIC/' Makefile &&
make
```

This package does not come with a test suite.

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-1.0.10 &&
install -v -m644 doc/*.{png,txt} /usr/share/doc/libmng-1.0.10
```

## 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.

**sed -i -e 's/unroll-loops/& -fPIC/' Makefile:** Add a gcc option to make the build compatible with x86\_64 systems.

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

## Contents

<b>Installed Programs:</b>	None
<b>Installed Library:</b>	libmng.{so,a}
<b>Installed Directory:</b>	/usr/share/doc/libmng-1.0.10

## 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.

# libpng-1.6.2

## Introduction to libpng

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

This package is known to build and work properly using an LFS-7.3 platform.

## Package Information

- Download (HTTP): <http://downloads.sourceforge.net/libpng/libpng-1.6.2.tar.xz>
- 
- Download MD5 sum: 9d838f6fca9948a9f360a0cc1b516d5f
- Download size: 820 KB
- Estimated disk space required: 13 MB
- Estimated build time: 0.1 SBU

## Additional Downloads

- Optional patch to include animated png functionality in libpng (required to use the system libpng in Firefox): <http://downloads.sourceforge.net/libpng-apng/libpng-1.6.2-apng.patch.gz>

## Installation of libpng

If you want to patch libpng to support apng files, apply the patch:

```
gzip -cd ../libpng-1.6.2-apng.patch.gz | patch -p1
```

Install libpng by running the following commands:

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

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

Now, as the **root** user:

```
make install &&
mkdir -v /usr/share/doc/libpng-1.6.2 &&
cp -v README libpng-manual.txt /usr/share/doc/libpng-1.6.2
```

## Command Explanations

**--disable-static**: This switch prevents installation of static versions of the libraries.

## Contents

<b>Installed Programs:</b>	libpng-config and libpng16-config
<b>Installed Libraries:</b>	libpng.so and libpng16.so
<b>Installed Directories:</b>	/usr/include/libpng16 and /usr/share/doc/libpng-1.6.2

## Short Descriptions

**libpng-config** is a shell script that provides configuration information for applications wanting to use libpng.  
**libpng.so** contain routines used to create and manipulate PNG format graphics files.

# librsvg-2.36.4

## Introduction to librsvg

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

This package is known to build and work properly using an LFS-7.3 platform.

## Package Information

- Download (HTTP): <http://ftp.gnome.org/pub/gnome/sources/librsvg/2.36/librsvg-2.36.4.tar.xz>
- Download (FTP): <ftp://ftp.gnome.org/pub/gnome/sources/librsvg/2.36/librsvg-2.36.4.tar.xz>
- Download MD5 sum: 3c94524c8ccf668e30b236f409239f54
- Download size: 504 KB
- Estimated disk space required: 13 MB
- Estimated build time: 0.2 SBU

## librsvg Dependencies

### Required

gdk-pixbuf-2.26.5, libcroco-0.6.8 and Pango-1.32.5

### Recommended

GTK+-2.24.17 and GTK+-3.6.4

### Optional (Required if building GNOME)

gobject-introspection-1.34.2 and Vala-0.18.1

### Optional

DocBook-utils-0.6.14 and GTK-Doc-1.18

## Installation of librsvg

Install librsvg by running the following commands:

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

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

Now, as the root user:

```
make install
```

## Command Explanations

**--disable-static**: This switch prevents installation of static versions of the libraries.

**--disable-introspection**: Use this switch if you have not installed Gobject Introspection.

--disable-gtk-theme: Use this switch if you have not installed GTK+ 2.

--enable-gtk-doc: Use this parameter if GTK-Doc is installed and you wish to rebuild and install the API documentation.

## Contents

**Installed Programs:**

rsvg-convert and rsvg-view-3

**Installed Library:**

librsvg-2.so and libpixbufloader-svg.so

**Installed Directories:**

/usr/include/librsvg-2, /usr/share/gtk-doc/html/rsvg and /usr/share/themes/bubble

## Short Descriptions

**rsvg-convert**

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

**rsvg-view-3**

is a simple GTK+ 3 application that can be used to view an SVG file.

**librsvg-2.so**

provides the functions to render Scalable Vector Graphics.

**libpixbufloader-svg.so**

is the Gdk Pixbuf plugin that allows GTK+ applications to render Scalable Vector Graphics images.

# LibTIFF-4.0.3

## 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 used for general work with TIFF files.

This package is known to build and work properly using an LFS-7.3 platform.

## Package Information

- Download (HTTP): <http://download.osgeo.org/libtiff/tiff-4.0.3.tar.gz>
- Download (FTP): <ftp://ftp.remotesensing.org/libtiff/tiff-4.0.3.tar.gz>
- Download MD5 sum: 051c1068e6a0627f461948c365290410
- Download size: 2.0 MB
- Estimated disk space required: 27 MB
- Estimated build time: 0.3 SBU

## LibTIFF Dependencies

### Optional

Freeglut-2.8.1, *JBIG-KIT*, libjpeg-turbo-1.2.1 and Xorg Libraries

## Installation of LibTIFF

Install LibTIFF by running the following commands:

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

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

Now, as the root user:

```
make install
```

## Command Explanations

*--disable-static*: This switch prevents installation of static versions of the libraries.

## Contents

<b>Installed Programs:</b>	bmp2tiff, fax2ps, fax2tiff, gif2tiff, pal2rgb, ppm2tiff, ras2tiff, raw2tiff, rgb2ycbcr, thumbnail, tiff2bw, tiff2pdf, tiff2ps, tiff2rgba, tiffcmp, tiffcrop, tiffcrop, tiffdither, tiffdump, tiffinfo, tiffmedian, tiffset and tiffsplits
<b>Installed Libraries:</b>	libtiff.so and libtiffxx.so
<b>Installed Directory:</b>	/usr/share/doc/tiff-4.0.3

## Short Descriptions

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

<b>fax2ps</b>	converts a TIFF facsimile to compressed PostScript file.
<b>fax2tiff</b>	creates a TIFF Class F fax file from raw fax data.
<b>gif2tiff</b>	creates a TIFF file from a GIF87 format image file.
<b>pal2rgb</b>	converts a palette color TIFF image to a full color image.
<b>ppm2tiff</b>	creates a TIFF file from a PPM image file.
<b>ras2tiff</b>	creates a TIFF file from a Sun rasterfile.
<b>raw2tiff</b>	converts a raw byte sequence into TIFF.
<b>rgb2ycber</b>	converts non-YCbCr TIFF images to YCbCr TIFF images.
<b>thumbnail</b>	creates a TIFF file with thumbnail images.
<b>tiff2bw</b>	converts a color TIFF image to grayscale.
<b>tiff2pdf</b>	converts a TIFF image to a PDF document.
<b>tiff2ps</b>	converts a TIFF image to a PostScript file.
<b>tiff2rgba</b>	converts a wide variety of TIFF images into an RGBA TIFF image.
<b>tiffcmp</b>	compares two TIFF files.
<b>tiffcp</b>	copies (and possibly converts) a TIFF file.
<b>tiffcrop</b>	selects, copies, crops, converts, extracts and/or processes one or more TIFF files.
<b>tiffdither</b>	converts a grayscale image to bilevel using dithering.
<b>tiffdump</b>	prints verbatim information about TIFF files.
<b>tiffinfo</b>	prints information about TIFF files.
<b>tiffmedian</b>	applies the median cut algorithm to data in a TIFF file.
<b>tiffset</b>	sets the value of a TIFF header to a specified value.
<b>tiffspli</b>	splits a multi-image TIFF into single-image TIFF files.
<b>libtiff.so</b>	contains the API functions used by the libtiff programs as well as other programs to read and write TIFF files.
<b>libtiffxx.so</b>	contains the C++ API functions used by programs to read and write TIFF files.

# OpenJPEG-1.5.1

## Introduction to OpenJPEG

OpenJPEG is an open-source implementation of the JPEG-2000 standard. OpenJPEG fully respects the JPEG-2000 specifications and can compress/decompress lossless 16-bit images.

This package is known to build and work properly using an LFS-7.2 platform.

## Package Information

- Download (HTTP): <http://openjpeg.googlecode.com/files/openjpeg-1.5.1.tar.gz>
- 
- Download MD5 sum: b5f74cec2688fb918331bb014061be6f
- Download size: 2.0 MB
- Estimated disk space required: 17 MB
- Estimated build time: 0.1 SBU

## OpenJPEG Dependencies

### Recommended

pkg-config-0.28

### Optional

Little CMS-2.4, libpng-1.6.2, LibTIFF-4.0.3 and Doxygen-1.8.4 (to build the API documentation)

## Installation of OpenJPEG

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

This package does not come with a testsuite.

Now, as the root user:

```
make install
```

## Command Explanations

**--disable-static:** This prevents the static library from being built.

## Contents

<b>Installed Programs:</b>	image_to_j2k, j2k_dump and j2k_to_image
<b>Installed Libraries:</b>	libopenjpeg.so
<b>Installed Directories:</b>	/usr/include/openjpeg-1.5 and /usr/share/doc/openjpeg-1.5

## Short Descriptions

**image\_to\_j2k** converts various image formats to the jpeg2000 format.

**j2k\_dump** reads in a jpeg2000 image and dumps the contents to stdout.  
**j2k\_to\_image** converts jpeg2000 images to other image types.

# Pixman-0.30.0

## Introduction to Pixman

The Pixman package contains a library that provides low-level pixel manipulation features such as image compositing and trapezoid rasterization.

This package is known to build and work properly using an LFS-7.3 platform.

## Package Information

- Download (HTTP): <http://cairographics.org/releases/pixman-0.30.0.tar.gz>
- 
- Download MD5 sum: ae7ac97921dfa59086ca2231621a79c7
- Download size: 784 KB
- Estimated disk space required: 45 MB
- Estimated build time: 0.5 SBU

## Pixman Dependencies

### Optional

GTK+-2.24.17 and libpng-1.6.2

## Installation of Pixman

Install Pixman by running the following commands:

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

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

Now, as the root user:

```
make install
```

## Command Explanations

**--disable-static**: This switch prevents installation of static versions of the libraries.

## Contents

<b>Installed Programs:</b>	None
<b>Installed Library:</b>	libpixman-1.so
<b>Installed Directory:</b>	/usr/include/pixman-1

## Short Descriptions

**libpixman-1.so** contains functions that provide low-level pixel manipulation features.

# Poppler-0.22.4

## Introduction to Poppler

The Poppler package contains a PDF rendering library and command line tools used to manipulate PDF files. This is useful for providing PDF rendering functionality as a shared library.

This package is known to build and work properly using an LFS-7.3 platform.

## Package Information

- Download (HTTP): <http://poppler.freedesktop.org/poppler-0.22.4.tar.gz>
- 
- Download MD5 sum: 49d55921ce795778c7231fe9f2fe923b
- Download size: 2.2 MB
- Estimated disk space required: 135 MB (excluding the encoding data) and 145 MB (including the encoding data)
- Estimated build time: 1.0 SBU

## Additional Downloads

### Poppler Encoding Data

- Download (HTTP): <http://poppler.freedesktop.org/poppler-data-0.4.6.tar.gz>
- Download MD5 sum: a8a7ca808827dd674faba6e4fc73b471
- Download size: 4.0 MB

The additional package consists of encoding files for use with Poppler. The encoding files are optional and Poppler will automatically read them if they are present. When installed, they enable Poppler to render CJK and Cyrillic properly.

## Poppler Dependencies

### Required

Fontconfig-2.10.2

### Recommended

Cairo-1.12.14, libjpeg-turbo-1.2.1 and libpng-1.6.2

### Optional

cURL-7.30.0, GTK+-2.24.17, Little CMS-1.19 or Little CMS-2.4, LibTIFF-4.0.3, libxml2-2.9.1, OpenJPEG-1.5.1 and Qt-4.8.4 (the `libpoppler-qt4.so` library is needed for PDF support in Okular).

## Installation of Poppler

Install Poppler by running the following commands:

```
./configure --prefix=/usr      \
            --sysconfdir=/etc \
            --disable-static \
            --enable-xpdf-headers &&
make
```

This package does not come with a test suite.

Now, as the root user:

```
make install &&
install -v -m755 -d      /usr/share/doc/poppler-0.22.4 &&
install -v -m644 README* /usr/share/doc/poppler-0.22.4
```

If you downloaded the additional encoding data package, install it by issuing the following commands:

```
tar -xf ../poppler-data-0.4.6.tar.gz &&
cd poppler-data-0.4.6
```

Now, as the root user:

```
make prefix=/usr install
```

## Command Explanations

**--disable-static**: This switch prevents installation of static versions of the libraries.

**--enable-xpdf-headers**: Install some old Xpdf headers required by certain programs (e.g. Okular, LibreOffice and Inkscape).

## Contents

<b>Installed Programs:</b>	pdfdetach, pdffonts, pdfimages, pdfinfo, pdfseparate, pdftcairo, pdftohtml, pdftoppm, pdftops, pdftotext, pdfunite and poppler-glib-demo
<b>Installed Libraries:</b>	libpoppler.so, libpoppler-cpp.so, libpoppler-glib.so and libpoppler-qt4.so
<b>Installed Directories:</b>	/usr/include/poppler, /usr/share/doc/poppler-0.22.4, /usr/share/gtk-doc/html/poppler and /usr/share/poppler

## Short Descriptions

<b>pdfdetach</b>	lists or extracts embedded files from PDF files.
<b>pdffonts</b>	lists the fonts used in a PDF file along with various information for each font.
<b>pdfimages</b>	saves images from a PDF file as PPM, PBM, or JPEG files.
<b>pdfinfo</b>	prints the contents of the 'Info' dictionary (plus some other useful information) from a PDF file.
<b>pdfseparate</b>	extracts single pages from a PDF file.
<b>pdftcairo</b>	converts a PDF file to one of several formats (PNG, JPEG, PDF, PS, EPS, SVG) using the cairo output device of the poppler library.
<b>pdftohtml</b>	converts a PDF file to HTML.
<b>pdftoppm</b>	converts PDF files to PBM, PGM and PPM formats.
<b>pdftops</b>	converts PDF files to Postscript format.
<b>pdftotext</b>	converts PDF files to plain text.
<b>pdfunite</b>	merges several PDF files, in the order of their occurrence on the command line, to one PDF output file.

<b>poppler-glib-demo</b>	is a tool to demonstrate the API, and for use when debugging and testing Poppler.
<code>libpoppler.so</code>	contains the API functions to render PDF files.
<code>libpoppler-cpp.so</code>	is a C++ backend for rendering PDF files.
<code>libpoppler-glib.so</code>	is a wrapper library used to interface the PDF rendering functions with GTK+.
<code>libpoppler-qt4.so</code>	is a wrapper library used to interface the PDF rendering functions with Qt-4.

# Qpdf-4.1.0

## Introduction to Qpdf

The Qpdf package contains command-line programs and library that do structural, content-preserving transformations on PDF files.

This package is known to build and work properly using an LFS-7.3 platform.

## Package Information

- Download (HTTP): <http://downloads.sourceforge.net/qpdf/qpdf-4.1.0.tar.gz>
- 
- Download MD5 sum: eedd61acc53744446d181429651a9baf
- Download size: 4.9 MB
- Estimated disk space required: 80 MB
- Estimated build time: 0.6 SBU

## Qpdf Dependencies

### Required

PCRE-8.32

### Optional

fop-1.1 and libxslt-1.1.28

## Installation of Qpdf

Install Qpdf by running the following commands:

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

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

Now, as the **root** user:

```
make docdir=/usr/share/doc/qpdf-4.1.0 install
```

## Command Explanations

**--disable-static**: This switch prevents installation of static versions of the libraries.

## Contents

<b>Installed Programs:</b>	fix-qdf, qpdf and zlib-deflate
<b>Installed Library:</b>	libqpdf.so
<b>Installed Directories:</b>	/usr/include/qpdf and /usr/share/doc/qpdf

## Short Descriptions

**fix-qdf**      is used to repair PDF files in QDF form after editing.

**qpdf** is used to convert one PDF file to another equivalent PDF file.

**libqpdf.so** contains the Qpdf API functions.

# Chapter 11. 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, a program to interface with a palm-pilot, a program for entering PIN numbers and pass-phrases, and a hash generator.

# Apr-Util-1.5.2

## Introduction to Apr Util

The Apache Portable Runtime Utility Library provides a predictable and consistent interface to underlying client library interfaces. This application programming interface assures predictable if not identical behaviour regardless of which libraries are available on a given platform.

This package is known to build and work properly using an LFS-7.3 platform.

### Package Information

- Download (HTTP): <http://archive.apache.org/dist/apr/apr-util-1.5.2.tar.bz2>
- 
- Download MD5 sum: 89c1348aa79e898d7c34a6206311c9c2
- Download size: 680 KB
- Estimated disk space required: 11 MB
- Estimated build time: 0.2 SBU

## Apr Util Dependencies

### Required

Apr-1.4.6

### Recommended

OpenSSL-1.0.1e

### Optional

Berkeley DB-5.3.21, expat-2.1.0, FreeTDS, MySQL-5.6.11, OpenLDAP-2.4.35, PostgreSQL-9.2.4, SQLite-3.7.16.2 and unixODBC-2.3.1

## Installation of Apr Util

Install Apr Util by running the following commands:

```
./configure --prefix=/usr      \
            --with-apr=/usr  \
            --with-gdbm=/usr  \
            --with-openssl=/usr \
            --with-crypto &&
make
```

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

Now, as the root user:

```
make install
```

## Command Explanations

**--with-gdbm=/usr**: This switch enables the `apr_dbm_gdbm-1.so` plugin.

--with-openssl=/usr --with-crypto: These switches enable the `apr_crypto_openssl-1.so` plugin. Remove them if you have not installed OpenSSL-1.0.1e.

--with-berkeley-db=/usr: If you have installed Berkeley DB-5.3.21, use this switch to compile the `apr_dbm_db-1.so` plugin.

## Contents

**Installed Program:** apu-1-config

**Installed Library:** libaprutil-1.so

**Installed Directory:** /usr/lib/apr-util-1

## Short Descriptions

`libaprutil-1.so` contains functions that provide a predictable and consistent interface to underlying client library interfaces.

# bc-1.06.95

## Introduction to bc

The bc package contains an arbitrary precision numeric processing language.

This package is known to build and work properly using an LFS-7.3 platform.

## Package Information

- Download (HTTP): <http://alpha.gnu.org/gnu/bc/bc-1.06.95.tar.bz2>
- Download (FTP): <ftp://alpha.gnu.org/gnu/bc/bc-1.06.95.tar.bz2>
- Download MD5 sum: 5126a721b73f97d715bb72c13c889035
- Download size: 288 KB
- Estimated disk space required: 3 MB
- Estimated build time: less than 0.1 SBU (0.2 SBU if running the testsuite)

## Installation of Bc

Install bc by running the following commands:

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

To test bc, run the commands below. There is quite a bit of output, so you may want to redirect it to a file. There are a very small percentage of tests (10 of 12,144) that will indicate a roundoff error at the last digit.

```
echo "quit" | ./bc/bc -l Test/checklib.b
```

Now, as the root user:

```
make install
```

## Command Explanations

*--with-readline*: This option enables Readline support in interactive mode.

## Contents

<b>Installed Programs:</b>	bc and dc
<b>Installed Libraries:</b>	None
<b>Installed Directories:</b>	None

## Short Descriptions

**bc** is a calculator.

**dc** is a reverse-polish calculator.

# Compface-1.5.2

## 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.

This package is known to build and work properly using an LFS-7.2 platform.

## Package Information

- Download (HTTP): <http://ftp.xemacs.org/pub/xemacs/aux/compface-1.5.2.tar.gz>
- 
- Download MD5 sum: 62f4f79c0861ad292ba3cf77b4c48319
- Download size: 47 KB
- Estimated disk space required: 520 KB
- Estimated build time: Less than 0.1 SBU

## Installation of Compface

Install Compface 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 -m755 -v xbm2xface.pl /usr/bin
```

## Contents

<b>Installed Programs:</b>	compface, uncompface and xbm2xface.pl
<b>Installed Library:</b>	libcompface.{so,a}
<b>Installed Directories:</b>	None

## Short Descriptions

<b>compface</b>	is a filter for generating highly compressed representations of 48x48x1 face image files.
<b>uncompface</b>	is an inverse filter which performs an inverse transformation with no loss of data.
<b>xbm2xface.pl</b>	is a script to generate xfaces.
<b>libcompface.{so,a}</b>	allows the compression and decompression algorithms to be used in other programs such as MTAs.

# desktop-file-utils-0.21

## Introduction to Desktop File Utils

The Desktop File Utils package contains command line utilities for working with *Desktop entries*. These utilities are used by Desktop Environments and other applications to manipulate the MIME-types application databases and help adhere to the Desktop Entry Specification.

This package is known to build and work properly using an LFS-7.3 platform.

### Package Information

- Download (HTTP): <http://freedesktop.org/software/desktop-file-utils/releases/desktop-file-utils-0.21.tar.xz>
- 
- Download MD5 sum: fda5c312c9fb3b8d818fb54f2c34db82
- Download size: 128 KB
- Estimated disk space required: 2.0 MB
- Estimated build time: less than 0.1 SBU

### Desktop File Utils Dependencies

#### Required

GLib-2.34.3

#### Optional

Emacs-24.2

## Installation of Desktop File Utils

Install Desktop File Utils 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 Desktop File Utils

### Configuration Information

The *XDG Base Directory* specification defines the standard locations for applications to place data and configuration files. These files can be used, for instance, to define the menu structure and menu items in a desktop environment.

The default location for configuration files to be installed is `/etc/xdg`, and the default locations for data files are `/usr/local/share` and `/usr/share`. These locations can be extended with the environment variables `XDG_CONFIG_DIRS` and `XDG_DATA_DIRS`, respectively. The GNOME, KDE and XFCE environments respect these settings.

When a package installs a .desktop file to a location in one of the base data directories, the database that maps MIME-types to available applications can be updated. For instance, the cache file at /usr/share/applications/mimeinfo.cache can be rebuilt by executing the following command as the root user:

```
update-desktop-database /usr/share/applications
```

## Contents

<b>Installed Programs:</b>	desktop-file-edit, desktop-file-install, desktop-file-validate and update-desktop-database
<b>Installed Libraries:</b>	None
<b>Installed Directories:</b>	None

## Short Descriptions

<b>desktop-file-edit</b>	is used to modify an existing desktop file entry.
<b>desktop-file-install</b>	is used to install a new desktop file entry. It is also used to rebuild or modify the MIME-types application database.
<b>desktop-file-validate</b>	is used to verify the integrity of a desktop file.
<b>update-desktop-database</b>	is used to update the MIME-types application database.

# Gperf-3.0.4

## Introduction to Gperf

Gperf generates a perfect hash function from a key set.

This package is known to build and work properly using an LFS-7.3 platform.

## Package Information

- Download (HTTP): <http://ftp.gnu.org/gnu/gperf/gperf-3.0.4.tar.gz>
- Download (FTP): <ftp://ftp.gnu.org/gnu/gperf/gperf-3.0.4.tar.gz>
- Download MD5 sum: c1f1db32fb6598d6a93e6e88796a8632
- Download size: 968 KB
- Estimated disk space required: 6.5 MB
- Estimated build time: less than 0.1 SBU

## Installation of Gperf

Install Gperf by running the following commands:

```
./configure --prefix=/usr --docdir=/usr/share/doc/gperf-3.0.4 &&
make
```

To test the results, issue: **make check**. There should be no output from the **diff** commands.

Now, as the **root** user:

```
make install &&

install -m644 -v doc/gperf.{dvi,ps,pdf} \
          /usr/share/doc/gperf-3.0.4 &&

pushd /usr/share/info &&
rm -v dir &&
for FILENAME in *; do
    install-info $FILENAME dir 2>/dev/null
done &&
popd
```

## Command Explanations

**install -m644 -v doc/gperf.{dvi,ps,pdf} ...**: This command installs documentation.

**pushd ... popd**: This set of commands rebuilds the `/usr/share/info/dir` file as the installation failed to do so.

## Contents

<b>Installed Program:</b>	gperf
<b>Installed Libraries:</b>	None
<b>Installed Directory:</b>	/usr/share/doc/gperf-3.0.4

## Short Descriptions

**gperf** generates a perfect hash function from a key set.

# Graphviz-2.30.1

## Introduction to Graphviz

The Graphviz package contains graph visualization software. Graph visualization is a way of representing structural information as diagrams of abstract graphs and networks. Graphviz has several main graph layout programs. It also has web and interactive graphical interfaces, auxiliary tools, libraries, and language bindings.

This package is known to build and work properly using an LFS-7.3 platform.

## Package Information

- Download (HTTP): <http://graphviz.org/pub/graphviz/stable/SOURCES/graphviz-2.30.1.tar.gz>
- 
- Download MD5 sum: 8130785a8f1fb8a57f6b839b617e85fa
- Download size: 23 MB
- Estimated disk space required: 215 MB
- Estimated build time: 2.0 SBU

## Graphviz Dependencies

### Recommended

*expat-2.1.0, FreeType-2.4.12, Fontconfig-2.10.2, Freeglut-2.8.1, gdk-pixbuf-2.26.5, libjpeg-turbo-1.2.1, libpng-1.6.2, librsvg-2.36.4, Pango-1.32.5 and Xorg Libraries*

### Optional

*DevIL, Electric Fence, libglade-2.6.4, libLASi, GD Library, glitz, ghostscript-9.06, GTK+-2.24.17 and Qt-4.8.4*

### Optional (To Build Language Bindings)

*SWIG (SWIG must be installed or no bindings will be built), Guile-2.0.9, OpenJDK-1.7.0.9, Io, Lua, Mono, OCaml, PHP-5.4.11, Python-2.7.5, R, Ruby-1.9.3-p429, Tcl-8.6.0 and Tk-8.6.0*

## Installation of Graphviz

Install Graphviz by running the following commands:

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

This package does not come with a test suite that provides meaningful results.

Now, as the `root` user:

```
make install
```

If desired, create a symbolic link in the system documents directory to the documentation installed in `/usr/share/graphviz/doc` using the following command as the `root` user:

```
ln -v -s /usr/share/graphviz/doc \
/usr/share/doc/graphviz-2.30.1
```

## Command Explanations

*--disable-static*: This switch prevents installation of static versions of the libraries.

## Configuring Graphviz

### Config Files

/usr/lib/graphviz/config

### Configuration Information

There are no specific configuration requirements for Graphviz. You may consider installing the additional plugins and tools available from the download page at [http://www.graphviz.org/Download\\_source.php](http://www.graphviz.org/Download_source.php) for additional capabilities. If additional plugins are installed, you can run **dot -c** (as the root user) to update the config file in /usr/lib/graphviz.

## Contents

<b>Installed Programs:</b>	acyclic, bcomps, ccomps, circo, cluster, diffimg, dijkstra, dot, dot2gxl, dot_builtins, dotty, fdp, gc, gml2gv, gv2gxl, gvcolor, gvedit, gvgen, gvmap, gvmap.sh, gvpack, gvpr, gxl2dot, gxl2gv, lefty, lneato, mm2gv, neato, nop, osage, patchwork, prune, sccmap, sfdp, tred, twopi, unflatten and vimdot
<b>Installed Libraries:</b>	libcdt.so, libcgraph.so, libgraph.so, libgvc.so, libgvpr.so, libpathplan.so and libxdot.so
<b>Installed Directories:</b>	/usr/include/graphviz, /usr/lib/graphviz and /usr/share/graphviz

### Short Descriptions

<b>acyclic</b>	is a filter that takes a directed graph as input and outputs a copy of the graph with sufficient edges reversed to make the graph acyclic.
<b>bcomps</b>	decomposes graphs into their biconnected components, printing the components to standard output.
<b>ccomps</b>	decomposes graphs into their connected components, printing the components to standard output.
<b>circo</b>	draws graphs using a circular layout.
<b>cluster</b>	takes as input a graph in DOT format, finds node clusters and augments the graph with this information.
<b>diffimg</b>	generates an image where each pixel is the difference between the corresponding pixel in each of the two source images.
<b>dijkstra</b>	reads a stream of graphs and for each computes the distance of every node from sourcenode.
<b>dot</b>	draws directed graphs. It works well on DAGs and other graphs that can be drawn as hierarchies. It reads attributed graph files and writes drawings. By default, the output format dot is the input file with layout coordinates appended.
<b>dot2gxl</b>	converts between graphs represented in GXL and in the DOT language. Unless a conversion type is specified using a flag, <b>gxl2dot</b> will deduce the type of conversion from the suffix of the input file, a .dot suffix causing a conversion from DOT to GXL, and a .gxl suffix causing a conversion from GXL to DOT.

<b>dotty</b>	is a graph editor for the X Window System. It may be run as a standalone editor, or as a front end for applications that use graphs. It can control multiple windows viewing different graphs.
<b>fdp</b>	draws undirected graphs using a “spring” model. It relies on a force-directed approach in the spirit of Fruchterman and Reingold.
<b>gc</b>	is a graph analogue to <b>wc</b> in that it prints to standard output the number of nodes, edges, connected components or clusters contained in the input files. It also prints a total count for all graphs if more than one graph is given.
<b>gml2gv</b>	converts a graph specified in the GML format to a graph in the GV (formerly DOT) format.
<b>gx12gv</b>	converts between graphs represented in GXL and in the GV language.
<b>gvcolor</b>	is a filter that sets node colors from initial seed values. Colors flow along edges from tail to head, and are averaged (as HSB vectors) at nodes.
<b>gvedit</b>	provides a simple graph editor and viewer. It allows many graphs to be viewed at the same time. The text of each graph is displayed in its own text window.
<b>gvgen</b>	generates a variety of simple, regularly-structured abstract graphs.
<b>gvmap</b>	takes as input a graph in DOT format, finds node clusters and produces a rendering of the graph as a geographic-style map, with clusters highlighted, in xdot format.
<b>gvpack</b>	reads in a stream of graphs, combines the graphs into a single layout, and produces a single graph serving as the union of the input graphs.
<b>gvpr</b>	is a graph stream editor inspired by <b>awk</b> . It copies input graphs to its output, possibly transforming their structure and attributes, creating new graphs, or printing arbitrary information.
<b>gx12dot</b>	converts between graphs represented in GXL and in the DOT language. Unless a conversion type is specified using a flag, <b>gx12dot</b> will deduce the type of conversion from the suffix of the input file, a <b>.dot</b> suffix causing a conversion from DOT to GXL, and a <b>.gx1</b> suffix causing a conversion from GXL to DOT.
<b>lefty</b>	is a two-view graphics editor for technical pictures.
<b>neato</b>	is a graph editor for the X Window System. It may be run as a standalone editor, or as a front end for applications that use graphs. It can control multiple windows viewing different graphs.
<b>mm2gv</b>	converts a sparse matrix of the Matrix Market format to a graph in the GV (formerly DOT) format.
<b>neato</b>	draws undirected graphs using “spring” models. Input files must be formatted in the <b>dot</b> attributed graph language. By default, the output of <b>neato</b> is the input graph with layout coordinates appended.
<b>nop</b>	reads a stream of graphs and prints each in pretty-printed (canonical) format on stdout. If no files are given, it reads from stdin.
<b>osage</b>	draws clustered graphs. As input, it takes any graph in the DOT format.
<b>patchwork</b>	draws clustered graphs using a squarified treemap layout. As input, it takes any graph in the DOT format.
<b>prune</b>	reads directed graphs in the same format used by <b>dot</b> and removes subgraphs rooted at nodes specified on the command line via options.

<b>sccmap</b>	decomposes digraphs into strongly connected components and an auxiliary map of the relationship between components. In this map, each component is collapsed into a node. The resulting graphs are printed to stdout.
<b>sfdp</b>	draws undirected graphs using the “spring” model, but it uses a multi-scale approach to produce layouts of large graphs in a reasonably short time.
<b>tred</b>	computes the transitive reduction of directed graphs, and prints the resulting graphs to standard output. This removes edges implied by transitivity. Nodes and subgraphs are not otherwise affected.
<b>twopi</b>	draws graphs using a radial layout. Basically, one node is chosen as the center and put at the origin. The remaining nodes are placed on a sequence of concentric circles centered about the origin, each a fixed radial distance from the previous circle.
<b>unflatten</b>	is a preprocessor to <b>dot</b> that is used to improve the aspect ratio of graphs having many leaves or disconnected nodes. The usual layout for such a graph is generally very wide or tall.
<b>vimdot</b>	is a simple script which launches the <b>gvim</b> or <b>vim</b> editor along with a GUI window showing the <b>dot</b> output of the edited file.
<b>libcdt.so</b>	manages run-time dictionaries using standard container data types: unordered set/multiset, ordered set/multiset, list, stack, and queue.
<b>libcgraph.so</b>	supports graph programming by maintaining graphs in memory and reading and writing graph files. Graphs are composed of nodes, edges, and nested subgraphs.
<b>libgraph.so</b>	maintains directed and undirected attributed graphs in memory and reads and writes graph files. Graphs are composed of nodes, edges, and nested subgraphs.
<b>libgvc.so</b>	provides a context for applications wishing to manipulate and render graphs. It provides a command line parsing, common rendering code, and a plugin mechanism for renderers.
<b>libpathplan.so</b>	contains functions to find the shortest path between two points in a simple polygon.
<b>libxdot.so</b>	provides support for parsing and deparsing graphical operations specified by the xdot language.

# GTK-Doc-1.18

## Introduction to GTK-Doc

The GTK-Doc package contains a code documenter. 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.

This package is known to build and work properly using an LFS-7.3 platform.

## Package Information

- Download (HTTP): <http://ftp.gnome.org/pub/gnome/sources/gtk-doc/1.18/gtk-doc-1.18.tar.xz>
- Download (FTP): <ftp://ftp.gnome.org/pub/gnome/sources/gtk-doc/1.18/gtk-doc-1.18.tar.xz>
- Download MD5 sum: 3927bed60fdd0fc9093a1d00018e746a
- Download size: 628 KB
- Estimated disk space required: 10 MB
- Estimated build time: 0.2 SBU

## GTK-Doc Dependencies

### Required

docbook-xml-4.5, docbook-xsl-1.77.1, and libxslt-1.1.28

### Recommended

pkg-config-0.28 (to use some of the optional deps)

### Optional

*dflatex* or *fop-1.1* (XML PDF support), GLib-2.34.3 (for the test suite), gnome-doc-utils-0.20.10 and which-2.20 (required for the test suite and gtk-doc documentation), OpenJade-1.3.2 with docbook-4.5 and docbook-dsssl-1.79 (SGML support, not actively maintained any more), Python-2.7.5 (builds gtkdoc-depscan), and Rarian-0.8.1

## Installation of GTK-Doc

Install GTK-Doc by running the following commands:

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

This package does not have a working testsuite.

Now, as the root user:

```
make install
```

## Contents

<b>Installed Programs:</b>	gtkdoc-check, gtkdoc-depscan, gtkdoc-fixxref, gtkdocize, gtkdoc-mkdb, gtkdoc-mkhtml, gtkdoc-mkman, gtkdoc-mkpdf, gtkdoc-mktmpl, gtkdoc-rebase, gtkdoc-scan, gtkdoc-scangobj, and gtkdoc-scanobj
<b>Installed Libraries:</b>	None
<b>Installed Directories:</b>	/usr/share/{gnome/help/gtk-doc-manual/*,gtk-doc/data,omf/gtk-doc-manual,sgml/gtk-doc{}}

## Short Descriptions

**gtkdoc\*** these are all shell, Perl, or Python scripts used by package `Makefile` scripts to generate documentation for the package being built.

# Hd2u-1.0.3

## Introduction to Hd2u

The hd2u package contains an any to any text format converter.

This package is known to build and work properly using an LFS-7.2 platform.

## Package Information

- Download (HTTP): [http://www.megaloman.com/~hany/\\_data/hd2u/hd2u-1.0.3.tgz](http://www.megaloman.com/~hany/_data/hd2u/hd2u-1.0.3.tgz)
- 
- Download MD5 sum: 8f6668fafb279aa19f956ec0515717b6
- Download size: 64 KB
- Estimated disk space required: 380 KB
- Estimated build time: less than 0.1 SBU

## Hd2u Dependencies

### Required

popt-1.16

## 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

<b>Installed Program:</b>	dos2unix
<b>Installed Libraries:</b>	None
<b>Installed Directories:</b>	None

## Short Descriptions

**dos2unix** converts text between various OS formats (such as converting from DOS format to Unix).

# icon-naming-utils-0.8.90

## Introduction to icon-naming-utils

The icon-naming-utils package contains a Perl script used for maintaining backwards compatibility with current desktop icon themes, while migrating to the names specified in the *Icon Naming Specification*.

This package is known to build and work properly using an LFS-7.3 platform.

## Package Information

- Download (HTTP): <http://tango.freedesktop.org/releases/icon-naming-utils-0.8.90.tar.bz2>
- 
- Download MD5 sum: dd8108b56130b9eedc4042df634efa66
- Download size: 57 KB
- Estimated disk space required: 440 KB
- Estimated build time: less than 0.1 SBU

## icon-naming-utils Dependencies

### Required

XML::Simple-2.20

## Installation of icon-naming-utils

Install icon-naming-utils by running the following commands:

```
./configure --prefix=/usr \
            --libexecdir=/usr/lib/icon-naming-utils &&
make
```

This package does not come with a test suite.

Now, as the root user:

```
make install
```

## Command Explanations

**--libexecdir=/usr/lib/icon-naming-utils**: This parameter is used so that the main program script is placed in /usr/lib/icon-naming-utils instead of /usr/libexec.

## Contents

<b>Installed Programs:</b>	icon-name-mapping
<b>Installed Libraries:</b>	None
<b>Installed Directories:</b>	/usr/share/dtds and /usr/share/icon-naming-utils

## Short Descriptions

<b>icon-name-mapping</b>	is a Perl script used for maintaining backwards compatibility with current desktop icon themes, while migrating to the names specified in the Icon Naming Specification.
--------------------------	--

# ImageMagick-6.8.5-6

## 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 for Perl and C++ are also available.

This package is known to build and work properly using an LFS-7.3 platform.

## Package Information

- 
- Download (FTP): <ftp://ftp.imagemagick.org/pub/ImageMagick/ImageMagick-6.8.5-6.tar.xz>
- Download MD5 sum: d2d03e8131722a5b85fc2a866d9df517
- Download size: 7.9 MB
- Estimated disk space required: 208 MB (with typical dependencies, reputedly 450 MB with all dependencies)
- Estimated build time: 1.9 SBU (typical build - additional 20 SBU to run the test suite)



### Note

The ImageMagick source releases are updated frequently and the version shown above may no longer be available from the download locations. You can download a more recent version and use the existing BLFS instructions to install it. Chances are that it will work just fine, but this has not been tested by the BLFS team. If the package version shown above is not available from the locations shown above, or from the legacy/ directory at <ftp://ftp.ImageMagick.org/pub/ImageMagick> you can download it from the BLFS package server at <http://anduin.linuxfromscratch.org/sources/BLFS/svn/i/ImageMagick-6.8.5-6.tar.xz>.

## ImageMagick Dependencies

### Recommended

X Window System

The optional dependencies listed below should be installed if you need support for the specific format or the conversion tool the dependency provides. Many of the dependencies' capabilities and uses are described in the "MAGICK DELEGATES" section of the README.txt file located in the source tree. Additional information about the dependencies can be found in the Install-unix.txt file located in the source tree as well as issuing the `./configure --help` command. A summary of this information, as well as some additional notes can be viewed on-line at <http://www.imagemagick.org/script/advanced-unix-installation.php>.

### Optional System Utilities

`pkg-config-0.28`, `Cups-1.6.2`, `cURL-7.30.0`, `Dmalloc`, `Electric Fence`, `FFmpeg-1.2.1`, `FFTW`, `PGP` or `GnuPG-1.4.13` or `GnuPG-2.0.20` (you'll have to do some hacking to use GnuPG), `SANE-1.0.23`, `ufrag` (for raw formats listed in `www/formats.html`), `Wget-1.14`, and `xdg-utils-1.1.0-rc1`

### Optional Graphics Libraries

`corefonts`, `DjVuLibre`, `FlashPIX`, `JasPer-1.900.1`, `JBIG-KIT`, `Little CMS-1.19` or `Little CMS-2.4`, `libexif-0.6.21`, `libjpeg-turbo-1.2.1`, `libpng-1.6.2`, `librsvg-2.36.4`, `LibTIFF-4.0.3`, `libwebp`, `Liquid Rescale`, `OpenEXR`, `Pango-1.32.5`, and `RALCGM` (or `ralcgm`)

## Optional Graphics Utilities

*Blender, DejaVu fonts, GhostPCL or GhostPDL, ghostscript-9.06, Gimp-2.8.4, Gnuplot, Graphviz-2.30.1, Inkscape-0.48.4, POV-Ray, and Radiance*

## Optional Conversion Tools

*AutoTrace, Enscript-1.6.6, GeoExpress Command Line Utilities, AKA MrSID Utilities (binary package), hp2xx, html2ps, libwmf, MPEG-2 Video Codec, Netpbm, texlive-20120701, Transfig, UniConvertor, and Utah Raster Toolkit (or URT-3.1b)*

# Installation of ImageMagick

Install ImageMagick by running the following commands:

```
./configure --prefix=/usr      \
            --sysconfdir=/etc \
            --with-modules   \
            --with-perl       \
            --disable-static  &&
make
```

The validation suite is intended to be run after the package is installed.

Now, as the root user:

```
make install
```

To test the installation, issue: **make check**. Note that the EPS, PS, and PDF tests require a working Ghostscript.

## Command Explanations

--sysconfdir=/etc: Install the .xml configuration files into /etc/ImageMagick instead of the default /usr/etc/ImageMagick.

--with-modules: Enables support for dynamically loadable modules.

--with-perl: Enables building and installing PerlMagick.

--disable-static: Prevents the static libraries being built and installed.

--with-gslib=/usr/lib: Enables support to use the Ghostscript shared library.

--with-rsvg: Enables support to use the librsvg library.

--with-autotrace: Enables support to use the Autotrace library.

--with-wmf: Enables support to use the libwmf library.

--with-gvc: Enables support to use GraphViz.

--with-windows-font-dir= <Some/Directory>: This option specifies the directory where the Windows CoreFonts are installed.

--with-dejavu-font-dir= <Some/Directory>: This option specifies the directory where the DejaVu fonts are installed.

The options and parameters listed above are the only ones you should have to pass to the **configure** script to activate all the delegate dependencies. All other dependencies will be automatically detected and utilized in the build if they are installed.

## Contents

<b>Installed Programs:</b>	animate, compare, composite, conjure, convert, display, identify, import, Magick-config, Magic++-config, MagickCore-config, MagickWand-config, mogrify, montage, stream, and Wand-config
<b>Installed Libraries:</b>	libMagickCore-Q16.so, libMagickWand-Q16.so, libMagick++-Q16.so, and numerous plugin modules
<b>Installed Directories:</b>	/etc/ImageMagick, /usr/include/ImageMagick, /usr/lib/ImageMagick-6.8.5, /usr/lib/perl5/site_perl/<5.x.y>/<arch-linux>/auto/Image, /usr/lib/perl5/site_perl/<5.x.y>/<arch-linux>/Image/Magick, /usr/share/ImageMagick-6.8.5 and /usr/share/doc/ImageMagick-6.8.5

## Short Descriptions

<b>animate</b>	animates a sequence of images.
<b>compare</b>	compares an image to a reconstructed image.
<b>composite</b>	composites various images into the given base image.
<b>conjure</b>	processes a MSL script to create an image.
<b>convert</b>	converts image(s) from one format to another.
<b>display</b>	displays an image.
<b>identify</b>	describes the format and characteristics of an image file.
<b>import</b>	captures an X window.
<b>Magick{++,Core,Wand}-config</b>	show information about the installed versions of the ImageMagick libraries.
<b>mogrify</b>	transforms an image.
<b>montage</b>	composites various images into a new image.
<b>stream</b>	streams one or more pixel components of an image or portion of the image to your choice of storage formats.
<b>Wand-config</b>	shows the options required to use the Wand library.
<b>Image::Magick</b>	allows the reading, manipulation and writing of a large number of image file formats using the ImageMagick library. Run <b>make</b> in the <b>PerlMagick/demo</b> directory of the package source tree after the package is installed to see a nice demo of the module's capabilities.

# Intltool-0.50.2

## Introduction to Intltool

The Intltool is an internationalization tool used 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.

This package is known to build and work properly using an LFS-7.3 platform.

## Package Information

- Download (HTTP): <http://launchpad.net/intltool/trunk/0.50.2/+download/intltool-0.50.2.tar.gz>
- 
- Download MD5 sum: 23fdb879118253cb99aeac067da5f591
- Download size: 188 KB
- Estimated disk space required: 1.4 MB
- Estimated build time: less than 0.1 SBU

## Intltool Dependencies

### Required

XML::Parser-2.41

## 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 &&
install -v -m644 -D doc/I18N-HOWTO \
/usr/share/doc/intltool-0.50.2/I18N-HOWTO
```

## Contents

<b>Installed Programs:</b>	intltool-extract, intltool-merge, intltool-prepare, intltool-update and intltoolize
<b>Installed Libraries:</b>	None
<b>Installed Directories:</b>	/usr/share/doc/intltool-0.50.2 and /usr/share/intltool

## Short Descriptions

<b>intltoolize</b>	prepares a package to use intltool.
<b>intltool-extract</b>	generates header files that can be read by <b>gettext</b> .
<b>intltool-merge</b>	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.

# libiodbc-3.52.8

## Introduction to libiodbc

libiodbc is an API to ODBC compatible databases.

This package is known to build and work properly using an LFS-7.2 platform.

## Package Information

- Download (HTTP): <http://downloads.sourceforge.net/project/iodbc/iodbc/3.52.8/libiodbc-3.52.8.tar.gz>
- 
- Download MD5 sum: 9889f95f632f10895ff53b8a22162810
- Download size: 1.0 MB
- Estimated disk space required: 27 MB
- Estimated build time: 0.3 SBU

## libiodbc Dependencies

### Recommended

GTK+-2.24.17 (to create the GUI admin tool)

## Installation of libiodbc

Install libiodbc by running the following commands:

```
./configure --prefix=/usr \
            --with-iodbc-inidir=/etc/iodbc \
            --includedir=/usr/include/iodbc \
            --disable-libodbc \
make
```

This package does not come with a test suite.

Now, as the root user:

```
make install
```

## Command Explanations

`--with-iodbc-inidir`: libiodbc will install configuration files in this directory.

`--includedir=/usr/include/iodbc`: This installs the interface headers to a private directory to avoid a conflict with headers installed by unixODBC.

`--disable-libodbc`: This prevents the installation of the `libodbc.so` symbolic link to avoid a conflict with unixODBC.

## Contents

**Installed Programs:** `iodbc-config`, `iodbctest`, `iodbctestw`, and `iodbcadm`

**Installed Libraries:** `libiodbc.{a,so}`, `libiodbcinst.{a,so}`, and `libiodbcadm.{a,so}`

**Installed Directory:** `/usr/include/iodbc`, `/usr/share/libiodbc`, and `/etc/iodbc`

## Short Descriptions

- iodbc-config** is a utility for retrieving the installation options of libiodbc.
- iodbctest{,w}** are interactive SQL processors.
- iodbcadm** is a graphical administration utility.

# PIN-Entry-0.8.3

## Introduction to PIN-Entry

The PIN-Entry package contains a collection of simple PIN or pass-phrase entry dialogs which utilize the Assuan protocol as described by the *Ägypten project*. PIN-Entry programs are usually invoked by the **gpg-agent** daemon, but can be run from the command line as well. There are programs for various text-based and GUI environments, including interfaces designed for Ncurses (text-based), GTK+, GTK+2, Qt3, and Qt4.

This package is known to build and work properly using an LFS-7.3 platform.

## Package Information

- 
- Download (FTP): <ftp://ftp.gnupg.org/gcrypt/pinentry/pinentry-0.8.3.tar.bz2>
- Download MD5 sum: 2ae681cbca0d9fb774b2c90b11ebf56c
- Download size: 424 KB
- Estimated disk space required: 12 MB
- Estimated build time: 0.2 SBU

## PIN-Entry Dependencies

### Optional

GTK+-2.24.17, libcap2-2.22 and Qt-4.8.4

## Installation of PIN-Entry

Install PIN-Entry 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

<b>Installed Programs:</b>	pinentry, pinentry-curses, pinentry-gtk, pinentry-gtk-2, pinentry-qt, and pinentry-qt4
<b>Installed Libraries:</b>	None
<b>Installed Directory:</b>	None

## Short Descriptions

<b>pinentry</b>	is a symbolic link to the default PIN-Entry program.
<b>pinentry-curses</b>	is an Ncurses text-based PIN-Entry program.
<b>pinentry-gtk</b>	is a GTK+ GUI PIN-Entry program.
<b>pinentry-gtk-2</b>	is a GTK+2 GUI PIN-Entry program.

- pinentry-qt** is a Qt3 GUI PIN-Entry program.
- pinentry-qt4** is a Qt4 GUI PIN-Entry program.

# Rarian-0.8.1

## Introduction to Rarian

The Rarian package is a documentation metadata library based on the proposed Freedesktop.org spec. Rarian is designed to be a replacement for ScrollKeeper.

This package is known to build and work properly using an LFS-7.2 platform.

## Package Information

- Download (HTTP): <http://ftp.gnome.org/pub/gnome/sources/rarian/0.8/rarian-0.8.1.tar.bz2>
- Download (FTP): <ftp://ftp.gnome.org/pub/gnome/sources/rarian/0.8/rarian-0.8.1.tar.bz2>
- Download MD5 sum: 75091185e13da67a0ff4279de1757b94
- Download size: 317 KB
- Estimated disk space required: 6 MB
- Estimated build time: 0.2 SBU

## Rarian Dependencies

### Recommended

libxslt-1.1.28 (**rarian-sk-extract** will not be built without this) and docbook-xml-4.5 (without this, Rarian scripts source DTDs from the net)

## Installation of Rarian

Install Rarian by running the following commands:

```
./configure --prefix=/usr \
            --localstatedir=/var &&
make
```

This package does not come with a test suite.

Now, as the root user:

```
make install
```

## Contents

<b>Installed Programs:</b>	rarian-example, rarian-sk-config, rarian-sk-extract, rarian-sk-gen-uuid, rarian-sk-get-cl, rarian-sk-get-content-list, rarian-sk-get-extended-content-list, rarian-sk-get-scripts, rarian-sk-install, rarian-sk-migrate, rarian-sk-preinstall, rarian-sk-rebuild, and rarian-sk-update
<b>Installed Library:</b>	librarian.{so,a}
<b>Installed Directories:</b>	/usr/include/rarian, /usr/share/help, /usr/share/librarian/manual, /usr/share/librarian/Templates/C, and /usr/var/lib/rarian

## Short Descriptions

<b>rarian-example</b>	prints a nice list of all available documents found by the library.
-----------------------	---

<b>rarian-sk-config</b>	emulates <b>scrollkeeper-config</b> .
<b>rarian-sk-extract</b>	is a wrapper around xsltproc to mimic <b>scrollkeeper-extract</b> .
<b>rarian-sk-gen-uuid</b>	generates a unique (random) uuid.
<b>rarian-sk-get-cl</b>	gets a content list (category tree).
<b>rarian-sk-get-content-list</b>	is a simple wrapper to make calling <b>scrollkeeper-get-cl</b> easier.
<b>rarian-sk-get-extended-content-list</b>	is a simple wrapper to make calling <b>scrollkeeper-get-cl</b> (extended) easier.
<b>rarian-sk-get-scripts</b>	emulates <b>scrollkeeper-get-index-from-index-from-docpath</b> , <b>scrollkeeper-get-toc-from-docpath</b> , and <b>scrollkeeper-get-toc-from-id</b> .
<b>rarian-sk-install</b>	emulates <b>scrollkeeper-install</b> and <b>scrollkeeper-uninstall</b> .
<b>rarian-sk-migrate</b>	takes in a directory full of omf's, reads and parses them and spews out an equivalent scroll file.
<b>rarian-sk-preinstall</b>	creates the omf file by reading an existing omf file and replacing the url for a resource with the url.
<b>rarian-sk-rebuild</b>	is a simple wrapper script to emulate <b>scrollkeeper-rebuilddb</b> .
<b>rarian-sk-update</b>	is compatible with the <b>scrollkeeper-update</b> script that's required to be run when installing new omf files. It converts the omf files into new-style scrolls.
<b>librarian.{so,a}</b>	is the API to build a list of available meta data files and allows access to these.

# Rep-gtk-0.90.8.1

## 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.

This package is known to build and work properly using an LFS-7.2 platform.

## Package Information

- Download (HTTP): <http://download.tuxfamily.org/librep/rep-gtk/rep-gtk-0.90.8.1.tar.xz>
- 
- Download MD5 sum: 00c1d9d7fe1c4d8851a59efa0e5a0645
- Download size: 252 KB
- Estimated disk space required: 23 MB
- Estimated build time: 0.2 SBU

## Rep-gtk Dependencies

### Required

libglade-2.6.4 and librep-0.92.2.1

## Installation of Rep-gtk

Install rep-gtk 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

<b>Installed Programs:</b>	None
<b>Installed Libraries:</b>	Lisp bindings
<b>Installed Directory:</b>	/usr/lib/rep/gui/

## Short Descriptions

Lisp bindings are libraries stored in /usr/lib/rep/gui/ that assist communication between Lisp and the GTK libraries.

# rxvt-unicode-9.16

## Introduction to rxvt-unicode

rxvt-unicode is a clone of the terminal emulator rxvt, an X Window System terminal emulator which includes support for XFT and Unicode.

This package is known to build and work properly using an LFS-7.3 platform.

## Package Information

- Download (HTTP): <http://dist.schmorp.de/rxvt-unicode/Attic/rxvt-unicode-9.16.tar.bz2>
- 
- Download MD5 sum: 2e2942e8367624affebc0568e3671b66
- Download size: 878 KB
- Estimated disk space required: 32 MB
- Estimated build time: 0.2 SBU

## rxvt-unicode Dependencies

### Required

X Window System

### Recommended

pkg-config-0.28

### Optional

gdk-pixbuf-2.26.5, or *libAfterImage* (these add support for background images and simulated transparency)

## Installation of rxvt-unicode

Install rxvt-unicode by running the following commands:

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

This package does not come with a test suite.

Now, as the root user:

```
make install
```

## Command Explanations

**--enable-everything**: Add support for all non-multichoice options. Details about the different options can be found in the file *README.configure*.

**--disable-xft**: Remove support for Xft fonts.

**--disable-perl**: Disable the embedded Perl interpreter.

**--disable-afterimage**: Remove support for *libAfterImage*.

## Configuring rxvt-unicode

The rxvt-unicode terminal emulator uses the resource class URxvt and the resource name urxvt. You can add X resource definitions to a user's `~/.Xresources` file or to the system-wide `/etc/X11/app-defaults/URxvt` file. The following example will load the `matcher` Perl extension (assuming Perl support wasn't disabled), which enables a middle button click to open an underlined URL in the specified browser, sets a background and foreground color and loads an Xft font:

```
cat >> /etc/X11/app-defaults/URxvt << "EOF"
URxvt*perl-ext: matcher
URxvt*urlLauncher: firefox
URxvt.background: black
URxvt.foreground: yellow
URxvt*font: xft:Monospace:pixelsize=12
EOF
```

The rxvt-unicode application can also run in a daemon mode, which makes it possible to open multiple terminal windows within the same process. The **urxvtd** client then connects to the **urxvtd** daemon and requests a new terminal window. Use this option with caution. If the daemon crashes, all the running processes in the terminal windows are terminated.

You can start the **urxvtd** daemon in the system or personal startup **X** session script (e.g., `~/.xinitrc`) by adding the following lines near the top of the script:

```
# Start the urxvtd daemon
urxvtd -q -f -o &
```

For more information, examine the **urxvt**, **urxvtd**, **urxvtc**, and **urxvtperl** man pages.

## Contents

<b>Installed Programs:</b>	urxvt, urxvtd, and urxvtc
<b>Installed Libraries:</b>	Many Perl extensions located under <code>/usr/lib/urxvt/perl</code>
<b>Installed Directory:</b>	<code>/usr/lib/urxvt</code>

## Short Descriptions

- urxvt** is a terminal emulator for the X Window System.
- urxvtd** is the **urxvt** terminal daemon.
- urxvtc** controls the **urxvtd** daemon.

# Screen-4.0.3

## 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 provides configurable input and output translation, serial port support, configurable logging, multi-user support, and many character encodings, including UTF-8. Screen sessions can be detached and resumed later on a different terminal.

This package is known to build and work properly using an LFS-7.3 platform.

## Package Information

- Download (HTTP): <http://ftp.uni-erlangen.de/pub/utilities/screen/screen-4.0.3.tar.gz>
- Download (FTP): <ftp://ftp.uni-erlangen.de/pub/utilities/screen/screen-4.0.3.tar.gz>
- Download MD5 sum: 8506fd205028a96c741e4037de6e3c42
- Download size: 821 KB
- Estimated disk space required: 5.8 MB
- Estimated build time: 0.2 SBU

## Screen Dependencies

### Optional

Linux-PAM-1.1.6

## Installation of Screen

Install Screen by running the following commands:

```
./configure --prefix=/usr \
            --with-socket-dir=/var/run/screen \
            --with-pty-group=5 \
            --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.
- with-pty-group=5: This option sets the gid to the value used by LFS.



## Note

Older versions of LFS use the value 4 for the tty group. If you are using LFS version 7.1 or older, change the pty-group option to 4.

`sed -i -e "s%{/usr/local/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

<b>Installed Program:</b>	screen
<b>Installed Libraries:</b>	None
<b>Installed Directory:</b>	/var/run/screen

## Short Descriptions

**screen** is a terminal multiplexor with VT100/ANSI terminal emulation.

# Sharutils-4.13.5

## Introduction to Sharutils

The Sharutils package contains utilities that can create 'shell' archives.

This package is known to build and work properly using an LFS-7.3 platform.

### Package Information

- Download (HTTP): <http://ftp.gnu.org/gnu/sharutils/sharutils-4.13.5.tar.xz>
- Download (FTP): <ftp://ftp.gnu.org/gnu/sharutils/sharutils-4.13.5.tar.xz>
- Download MD5 sum: 05b66d9b30336a9fd3b28fd1860e26c1
- Download size: 1.1 MB
- Estimated disk space required: 20 MB
- Estimated build time: 0.3 SBU

## Installation of Sharutils

Install Sharutils by running the following commands:

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

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

Now, as the root user:

```
make install
```

## Contents

<b>Installed Programs:</b>	shar, unshar, uudecode and uuencode
<b>Installed Libraries:</b>	None
<b>Installed Directories:</b>	None

## Short Descriptions

<b>shar</b>	creates "shell archives" (or shar files) which are in text format and can be mailed.
<b>unshar</b>	unpacks a shar file.
<b>uudecode</b>	reads a file (or by default the standard input) and writes an encoded version to the standard output. The encoding uses only printing ASCII characters.
<b>uuencode</b>	reads a file (or by default the standard input) and decodes the uuencoded version to the standard output.

# SpiderMonkey-1.0.0

## Introduction to SpiderMonkey

SpiderMonkey is Mozilla's JavaScript engine written in C/C++. The most recent standalone source code release implements JavaScript 1.8.5.

This package is known to build and work properly using an LFS-7.3 platform.

## Package Information

- Download (HTTP): <http://ftp.mozilla.org/pub.mozilla.org/js/js185-1.0.0.tar.gz>
- Download (FTP): <ftp://ftp.mozilla.org/pub.mozilla.org/js/js185-1.0.0.tar.gz>
- Download MD5 sum: a4574365938222adca0a6bd33329cb32
- Download size: 5.9 MB
- Estimated disk space required: 99 MB
- Estimated build time: 1.1 SBU

## SpiderMonkey Dependencies

### Required

NSPR-4.9.6, Python-2.7.5 and Zip-3.0

## Installation of SpiderMonkey

Install SpiderMonkey by running the following commands:

```
cd js/src &&
sed -i 's#s \\\($SHLIB_\\(ABI\\|EXACT\\)_VER)\\)##s $(notdir \\1)##' Makefile.in &&
./configure --prefix=/usr --enable-threadsafe --with-system-nspr &&
make
```

To test the results, issue: **TZ=US/Pacific make check**.

Now, as the root user:

```
make install
```

## Command Explanations

**sed -i 's#s \\\(\$SHLIB\_\\(ABI\\|EXACT\\)\_VER)\\)##s \$(notdir \\1)##' Makefile.in:** This sed fixes the symlinks for libmozjs185.so so that they are relative and not absolute symlinks.

**TZ=US/Pacific make check:** the timezone tests were written to be executed in Pacific time and to assume an mm/dd/yyyy date format. The test suite runs in the local timezone, so override its environment to prevent multiple failures in the **check-date-format-tofte.js** tests.

**--enable-threadsafe:** This switch enables support for multiple threads.

**--with-system-nspr:** This parameter forces the package to link to the system version of NSPR instead of using its included, and now old, version.

## Contents

**Installed Program:** js-config  
**Installed Libraries:** libmozjs185-1.0.a and libmozjs185.so  
**Installed Directory:** /usr/include/js

## Short Descriptions

**js-config** is used to find out SpiderMonkey compiler and linker flags.  
**libmozjs185.so** contains the Mozilla JavaScript API functions.

# HTML Tidy-cvs\_20101110

## 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.

This package is known to build and work properly using an LFS-7.3 platform.

## Package Information

- Download (HTTP): [http://anduin.linuxfromscratch.org/sources/BLFS/svn/t/tidy-cvs\\_20101110.tar.bz2](http://anduin.linuxfromscratch.org/sources/BLFS/svn/t/tidy-cvs_20101110.tar.bz2)
- 
- Download MD5 sum: dd1fe109b4259ad3f364b175787ad5e9
- Download size: 807 KB
- Estimated disk space required: 12 MB
- Estimated build time: 0.2 SBU

HTML Tidy tarballs are no longer generated by the maintainers. To build from source, the HTML Tidy developers recommend using current CVS. The source tarball shown above was created by the BLFS team by pulling a CVS version, then generating the autotool components and documentation. BLFS made no changes to the existing source files.

## HTML Tidy Dependencies

### Optional

*Dmalloc*

## Installation of HTML Tidy

Install HTML Tidy by running the following commands:

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

This package does not come with a test suite.

Now, as the root user:

```
make install &&

install -v -m644 -D html/doc/tidy.1 \
          /usr/share/man/man1/tidy.1 &&
install -v -m755 -d /usr/share/doc/tidy-cvs_20101110 &&
install -v -m644      html/doc/*.{html,gif,css} \
          /usr/share/doc/tidy-cvs_20101110
```

If you wish to install the API documentation you must have Doxygen-1.8.4 installed, then change directories into the html/doc of the source tree and issue the command **doxygen**. Then as the root user copy the **api** directory to /usr/share/doc/tidy-cvs\_20101110.

## Command Explanations

*--disable-static*: This switch prevents installation of static versions of the libraries.

## 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

**Installed Directory:** /usr/share/doc/tidy-cvs\_20101110

## Short Descriptions

**tab2space** is a utility to expand tabs and ensure consistent line endings.

**tidy** validates, corrects, and pretty-prints HTML files.

**libtidy.so** library provides the HTML Tidy API functions to **tidy** and can also be called by other programs.

# unixODBC-2.3.1

## Introduction to unixODBC

The unixODBC package is an Open Source ODBC (Open DataBase Connectivity) sub-system and an ODBC SDK for Linux, Mac OSX, and UNIX. ODBC is an open specification for providing application developers with a predictable API with which to access data sources. Data sources include optional SQL Servers and any data source with an ODBC Driver. unixODBC contains the following components used to assist with the manipulation of ODBC data sources: a driver manager, an installer library and command line tool, command line tools to help install a driver and work with SQL, drivers and driver setup libraries.

This package is known to build and work properly using an LFS-7.2 platform.

## Package Information

- Download (HTTP): <http://www.unixodbc.org/unixODBC-2.3.1.tar.gz>
- Download (FTP): <ftp://mirror.ovh.net/gentoo-distfiles/distfiles/unixODBC-2.3.1.tar.gz>
- Download MD5 sum: 86788d4006620fa1f171c13d07fdcaab
- Download size: 1.8 MB
- Estimated disk space required: 30 MB
- Estimated build time: 0.5 SBU

## unixODBC Dependencies

### Optional

*Mini SQL* and Pth-2.0.7

## Installation of unixODBC

Install unixODBC by running the following commands:

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

This package does not come with a test suite.

Now, as the root user:

```
make install &&

find doc -name "Makefile*" -exec rm {} \; &&
chmod 644 doc/{1st,ProgrammerManual/Tutorial}/* &&

install -v -m755 -d /usr/share/doc/unixODBC-2.3.1 &&
cp -v -R doc/* /usr/share/doc/unixODBC-2.3.1
```

## Command Explanations

--enable-drivers: This parameter enables building the drivers that were installed by default in previous versions.

--enable-drivers-conf: This parameter enables building the driver configuration libraries that were installed by default in previous versions.

## Configuring unixODBC

### Config Files

/etc/unixODBC/\*

### Configuration Information

The files in /etc/unixODBC are meant to be configured by the system administrator (or the ODBC site administrator if appropriate privileges are granted to /etc/unixODBC). These files are not meant to be directly edited. The ODBC installer library is responsible for reading and writing the unixODBC config files.

Unfortunately, there are no **man** or **info** pages for the various programs available in the unixODBC package. Along with the information in the “Short Descriptions” below and the documentation installed in /usr/share/doc/unixODBC-2.3.1, there are many README files throughout the source tree where the use and functionality of the programs can be found. Additionally, you can use the parameter -? for syntax and usage information. Lastly, the unixODBC web site at <http://www.unixodbc.org/> has very good information.

## Contents

<b>Installed Programs:</b>	dltest, isql, iusql, odbc_config and odbcinst
<b>Installed Libraries:</b>	libodbc.so, libodbccr.so and libodbcinst.so
<b>Installed Directories:</b>	/etc/unixODBC and /usr/share/doc/unixODBC-2.3.1

### Short Descriptions

<b>dltest</b>	is a utility used to check a share library to see if it can be loaded and if a given symbol exists in it.
<b>isql</b>	is an utility which can be used to submit SQL to a data source and to format/output results. It can be used in batch or interactive mode.
<b>iusql</b>	provides the same functionality as the <b>isql</b> program.
<b>odbc_config</b>	is used to find out details about the installation of the unixODBC package.
<b>odbcinst</b>	is an utility created for install script/RPM writers. It is a command line interface to key functionality in the <b>libodbcinst</b> library. It does not copy any files (i.e., libraries) but it will modify the ODBC System Information for the user.

# XScreenSaver-5.21

## 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.

This package is known to build and work properly using an LFS-7.3 platform.

## Package Information

- Download (HTTP): <http://www.jwz.org/xscreensaver/xscreensaver-5.21.tar.gz>
- 
- Download MD5 sum: 1e9828ab7146d443c9d109cf2a1a4ed2
- Download size: 7.1 MB
- Estimated disk space required: 205 MB
- Estimated build time: 2.0 SBU

## XScreenSaver Dependencies

### Required

bc-1.06.95, libglade-2.6.4 and Xorg Applications

### Optional

GDM-3.6.2, GLE and Linux-PAM-1.1.6

## Installation of XScreenSaver

Install XScreenSaver by running the following commands:

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

This package does not come with a test suite.

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.

## Configuring XScreenSaver

### Config Files

`/etc/X11/app-defaults/XScreenSaver` and `~/.xscreensaver`

## Linux PAM Configuration

If you have built XScreenSaver with Linux PAM support, you need to create PAM configuration file to get XScreenSaver to work correctly with BLFS.

Issue the following commands as the `root` user to create the configuration file for Linux PAM:

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

auth      include system-auth
account   include system-account

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

## Contents

<b>Installed Programs:</b>	xscreensaver, xscreensaver-command, xscreensaver-demo, xscreensaver-getimage, xscreensaver-getimage-file, xscreensaver-getimage-video, xscreensaver-gl-helper and xscreensaver-text
<b>Installed Libraries:</b>	None
<b>Installed Directories:</b>	/usr/lib/xscreensaver and /usr/share/xscreensaver

## Short Descriptions

<b>xscreensaver</b>	is a screen saver and locker daemon.
<b>xscreensaver-command</b>	controls a running <b>xscreensaver</b> process by sending it client messages.
<b>xscreensaver-demo</b>	is a graphical front-end for setting the parameters used by the background <b>xscreensaver</b> daemon.
<b>xscreensaver-getimage</b>	is a helper program for the <b>xscreensaver</b> modules that manipulate images.
<b>xscreensaver-getimage-file</b>	is a helper program for the <b>xscreensaver</b> modules that manipulate images.
<b>xscreensaver-getimage-video</b>	is a helper program for the <b>xscreensaver</b> modules that manipulate images.
<b>xscreensaver-gl-helper</b>	is a helper program for the <b>xscreensaver</b> OpenGL modules.
<b>xscreensaver-text</b>	prints some text to stdout, for use by screen savers.

# Chapter 12. System Utilities

This chapter contains mainly hardware utilities. It also contains some applications used by other applications in the book for installation or configuration purposes.

# apache-ant-1.8.4

## 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 that 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 that executes various tasks. Each task is run by an object that implements a particular task interface.

This package is known to build and work properly using an LFS-7.2 platform.

## Package Information

- Download (HTTP): <http://archive.apache.org/dist/ant/source/apache-ant-1.8.4-src.tar.bz2>
- 
- Download MD5 sum: c474fa9d0c35a24037c23b6e476862c1
- Download size: 3.2 MB
- Estimated disk space required: 66 MB
- Estimated build time: 0.4 SBU

## Apache Ant Dependencies

### Required

OpenJDK-1.7.0.9

### Recommended

JUnit-4.10

## 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.

If it is not possible to install the recommended JUnit package, install Apache Ant by removing the reference to the test instructions (note that the tests will not be performed):

```
sed -i 's;jars,test-jar;jars;` build.xml
```

otherwise copy the junit jar file to the local directory tree.

```
cp -v /usr/share/junit-4.10/junit-4.10.jar lib/optional/junit.jar
```

Install Apache Ant by running the following commands:

The unit regression tests are performed during the build step below unless JUnit is not installed. Now, as the root user:

```
./build.sh -Ddist.dir=/opt/ant-1.8.4 dist &&
ln -v -sfn ant-1.8.4 /opt/ant
```



## Note

Make sure the JAVA\_HOME environment variable is set for the root user.

## Command Explanations

**sed -i 's;jars...;**: If the JUnit package is not installed, the regression tests cannot be performed.

**cp -v /usr/share/junit-4.10/4.10.jar ...;**: This command copies the JUnit jar file into the directory where Apache Ant will look for it.

**./build.sh -Ddist.dir=/opt/ant-1.8.4 dist**: This command does everything. It builds, tests, then installs the package into /opt/ant-1.8.4.

**ln -v -sfn ant-1.8.4 /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

<b>Installed Programs:</b>	ant, antRun, antRun.pl, complete-ant-cmd.pl, runant.pl, and runant.py
<b>Installed Libraries:</b>	ant*.jar
<b>Installed Directories:</b>	/opt/ant-1.8.4

## Short Descriptions

<b>ant</b>	is a Java based build tool used by many packages instead of the conventional <b>make</b> program.
<b>antRun</b>	is a support script used to start <b>ant</b> build scripts in a given directory.
<b>antRun.pl</b>	is a Perl script that provides similar functionality offered by the <b>antRun</b> script.
<b>complete-ant-cmd.pl</b>	is a Perl script that allows Bash to complete an <b>ant</b> command-line.
<b>runant.pl</b>	is a Perl wrapper script used to invoke <b>ant</b> .
<b>runant.py</b>	is a Python wrapper script used to invoke <b>ant</b> .
<b>ant*.jar</b>	files are the Apache Ant Java class libraries.

## at-3.1.13

### Introduction to at

The at package provide delayed job execution and batch processing. It is required for Linux Standards Base (LSB) conformance.

This package is known to build and work properly using an LFS-7.2 platform.

### Package Information

- Download (HTTP): [http://ftp.de.debian.org/debian/pool/main/a/at/at\\_3.1.13.orig.tar.gz](http://ftp.de.debian.org/debian/pool/main/a/at/at_3.1.13.orig.tar.gz)
- Download (FTP): [ftp://ftp.de.debian.org/debian/pool/main/a/at/at\\_3.1.13.orig.tar.gz](ftp://ftp.de.debian.org/debian/pool/main/a/at/at_3.1.13.orig.tar.gz)
- Download MD5 sum: 1da61af6c29e323abaaf13ee1a8dad79
- Download size: 120 KB
- Estimated disk space required: 1.4 MB
- Estimated build time: less than 0.1 SBU

### at Dependencies

#### Optional

Linux-PAM-1.1.6

### Installation of at

Before building at, as the `root` user you should create the group and user `atd` which will run the `atd` daemon. Also ensure the working directory for the daemon exists:

```
groupadd -g 17 atd &&
useradd -d /dev/null -c "atd daemon" -g atd -s /bin/false -u 17 atd &&
mkdir -p /var/spool/cron
```

Install at with the following commands:

```
./configure --with-daemon_username=atd \
            --with-daemon_groupname=atd &&
make
```

This package does not come with a test suite.

Now, as the `root` user:

```
make install
```

### Configuring at

#### Config Files

`/etc/at.allow` and `/etc/at.deny` determines who can submit jobs via at or batch.

## Boot Script

Install the /etc/init.d/atd init script from the blfs-bootscripts-20130512 package.

```
make install-atd
```

## Contents

**Installed Programs:** at, atd, atrun, and batch

**Installed Libraries:** None

**Installed Directories:** /var/spool/{atjobs,atspool}

## Short Descriptions

**at** queues, examines or deletes jobs for later execution.

**atd** is the daemon that runs jobs queued for later execution.

**atrun** runs jobs queued for later execution.

**batch** is a script that executes commands when system load levels permit.

# autofs-5.0.7

## Introduction to Autofs

The Autofs package contains userspace tools that work with the kernel to mount and un-mount removable file systems. The primary use is to mount external network file systems like NFS (see NFS Utilities-1.2.7) or Samba (see Samba-3.6.12) on demand.

It may also be useful for allowing users to mount floppies, cdroms and other removable storage devices without requiring the system administrator to mount the devices.

This package is known to build and work properly using an LFS-7.2 platform.

## Package Information

- Download (HTTP): <http://ftp.kernel.org/pub/linux/daemons/autofs/v5/autofs-5.0.7.tar.xz>
- Download (FTP): <ftp://ftp.kernel.org/pub/linux/daemons/autofs/v5/autofs-5.0.7.tar.xz>
- Download MD5 sum: 7aa414dd1d07e263795eced1992e8645
- Download size: 248 KB
- Estimated disk space required: 8.4 MB
- Estimated build time: 0.1 SBU

## Autofs Dependencies

### Required

OpenLDAP-2.4.35, Cyrus SASL-2.1.26, and MIT Kerberos V5-1.11.2

## 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 client support          Y or M (optional)
    CIFS support                Y or M (optional)
```

Recompile and install the new kernel, if necessary.

## Installation of Autofs

Install Autofs by running the following commands:

```
./configure --prefix=/ --mandir=/usr/share/man &&
make
```

This package does not come with a test suite.

Now, as the root user:

```
make install
```

# 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, auto.smb, and auto.net. Replace the auto.master file with the following commands as the root user:

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

/media/auto  /etc/auto.misc  --ghost
#/home       /etc/auto.home

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

This file creates a new media directory, /media/auto that will overlay any existing directory of the same name. In this example, the file, /etc/auto.misc, has a line:

```
cd    -fstype=iso9660,ro,nosuid,nodev :/dev/cdrom
```

that will mount a cdrom as /media/auto/cd if that directory is accessed. The --ghost option tells the automounter to create “ghost” versions (i.e. empty directories) of all the mount points listed in the configuration file regardless whether any of the file systems are actually mounted or not. This is very convenient and highly recommended, because it will show you the available auto-mountable file systems as existing directories, even when their file systems aren't currently mounted. Without the --ghost option, you'll have to remember the names of the directories. As soon as you try to access one of them, the directory will be created and the file system will be mounted. When the file system gets unmounted again, the directory is destroyed too, unless the --ghost option was given.



### Note

An alternative method would be to specify another automount location such as /var/lib/auto/cdrom and create a symbolic link from /media/cdrom to the automount location.

The auto.misc file 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. Examples for floppies are available in the file and easily activated. Documentation for this file is available using the **man 5 autofs** command.

In the second line, if enabled, a user's home directory would be mounted via NFS upon login. The /etc/home.auto would need to exist and have an entry similar to:

```
joe  example.org:/export/home/joe
```

where the directory /export/home/joe is exported via NFS from the system example.org. NFS shares are covered on the next page.

This package could also be used to mount SMB shares, however that feature is not configured in these instructions. For additional configuration information, see the man pages for auto.master(5). There are also web resources such as this *AUTOFS HOWTO* available.

## Boot Script

autofs installs its own boot script, but it has no capability for logging or visual conformance with other BLFS scripts.

Install the /etc/init.d/autofs mount script included with the blfs-bootscripts-20130512 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:** lookup\_dir.so, lookup\_file.so, lookup\_hosts.so, lookup\_ldap.so, lookup\_multi.so, lookup\_nisplus.so, lookup\_program.so, lookup\_userhome.so, lookup\_yp.so, mount\_afs.so, mount\_autofs.so, mount\_bind.so, mount\_changer.so, mount\_ext2.so, mount\_generic.so, mount\_nfs.so, parse\_sun.so

**Installed Directories:** /lib/autofs

## Short Descriptions

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

# BlueZ-4.101

## Introduction to BlueZ

The BlueZ package contains the Bluetooth protocol stack for Linux.

This package is known to build and work properly using an LFS-7.2 platform.

## Package Information

- Download (HTTP): <http://www.kernel.org/pub/linux/bluetooth/bluez-4.101.tar.xz>
- Download (FTP): <ftp://ftp.kernel.org/pub/linux/bluetooth/bluez-4.101.tar.xz>
- Download MD5 sum: c828c172f01f20c6ecd7f407894956a2
- Download size: 868 KB
- Estimated disk space required: 42 MB
- Estimated build time: 0.8 SBU

## BlueZ Dependencies

### Required

D-Bus-1.6.10 and GLib-2.34.3

### Optional

alsa-lib-1.0.27, Check-0.9.10, gst-plugins-base-0.10.36, libsndfile-1.0.25 and libusb-compat-0.1.4

## Kernel Configuration

Enable the following options in the kernel configuration and recompile the kernel if necessary:

```
[*] Networking support --->
  <*> or <M> Bluetooth subsystem support --->
    <*> or <M> RFCOMM protocol support
    [*] RFCOMM TTY support
    <*> or <M> BNEP protocol support
    [*] Multicast filter support
    [*] Protocol filter support
    <*> or <M> HIDP protocol support

  Bluetooth device drivers --->
```

Select the appropriate drivers for your Bluetooth hardware.

## Installation of BlueZ

Install BlueZ by running the following commands:

```
./configure --prefix=/usr \
            --sysconfdir=/etc \
            --localstatedir=/var \
            --libexecdir=/lib \
            --enable-bccmd \
            --enable-dfutool \
            --enable-dund \
            --enable-hid2hci \
            --enable-hidd \
            --enable-pand \
            --enable-tools \
            --enable-wiimote \
            --disable-test \
            --without-systemdunitdir &&
make
```

This package does not come with a test suite.

Now, as the root user:

```
make install
```

Install required configuration files as the root user:

```
for CONFFILE in audio input network serial ; do
    install -v -m644 ${CONFFILE}/${CONFFILE}.conf /etc/bluetooth/${CONFFILE}.conf
done
unset CONFFILE
```

If desired, install the API documentation as the root user:

```
install -v -m755 -d /usr/share/doc/bluez-4.101 &&
install -v -m644 doc/*.txt /usr/share/doc/bluez-4.101
```

## Command Explanations

`--enable-bccmd`: This switch enables building of the BCCMD interface utility.

`--enable-dfutool`: This switch enables building of the DFU firmware upgrade utility.

`--enable-dund`: This switch enables building of the DUN daemon.

`--enable-hid2hci`: This switch enables building of the HID mode switching utility.

`--enable-hidd`: This switch enables building of the HID daemon.

`--enable-pand`: This switch enables building of the PAN daemon.

`--enable-tools`: This switch enables building of the Bluetooth utilities.

--enable-wiimote: This switch enables building of the Wii Remote plugin.  
--disable-test: This switch disables installation of the test programs.  
--without-systemdunitdir: This switch disables installation of the systemd units.  
--enable-cups: This switch enables CUPS backend support. Note that CUPS does not need to be installed for this support.

## Configuring BlueZ

### Config Files

/etc/bluetooth/audio.conf, /etc/bluetooth/input.conf, /etc/bluetooth/main.conf,  
/etc/bluetooth/network.conf, /etc/bluetooth/rfcomm.conf and /etc/bluetooth/  
serial.conf

### Boot Script

To automatically start the **bluetoothd** daemon when the system is rebooted, install the /etc/rc.d/init.d/bluetooth bootscript from the blfs-bootscripts-20130512 package.

```
make install-bluetooth
```

## Contents

<b>Installed Programs:</b>	bccmd, bluetoothd, ciptool, dfutool, dund, gatttool, hciattach, hciconfig, hcitool, hid2hci, hidd, l2ping, pand, rfcomm and sdptool
<b>Installed Library:</b>	libbluetooth.so
<b>Installed Directories:</b>	/etc/bluetooth, /usr/include/bluetooth, /usr/lib/bluetooth, /usr/share/doc/bluez-4.101 and /var/lib/bluetooth

## Short Descriptions

<b>bccmd</b>	is used to issue BlueCore commands to Cambridge Silicon Radio devices.
<b>bluetoothd</b>	is the Bluetooth daemon.
<b>ciptool</b>	is used to set up, maintain, and inspect the CIP configuration of the Bluetooth subsystem in the Linux kernel.
<b>dfutool</b>	is used to verify, archive and upgrade firmware files.
<b>dund</b>	is the Bluetooth dial-up networking daemon.
<b>hciattach</b>	is used to attach a serial UART to the Bluetooth stack as HCI transport interface.
<b>hciconfig</b>	is used to configure Bluetooth devices.
<b>hcitool</b>	is used to configure Bluetooth connections and send some special command to Bluetooth devices.
<b>hid2hci</b>	is used to set up switch supported Bluetooth devices into the HCI mode and back.
<b>hidd</b>	is the Bluetooth HID daemon.
<b>l2ping</b>	is used to send a L2CAP echo request to the Bluetooth MAC address given in dotted hex notation.

<b>pand</b>	is the Bluetooth daemon that allows you to connect to ethernet networks using Bluetooth.
<b>rfcomm</b>	is used to set up, maintain, and inspect the RFCOMM configuration of the Bluetooth subsystem in the Linux kernel.
<b>sdptool</b>	is used to perform SDP queries on Bluetooth devices.
<b>libbluetooth.so</b>	contains the BlueZ API functions.

# Colord-1.0.0

## Introduction to Colord

Colord is a system activated daemon that maps devices to color profiles. It is used by GNOME Color Manager for system integration and use when there are no users logged in.

This package is known to build and work properly using an LFS-7.3 platform.

## Package Information

- Download (HTTP): <http://www.freedesktop.org/software/colord/releases/colord-1.0.0.tar.xz>
- 
- Download MD5 sum: 5b0c442a2a87c3688b17e1547452ffcb
- Download size: 1.1 MB
- Estimated disk space required: 35 MB
- Estimated build time: 0.4 SBU

## Colord Dependencies

### Required

D-Bus-1.6.10, libgusb-0.1.6, Little CMS-2.4 and SQLite-3.7.16.2

### Recommended

gobject-introspection-1.34.2, Polkit-0.111, udev-Installed LFS Version or udev-extras (from systemd) (for GUdev) and Vala-0.18.1

### Optional

Bash Completion, colord-gtk-0.1.25 and gnome-desktop-3.6.2 (To build the example tools), DocBook-utils-0.6.14, GTK-Doc-1.18 and SANE-1.0.23

## Installation of Colord

There should be a dedicated user and group to take control of the **colord** daemon after it is started. Issue the following commands as the `root` user:

```
groupadd -g 71 colord &&
useradd -c "Color Daemon Owner" -d /var/lib/colord -u 71 \
        -g colord -s /bin/false colord
```

Install Colord by running the following commands:

```
./configure --prefix=/usr \
            --sysconfdir=/etc \
            --localstatedir=/var \
            --libexecdir=/usr/lib/colord \
            --with-daemon-user=colord \
            --enable-vala \
            --disable-bash-completion \
            --disable-systemd-login \
            --disable-static &&
make
```

Now, as the root user:

```
make install
```

To test the results, issue: **make check**. Note that system-wide D-Bus daemon must be running or the tests will fail.

## Command Explanations

**--with-daemon-user=colord**: This switch is used so the **colord** daemon will run as an unprivileged user instead of root user.

**--enable-vala**: This switch enables building of the Vala bindings. Remove if you don't have Vala-0.18.1 installed.

**--disable-bash-completion**: This switch disables Bash Completion support for Colord apps.

**--disable-systemd-login**: This switch prevents **configure** to look for Systemd libraries since Systemd is not part of LFS or BLFS.

**--disable-static**: This switch prevents installation of static versions of the libraries.

**--enable-gtk-doc**: Use this parameter if GTK-Doc is installed and you wish to rebuild and install the API documentation.

## Contents

<b>Installed Programs:</b>	cd-create-profile, cd-fix-profile, cd-iccdump, colord, colord-sane, colord-session and colormngr
<b>Installed Libraries:</b>	libcolordprivate.so, libcolord.so and libcolorhug.so
<b>Installed Directories:</b>	/usr/include/colord-1, /usr/lib/colord, /usr/lib/colord-plugins, /usr/lib/colord-sensors, /usr/share/color, /usr/share/colord, /usr/share/gtk-doc/html/colord and /var/lib/colord

## Short Descriptions

<b>cd-create-profile</b>	is a Color Manager Profile Creation Tool.
<b>cd-fix-profile</b>	is a tool used to fix metadata in ICC profiles.
<b>colormngr</b>	is a text-mode program that allows you to interact with colord on the command line.
<b>libcolord.so</b>	contains the Colord API functions.

# cpio-2.11

## Introduction to cpio

The cpio package contains tools for archiving.

This package is known to build and work properly using an LFS-7.3 platform.

## Package Information

- Download (HTTP): <http://ftp.gnu.org/pub/gnu/cpio/cpio-2.11.tar.bz2>
- Download (FTP): <ftp://ftp.gnu.org/pub/gnu/cpio/cpio-2.11.tar.bz2>
- Download MD5 sum: 20fc912915c629e809f80b96b2e75d7d
- Download size: 1 MB
- Estimated disk space required: 13 MB
- Estimated build time: 0.3 SBU

## Installation of cpio

Install cpio by running the following commands:

```
sed -i -e '/gets is a/d' gnu/stdio.in.h &&
./configure --prefix=/usr      \
             --bindir=/bin    \
             --libexecdir=/tmp \
             --enable-mt      \
             --with-rmt=/usr/sbin/rmt &&
make &&
makeinfo --html              -o doc/html      doc/cpio.texi &&
makeinfo --html --no-split   -o doc/cpio.html doc/cpio.texi &&
makeinfo --plaintext         -o doc/cpio.txt  doc/cpio.texi
```

If you have texlive-20120701 installed and wish to create PDF or Postscript documentation, issue one or both of the following commands:

```
make -C doc pdf &&
make -C doc ps
```

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

Now, as the **root** user:

```
make install &&
install -v -m755 -d /usr/share/doc/cpio-2.11/html &&
install -v -m644   doc/html/* \
                  /usr/share/doc/cpio-2.11/html &&
install -v -m644   doc/cpio.{html,txt} \
                  /usr/share/doc/cpio-2.11
```

If you built PDF or Postscript documentation, install it by issuing the following commands as the **root** user:

```
install -v -m644 doc/cpio.{pdf,ps,dvi} \
                  /usr/share/doc/cpio-2.11
```

## Command Explanations

`sed -i -e '/gets is a/d' gnu/stdio.in.h &&`: This fixes an incompatability with glibc-2.16.0.

`--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.

`--enable-mt`: This parameter forces the building and installation of the **mt** program.

`--with-rmt=/usr/sbin/rmt`: This parameter inhibits building the **rmt** program as it is already installed by the Tar package in LFS.

## Contents

<b>Installed Programs:</b>	cpio and mt
<b>Installed Libraries:</b>	None
<b>Installed Directories:</b>	/usr/share/doc/cpio-2.11

## Short Descriptions

**cpio** copies files to and from archives.

**mt** controls magnetic tape drive operations.

# D-Bus-1.6.10

## Introduction to D-Bus

D-Bus is a message bus system, a simple way for applications to talk to one another. D-Bus supplies both a system daemon (for events such as “new hardware device added” or “printer queue changed”) and a per-user-login-session daemon (for general IPC needs among user applications). Also, the message bus is built on top of a general one-to-one message passing framework, which can be used by any two applications to communicate directly (without going through the message bus daemon).

This package is known to build and work properly using an LFS-7.3 platform.

### Package Information

- Download (HTTP): <http://dbus.freedesktop.org/releases/dbus/dbus-1.6.10.tar.gz>
- 
- Download MD5 sum: de4970c20629aeb958a12132415b3630
- Download size: 1.9 MB
- Estimated disk space required: 105 MB
- Estimated build time: 0.4 SBU

### D-Bus Dependencies

#### Required

expat-2.1.0 or libxml2-2.9.1

#### Recommended

Xorg Libraries (for **dbus-launch** program)

#### Optional

D-Bus GLib Bindings-0.100.2 (to run tests), Python-2.7.5 (to run tests) and Doxygen-1.8.4 (to generate the API documentation)

Note that the **configure** script will look for xmlto-0.0.25 but it does nothing as the XML/HTML documentation is already shipped in the source tree.

## Installation of D-Bus

As the `root` user, create a system user and group to handle the system message bus activity:

```
groupadd -g 18 messagebus &&
useradd -c "D-Bus Message Daemon User" -d /var/run/dbus \
-u 18 -g messagebus -s /bin/false messagebus
```

Install D-Bus by running the following commands (you may wish to review the output from **./configure --help** first and add any desired parameters to the **configure** command shown below):

```
./configure --prefix=/usr \
            --sysconfdir=/etc \
            --localstatedir=/var \
            --libexecdir=/usr/lib/dbus-1.0 \
            --with-console-auth-dir=/run/console/ \
            --without-systemdsystemunitdir \
            --disable-systemd \
            --disable-static &&
make
```

See below for test instructions.

Now, as the `root` user:

```
make install &&
mv -v /usr/share/doc/dbus /usr/share/doc/dbus-1.6.10
```

If you are still building your system in chroot or you did not start the daemon yet, but you want to compile some packages that require D-Bus, generate D-Bus UUID to avoid warnings when compiling some packages with the following command as the `root` user:

```
dbus-uuidgen --ensure
```

The dbus tests cannot be run until after D-Bus GLib Bindings-0.100.2 has been installed. The tests require passing additional parameters to **configure** and exposing additional functionality in the binaries. These interfaces are not intended to be used in a production build of D-Bus. If you would like to run the unit tests, issue the following commands:

```
make distclean &&
./configure --enable-tests --enable-asserts &&
make &&
make check &&
make distclean
```

Note there has been a report that the tests may fail if running inside a Midnight Commander shell. You may get out-of-memory error messages when running the tests. These are normal and can be safely ignored.

## Command Explanations

- with-console-auth-dir=/run/console/**: This parameter specifies location of the ConsoleKit auth dir.
- without-systemdsystemunitdir**: This switch prevents installation of systemd unit files.
- disable-systemd**: This switch disables systemd support in D-Bus
- disable-static**: This switch prevents installation of static versions of the libraries.
- enable-tests**: Build extra parts of the code to support testing. Configure will end with a NOTE warning about this.
- enable-asserts**: Enable debugging code to run assertions for statements normally assumed to be true. This prevents a warning that '`--enable-tests`' on its own is only useful for profiling and might not give true results for all tests, but adds its own NOTE that this should not be used in a production build.

# Configuring dbus

## Config Files

```
/etc/dbus-1/session.conf, /etc/dbus-1/system.conf and /etc/dbus-1/system.d/*
```

## Configuration Information

The configuration files listed above should probably not be modified. If changes are required, you should create /etc/dbus-1/session-local.conf and/or /etc/dbus-1/system-local.conf and make any desired changes to these files.

If any packages install a D-Bus .service file outside of the standard /usr/share/dbus-1/services directory, that directory should be added to the local session configuration. For instance, /usr/local/share/dbus-1/services can be added by performing the following commands as the root user:

```
cat > /etc/dbus-1/session-local.conf << "EOF"
<!DOCTYPE busconfig PUBLIC
"-//freedesktop//DTD D-BUS Bus Configuration 1.0//EN"
"http://www.freedesktop.org/standards/dbus/1.0/busconfig.dtd">
<busconfig>

    <!-- Search for .service files in /usr/local -->
    <servicedir>/usr/local/share/dbus-1/services</servicedir>

</busconfig>
EOF
```

## Boot Script

To automatically start **dbus-daemon** when the system is rebooted, install the /etc/rc.d/init.d/dbus bootscript from the blfs-bootscripts-20130512 package.

```
make install-dbus
```

Note that this boot script only starts the system-wide D-Bus daemon. Each user requiring access to D-Bus services will also need to run a session daemon as well. There are many methods you can use to start a session daemon using the **dbus-launch** command. Review the **dbus-launch** man page for details about the available parameters and options. Here are some suggestions and examples:

- Add **dbus-launch** to the line in the ~/.xinitrc file that starts your graphical desktop environment.
- If you use **xdm** or some other display manager that calls the ~/.xsession file, you can add **dbus-launch** to the line in your ~/.xsession file that starts your graphical desktop environment. The syntax would be similar to the example in the ~/.xinitrc file.
- The examples shown previously use **dbus-launch** to specify a program to be run. This has the benefit (when also using the **--exit-with-session** parameter) of stopping the session daemon when the specified program is stopped. You can also start the session daemon in your system or personal startup scripts by adding the following lines:

```
# Start the D-Bus session daemon
eval `dbus-launch`
export DBUS_SESSION_BUS_ADDRESS
```

This method will not stop the session daemon when you exit your shell, therefore you should add the following line to your `~/.bash_logout` file:

```
# Kill the D-Bus session daemon
kill $DBUS_SESSION_BUS_PID
```

- A hint has been written that provides ways to start scripts using the KDM session manager of KDE. The concepts in this hint could possibly be used with other session managers as well. The hint is located at <http://www.linuxfromscratch.org/hints/downloads/files/execute-session-scripts-using-kdm.txt>.

## Contents

<b>Installed Programs:</b>	dbus-cleanup-sockets, dbus-daemon, dbus-launch, dbus-monitor, dbus-send and dbus-uuidgen
<b>Installed Library:</b>	libdbus-1.so
<b>Installed Directories:</b>	/etc/dbus-1, /usr/include/dbus-1.0, /usr/lib/dbus-1.0, /usr/share/dbus-1, /usr/share/doc/dbus-1.6.10 and /var/lib/dbus

## Short Descriptions

<b>dbus-cleanup-sockets</b>	is used to clean up leftover sockets in a directory.
<b>dbus-daemon</b>	is the D-Bus message bus daemon.
<b>dbus-launch</b>	is used to start <b>dbus-daemon</b> from a shell script. It would normally be called from a user's login scripts.
<b>dbus-monitor</b>	is used to monitor messages going through a D-Bus message bus.
<b>dbus-send</b>	is used to send a message to a D-Bus message bus.
<b>dbus-uuidgen</b>	is used to generate a universally unique ID.
<b>libdbus-1.so</b>	contains the API functions used by the D-Bus message daemon. D-Bus is first a library that provides one-to-one communication between any two applications; <b>dbus-daemon</b> is an application that uses this library to implement a message bus daemon.

# D-Bus Bindings

## Introduction to D-Bus Bindings

The D-Bus Bindings are a group of packages that contain programming language and platform interfaces to the D-Bus API. This is useful for programmers to easily interface D-Bus with their supported platform or language of choice. Some non-D-Bus packages will require one or more of the Bindings packages in order to build successfully.

The GLib and Python bindings are included on this page. Other language bindings are available at the *D-Bus Bindings* page for information.

- D-Bus GLib Bindings-0.100.2
- D-Bus Python Bindings-1.1.1

## D-Bus GLib Bindings

### Introduction to D-Bus GLib Bindings

This package is known to build and work properly using an LFS-7.3 platform.

#### Package Information

- Download (HTTP): <http://dbus.freedesktop.org/releases/dbus-glib/dbus-glib-0.100.2.tar.gz>
- 
- Download MD5 sum: ad0920c7e3aad669163bb59171cf138e
- Download size: 732 KB
- Estimated disk space required: 12 MB
- Estimated build time: 0.1 SBU

#### D-Bus GLib Dependencies

##### Required

D-Bus-1.6.10, expat-2.1.0 and GLib-2.34.3

##### Optional to Build the API Documentation

Doxygen-1.8.4

## Installation of D-Bus GLib Bindings

Install D-Bus GLib Bindings by running the following commands:

```
./configure --prefix=/usr \
            --sysconfdir=/etc \
            --libexecdir=/usr/lib/dbus-1.0 \
            --disable-static &&
make
```

To test the results, issue: **make check**. Note that more comprehensive tests can be run by following the same method used in D-Bus instructions, which requires building the package twice.

Now, as the root user:

```
make install
```

## Command Explanations

`--disable-static`: This switch prevents installation of static versions of the libraries.

`--enable-gtk-doc`: Use this parameter if GTK-Doc is installed and you wish to rebuild and install the API documentation.

## Contents

**Installed Program:** dbus-binding-tool

**Installed Library:** libdbus-glib-1.so

**Installed Directories:** /usr/share/gtk-doc/html/dbus-glib and /usr/share/doc/dbus-glib-0.100.2

## Short Descriptions

**dbus-binding-tool** is a tool used to interface with the D-Bus API.

**libdbus-glib-1.so** contains GLib interface functions to the D-Bus API.

## D-Bus Python Bindings

### Introduction to D-Bus Python Bindings

This package is known to build and work properly using an LFS-7.3 platform.

#### Package Information

- Download (HTTP): <http://dbus.freedesktop.org/releases/dbus-python/dbus-python-1.1.1.tar.gz>
- 
- Download MD5 sum: 742c7432ad0f7c3f98291d58fa2e35dc
- Download size: 583 KB
- Estimated disk space required: 5.7 MB
- Estimated build time: 0.2 SBU

#### D-Bus Python Dependencies

##### Required

Python-2.7.5 and D-Bus GLib Bindings-0.100.2

##### Optional

PyGObject-2.28.6 (required to run the test suite)

##### Optional (Required to build the API and HTML Documentation)

Epydoc and Docutils

## Installation of D-Bus Python Bindings

Install D-Bus Python Bindings by running the following commands:

```
./configure --prefix=/usr \
            --docdir=/usr/share/doc/dbus-python-1.1.1 &&
make
```

To test the results, issue: **make check**. Note you must have PyGObject installed.

Now, as the root user:

```
make install
```

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

```
install -v -m755 -d /usr/share/doc/dbus-python-1.1.1/api &&
install -v -m644    api/* \
                   /usr/share/doc/dbus-python-1.1.1/api
```

## Contents

**Installed Programs:**

none

**Installed Libraries:**

Python D-Bus modules

**Installed Directories:**

/usr/lib/python2.7/site-packages/dbus and /usr/share/doc/dbus-python-1.1.1

# Eject-2.1.5

## Introduction to Eject

The Eject package is a program for ejecting removable media under software control.



### Note

Starting with util-linux-2.22, the **eject** program has been incorporated into that package. If you have installed util-linux-2.22 or later, this package is not needed.

This package is known to build and work properly using an LFS-7.2 platform.

## Package Information

- Download (HTTP): <http://www.paldo.org/paldo/sources/eject/eject-2.1.5.tar.bz2>
- Download (FTP): <ftp://mirrors.kernel.org/slackware/slackware-13.1/source/a/eject/eject-2.1.5.tar.bz2>
- Download MD5 sum: 5a6cab2184ae4ed21128054d931d558f
- Download size: 105 KB
- Estimated disk space required: 1 MB
- Estimated build time: less than 0.1 SBU

## Installation of Eject

Install Eject 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

<b>Installed Programs:</b>	eject and volname
<b>Installed Libraries:</b>	None
<b>Installed Directories:</b>	None

## Short Descriptions

**eject**        ejects removable media.

**volname**     returns the volume name.

# Fcron-3.1.2

## Introduction to Fcron

The Fcron package contains a periodical command scheduler which aims at replacing Vixie Cron. This package is known to build and work properly using an LFS-7.3 platform.

### Package Information

- Download (HTTP): <http://fcron.free.fr/archives/fcron-3.1.2.src.tar.gz>
- Download (FTP): <ftp://ftp.seul.org/pub/fcron/fcron-3.1.2.src.tar.gz>
- Download MD5 sum: 36bf213e15f3a480f2274f8e46cced0a
- Download size: 583 KB
- Estimated disk space required: 3.6 MB
- Estimated build time: 0.1 SBU

## Fcron Dependencies

### Optional

An MTA, *text editor* (default is **vi** from the Vim-7.3 package), Linux-PAM-1.1.6, 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 --prefix=/usr --sysconfdir=/etc \
--localstatedir=/var --without-sendmail --with-boot-install=no \
--with-dsssl-dir=/usr/share/sgml/docbook/dsssl-stylesheets-1.79 &&
make
```

This package does not come with a test suite.

Now, as the root user:

```
make install
```

## Command Explanations

**autoconf**: This command is required to rebuild `configure` using the fixed input file.

**--without-sendmail**: By default, Fcron will attempt to use the `sendmail` command from an MTA package to email you the results of the `fcron` script. This switch is used to disable default email notification. Omit the switch to enable the default. Alternatively, you can use the `--with-sendmail=</path/to/MTA>` to use a different mailer command.

**--with-boot-install=no**: This prevents installation of the bootscript included with the package.

**--with-editor=</path/to/editor>**: This switch allows you to set the default text editor.

**--with-dsssl-dir=</path/to/dsssl-stylesheets>**: Avoid a warning message about not finding the DSSSL stylesheets.

## 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`.

`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-20130512` package.

```
make install-fcron
```

## Contents

**Installed Programs:** `fcron`, `fcrondyn`, `fcronsighup`, and `fcrontab`

**Installed Libraries:** None

**Installed Directories:** `/usr/share/doc/fcron-3.1.2` and `/var/spool/fcron`

## Short Descriptions

**fcron** is the scheduling daemon.

- fcrondyn** is a user tool intended to interact with a running **fcron** daemon.
- fcronsighup** instructs **fcron** to reread the Fcron tables.
- frontab** is a program used to install, edit, list and remove the tables used by **fcron**.

# GPM-1.20.7

## 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!

This package is known to build and work properly using an LFS-7.3 platform.

## Package Information

- Download (HTTP): <http://www.nico.schottelius.org/software/gpm/archives/gpm-1.20.7.tar.bz2>
- 
- Download MD5 sum: bf84143905a6a903dbd4d4b911a2a2b8
- Download size: 820 KB
- Estimated disk space required: 7.4 MB
- Estimated build time: 0.1 SBU

## Installation of GPM

Install GPM by running the following commands:

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

This package does not come with a test suite.

Now, as the root user:

```
make install &&

install-info --dir-file=/usr/share/info/dir \
              /usr/share/info/gpm.info &&

ln -v -sfn libgpm.so.2.1.0 /usr/lib/libgpm.so &&
install -v -m644 conf/gpm-root.conf /etc &&

install -v -m755 -d /usr/share/doc/gpm-1.20.7/support &&
install -v -m644 doc/support/* \
              /usr/share/doc/gpm-1.20.7/support &&
install -v -m644 doc/{FAQ,HACK_GPM,README*} \
              /usr/share/doc/gpm-1.20.7
```

## Command Explanations

**./autogen.sh**: This command creates the missing **configure** script.

**install-info ...:** This package installs an `.info` file, but does not update the system `dir` file. This command makes the update.

**ln -v -sfn libgpm.so.2.1.0 /usr/lib/libgpm.so:** This command is used to create (or update) the `.so` symlink to the library.

## Configuring GPM

### Boot Script

Install the `/etc/rc.d/init.d/gpm` init script included in the `blfs-bootscripts-20130512` 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 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 -m [device] -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

<b>Installed Programs:</b>	disable-paste, display-buttons, display-coords, get-versions, gpm, gpm-root, hlttest, mev, and mouse-test
<b>Installed Library:</b>	<code>libgpm.{so,a}</code>
<b>Installed Directory:</b>	<code>/usr/share/doc/gpm-1.20.7</code>

## Short Descriptions

<b>disable-paste</b>	is a security mechanism used to disable the paste buffer.
<b>display-buttons</b>	is a simple program that reports the mouse buttons being pressed and released.
<b>display-coords</b>	is a simple program that reports the mouse coordinates.
<b>get-versions</b>	is used to report the GPM library and server versions.
<b>gpm</b>	is a cut and paste utility and mouse server for virtual consoles.
<b>gpm-root</b>	is a default handler for <b>gpm</b> . It is used to draw menus on the root window.
<b>hltest</b>	is a simple sample application using the high-level library, meant to be read by programmers trying to use the high-level library.
<b>mev</b>	is a program to report mouse events.
<b>mouse-test</b>	is a tool for determining the mouse type and device it's attached to.
<b>libgpm.{so,a}</b>	contains the API functions to access the GPM daemon.

# Hdparm-9.43

## Introduction to Hdparm

The Hdparm package contains an utility that is useful for controlling ATA/IDE controllers and hard drives both to increase performance and sometimes to increase stability.

This package is known to build and work properly using an LFS-7.3 platform.

### 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://downloads.sourceforge.net/hdparm/hdparm-9.43.tar.gz>
- 
- Download MD5 sum: f73233be118d86c779a8463d8b6a3cdb
- Download size: 132 KB
- Estimated disk space required: 1.1 MB
- Estimated build time: less than 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

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 bindprefix=/usr/ install
```

## Contents

<b>Installed Program:</b>	hdparm
<b>Installed Libraries:</b>	None
<b>Installed Directories:</b>	None

## Short Descriptions

**hdparm** provides a command-line interface to various hard disk ioctls supported by the stock Linux ATA/IDE device driver subsystem.

# IBus-1.5.2

## Introduction to IBus

IBus is an Intelligent Input Bus. It is a new input framework for Linux OS. It provides full featured and user friendly input method user interface.

This package is known to build and work properly using an LFS-7.3 platform.

## Package Information

- Download (HTTP): <http://ibus.googlecode.com/files/ibus-1.5.2.tar.gz>
- 
- Download MD5 sum: 1b6b9c91089767762e00f8b5858d1b59
- Download size: 1.8 MB
- Estimated disk space required: 50 MB
- Estimated build time: 0.4 SBU

## IBus Dependencies

### Required

DConf-0.14.1 and ISO Codes-3.42

### Recommended

gobject-introspection-1.34.2, GTK+-2.24.17 and Vala-0.18.1

### Optional

D-Bus Python Bindings-1.1.1, GTK-Doc-1.18 and *pyxdg*

## Installation of IBus

Install IBus by running the following commands:

```
./configure --prefix=/usr \
            --sysconfdir=/etc \
            --libexecdir=/usr/lib/ibus &&
make
```

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

Now, as the root user:

```
make install
```

## Command Explanations

- disable-gtk2: This switch disables building of the GTK+ 2 imodule. Use it if you have not installed GTK+ 2.
- enable-gtk-doc: Use this parameter if GTK-Doc is installed and you wish to rebuild and install the API documentation.

## Contents

<b>Installed Programs:</b>	ibus, ibus-daemon and ibus-setup
<b>Installed Library:</b>	libibus-1.0.so and im-ibus.so (GTK+ Immodule)
<b>Installed Directories:</b>	/etc/dconf/db/ibus.d, /usr/include/ibus-1.0, /usr/lib/ibus, /usr/share/gtk-doc/html/ibus and /usr/share/ibus

## Short Descriptions

<b>ibus-daemon</b>	is the Intelligent Input Bus Daemon.
<b>ibus-setup</b>	is the GTK+ program used to configure the <b>ibus-daemon</b> .
<b>libibus-1.0.so</b>	contains IBus API functions.

# LSB Tools for managing bootscripts

## Introduction to initd-tools

The initd-tools package contains programs to install and remove LSB based bootscripts.

This package is known to build and work properly using an LFS-7.2 platform.

## Package Information

- Download (HTTP): <http://people.freedesktop.org/~dbn/initd-tools/releases/initd-tools-0.1.3.tar.gz>
- 
- Download MD5 sum: ab6377700ace81ec5a556ebdbae1d8d9
- Download size: 291 KB
- Estimated disk space required: 2.6 MB
- Estimated build time: less than 0.1 SBU

## Installation of initd-tools

Install initd-tools 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

<b>Installed Program:</b>	install_initd and remove_initd
<b>Installed Libraries:</b>	
<b>Installed Directories:</b>	/usr/lib/lsb

## Short Descriptions

<b>install_initd</b>	installs a boot script and the necessary symbolic links using LSB methodology.
<b>remove_initd</b>	removes a boot script and the necessary symbolic links using LSB methodology.

# libarchive-3.1.2

## Introduction to libarchive

The libarchive library provides a single interface for reading/writing various compression formats.

This package is known to build and work properly using an LFS-7.2 platform.

### Package Information

- Download (HTTP): <http://www.libarchive.org/downloads/libarchive-3.1.2.tar.gz>
- 
- Download MD5 sum: efad5a503f66329bb9d2f4308b5de98a
- Download size: 4.4 MB
- Estimated disk space required: 60 MB
- Estimated build time: 0.5 SBU

## libarchive Dependencies

### Optional

acl-2.2.51, libxml2-2.9.1 or expat-2.1.0, LZO-2.06, Nettle-2.7 and OpenSSL-1.0.1e

## Installation of libarchive

Install libarchive by running the following commands:

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

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

Now, as the root user:

```
make install
```

## Command Explanations

**--disable-static**: This switch prevents installation of static versions of the libraries.

## Contents

<b>Installed Programs:</b>	bsdcpio and bsdtar
<b>Installed Libraries:</b>	libarchive.so
<b>Installed Directories:</b>	None

## Short Descriptions

<b>bsdcpio</b>	is a tool similar to <b>cpio</b> .
<b>bsdtar</b>	is a tool similar to GNU <b>tar</b> .
<b>libarchive.so</b>	is a library that can create and read several streaming archive formats.

# lm\_sensors-3.3.3

## Introduction to lm\_sensors

The lm\_sensors package provides user-space support for the hardware monitoring drivers in the Linux kernel. This is useful for monitoring the temperature of the CPU and adjusting the performance of some hardware (such as cooling fans).

This package is known to build and work properly using an LFS-7.3 platform.

## Package Information

- Download (HTTP): [http://dl.lm-sensors.org/lm-sensors/releases/lm\\_sensors-3.3.3.tar.bz2](http://dl.lm-sensors.org/lm-sensors/releases/lm_sensors-3.3.3.tar.bz2)
- Download (FTP): [ftp://ftp.netroedge.com/pub/lm-sensors/lm\\_sensors-3.3.3.tar.bz2](ftp://ftp.netroedge.com/pub/lm-sensors/lm_sensors-3.3.3.tar.bz2)
- Download MD5 sum: 73c2fcccdab6049d289c5e0c596192a1
- Download size: 172 KB
- Estimated disk space required: 2.4 MB
- Estimated build time: 0.1 SBU

## lm\_sensors Dependencies

### Required

which-2.20

### Optional

*RRDtool (required to build the **sensord** program)*

## Kernel Configuration

Getting your kernel config right is an iterative process that may require that you recompile your kernel a couple of times. The simplest way to go about it is to start by enabling modules and then compile everything that may be needed by Lm Sensors as a module:

```
General setup --->
 [*] Prompt for development and/or incomplete code/drivers

[*] Enable loadable module support --->

Bus options (PCI etc.) --->
 [*] PCI support

Device Drivers --->
 [*] I2C support
 [*] I2C device interface
 I2C Algorithms --->
 <M> (configure all of them as modules)
 I2C Hardware Bus support --->
 <M> (configure all of them as modules)
 I2C Hardware Bus support --->
 <M> (configure all of them as modules)
 [*] Hardware Monitoring support --->
 <M> (configure all of them as modules)
```

Recompile your kernel and reboot into the new kernel. Don't forget to **make modules\_install**. We will come back to the kernel in the Configuring section below.

## Installation of lm\_sensors

Install lm\_sensors by running the following commands:

```
make PREFIX=/usr \
BUILD_STATIC_LIB=0 \
MANDIR=/usr/share/man
```

This package does not come with a test suite.

Now, as the root user:

```
make PREFIX=/usr \
BUILD_STATIC_LIB=0 \
MANDIR=/usr/share/man install &&
install -v -m755 -d /usr/share/doc/lm_sensors-3.3.3 &&
cp -rv README INSTALL doc/* \
/usr/share/doc/lm_sensors-3.3.3
```

## Command Explanations

**BUILD\_STATIC\_LIB=0**: This parameter disables compiling and installing the static version of libsensors.

**PROG\_EXTRA=sensord:** This parameter enables compiling **sensord**, a daemon that can monitor your system at regular intervals. Compiling **sensord** requires *RRDtool*. Compiling RRDtool 1.4.6 requires a sed: **sed -i '/sv\_undef/d'** bindings/perl-shared/RRDs.xs.

## Configuring Lm Sensors

### Config File

/etc/sensors3.conf

### Configuration Information

To find out what hardware sensors your system has, issue the following command as the **root** user:

**sensors-detect**

The appropriate modules should have been loaded and a summary is displayed at the end. Now you know what is needed and you can recompile your kernel to enable just the options you need (i.e., don't enable the modules you cannot use).

## Contents

<b>Installed Programs:</b>	fancontrol, isadump, isaset, pwmconfig, sensors, sensors-conf-convert, sensors-detect, and optionally, sensord
<b>Installed Library:</b>	libsensors.so
<b>Installed Directories:</b>	/usr/include/sensors and /usr/share/doc/lm_sensors-3.3.3

### Short Descriptions

<b>fancontrol</b>	is a shell script for use with lm_sensors. It reads its configuration from a file, then calculates fan speeds from temperatures and sets the corresponding PWM outputs to the computed values.
<b>isadump</b>	is a small helper program to examine registers visible through the ISA bus. It is intended to probe any chip that lives on the ISA bus working with an address register and a data register (I2C-like access) or a flat range (of up to 256 bytes).
<b>isaset</b>	is a small helper program to set registers visible through the ISA bus.
<b>pwmconfig</b>	tests the pulse width modulation (PWM) outputs of sensors and configures fancontrol.
<b>sensors</b>	prints the current readings of all sensor chips.
<b>sensors-conf-convert</b>	is a Perl script to convert lm-sensors version 2 configuration files to work with version 3.
<b>sensors-detect</b>	is a Perl script that will walk you through the process of scanning your system for various hardware monitoring chips (sensors) supported by libsensors, or more generally by the lm_sensors tool suite.
<b>libsensors.so</b>	contains the lm_sensors API functions.

# MC-4.8.6

## 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.

This package is known to build and work properly using an LFS-7.2 platform.



### Note

The download site uses a self-signed security certificate. You will need to accept it as valid to get the source code.

## Package Information

- Download (HTTP): <http://anduin.linuxfromscratch.org/sources/BLFS/svn/m/mc-4.8.6.tar.xz>
- 
- Download MD5 sum: 9e50fac70c472dfa108e07152f88bdae
- Download size: 2.1 MB
- Estimated disk space required: 70 MB
- Estimated build time: 0.5 SBU

## MC Dependencies

### Required

GLib-2.34.3 and PCRE-8.32

### Optional

Doxxygen-1.8.4, GPM-1.20.7, Samba-3.6.12, S-Lang-2.2.4, UnZip-6.0, X Window System, and Zip-3.0

## Installation of MC

Install MC by running the following commands:

```
./configure --prefix=/usr      \
            --enable-charset  \
            --disable-static   \
            --sysconfdir=/etc \
            --with-screen=ncurses &&
make
```

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

Now, as the root user:

```
make install &&
cp -v doc/keybind-migration.txt /usr/share/mc
```

## Command Explanations

**--enable-charset:** This option adds support to **mcedit** for editing files in encodings different from the one implied by the current locale.

**--sysconfdir=/etc:** This option places the global configuration directory in /etc.

**--with-screen=ncurses:** This option is only required if the optional S-Lang-2.2.4 package is not installed.

**--with-screen=(slang/ncurses):** This parameter selects the screen library used by MC. S-Lang-2.2.4 is the default if found.

## Configuring MC

### Config Files

`~/.config/mc/*`

### Configuration Information

The `~/.config/mc` directory and its contents are created when you start **mc** for the first time. Then you can edit the main `~/.config/mc/ini` configuration file manually or through the MC shell. Consult the `mc(1)` man page for details.



#### Note

On 8.x versions of mc, keybind names used in `mc.keymap.*` files are changed. This is described in `keybind-migration.txt`.

## Contents

<b>Installed Programs:</b>	mc, mcdiff, mcedit, and mcview
<b>Installed Libraries:</b>	None
<b>Installed Directories:</b>	/etc/mc, /usr/libexec/mc, /usr/share/mc, <code>~/.config/mc</code>

## Short Descriptions

<b>cons.saver</b>	is used internally by <b>mc</b> for saving and restoring the text behind the panels on Linux text console.
<b>mc</b>	is a visual shell.
<b>mcedit</b>	is an internal file editor.
<b>mcdiff</b>	is an internal visual diff tool.
<b>mcview</b>	is an internal file viewer.

# obex-data-server-0.4.6

## Introduction to OBEX Data Server

OBEX Data Server package contains D-Bus service providing high-level OBEX client and server side functionality. This package is known to build and work properly using an LFS-7.2 platform.

### Package Information

- Download (HTTP): <http://tadas.dailyda.com/software/obex-data-server-0.4.6.tar.gz>
- 
- Download MD5 sum: 961ca5db6fe9c97024e133cc6203cc4d
- Download size: 196 KB
- Estimated disk space required: 2.2 MB
- Estimated build time: 0.1 SBU

### Additional Downloads

- Required patch: <http://www.linuxfromscratch.org/patches/blfs/svn/obex-data-server-0.4.6-build-fixes-1.patch>

### OBEX Data Server Dependencies

#### Required

D-Bus GLib Bindings-0.100.2, ImageMagick-6.8.5-6 or gdk-pixbuf-2.26.5 and OpenOBEX-1.7

## Installation of OBEX Data Server

Install OBEX Data Server by running the following commands:

```
patch -Np1 -i ../obex-data-server-0.4.6-build-fixes-1.patch &&
./configure --prefix=/usr --sysconfdir=/etc &&
make
```

This package does not come with a test suite.

Now, as the `root` user:

```
make install
```

## Contents

<b>Installed Program:</b>	obex-data-server
<b>Installed Libraries:</b>	None
<b>Installed Directory:</b>	/etc/obex-data-server

## Short Descriptions

**obex-data-server** is a D-Bus service providing OBEX functionality.

# Obexd-0.48

## Introduction to Obexd

The Obexd package contains D-Bus services providing OBEX client and server functionality. OBEX is a communications protocol that facilitates the exchange of binary objects between devices.

This package is known to build and work properly using an LFS-7.2 platform.

## Package Information

- Download (HTTP): <http://www.kernel.org/pub/linux/bluetooth/obexd-0.48.tar.xz>
- Download (FTP): <ftp://ftp.kernel.org/pub/linux/bluetooth/obexd-0.48.tar.xz>
- Download MD5 sum: dfb9bdd490a975616afa3a0c2bf53c88
- Download size: 344 KB
- Estimated disk space required: 6.5 MB
- Estimated build time: 0.2 SBU

## Obexd Dependencies

### Required

BlueZ-4.101 and libical-1.0

## Installation of Obexd

Install Obexd by running the following commands:

```
sed -i 's/#include <string.h>/&\n#include <stdio.h>/' plugins/mas.c &&
./configure --prefix=/usr --libexecdir=/usr/lib/obex &&
make
```

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

Now, as the root user:

```
make install
```

## Command Explanations

**sed -i 's/#include ...:** This sed fixes building against the Glibc 2.17.

## Contents

<b>Installed Programs:</b>	obex-client and obexd
<b>Installed Libraries:</b>	None
<b>Installed Directory:</b>	/usr/lib/obex

# pciutils-3.2.0

## Introduction to PCI Utils

The PCI Utils package contains a set of programs for listing PCI devices, inspecting their status and setting their configuration registers.

This package is known to build and work properly using an LFS-7.3 platform.

### Package Information

- Download (HTTP): <http://ftp.kernel.org/pub/software/utils/pciutils/pciutils-3.2.0.tar.xz>
- Download (FTP): <ftp://ftp.kernel.org/pub/software/utils/pciutils/pciutils-3.2.0.tar.xz>
- Download MD5 sum: adb27c2d6ca54405115c532ae4c348e6
- Download size: 272 KB
- Estimated disk space required: 3.7 MB
- Estimated build time: 0.1 SBU

## Installation of PCI Utils

Install PCI Utils by running the following commands:

```
make PREFIX=/usr \
      SHARED=DIR=/usr/share/misc \
      MANDIR=/usr/share/man \
      SHARED=yes ZLIB=no all
```

This package does not come with a test suite.

Now, as the root user:

```
make PREFIX=/usr \
      SHARED=DIR=/usr/share/misc \
      MANDIR=/usr/share/man \
      SHARED=yes ZLIB=no \
      install install-lib &&
chmod -v 755 /usr/lib/libpci.so.3.2.0
```

## Command Explanations

`SHARED=yes`: This parameter enables building of shared library instead of static one.

`ZLIB=no`: This parameter prevents compression of the `pci.ids` file.

## Configuring PCI Utils

The `pci.ids` data file is constantly being updated. To get a current version of this file, run `update-pciids` as the root user. This program requires the `which-2.20` script or program to find `cURL-7.30.0`, `Lynx-2.8.8dev.15` or `Wget-1.14` which are used to download the most current file, and then replace the existing file in `/usr/share/misc`.

You may wish to add an entry to root's (or any other user who has write privilege to /usr/share/misc) crontab to automatically update the pci.ids file periodically.

## Contents

<b>Installed Programs:</b>	lspci, setpci and update-pciids
<b>Installed Library:</b>	libpci.so
<b>Installed Directory:</b>	/usr/include/pci

## Short Descriptions

<b>lspci</b>	is an utility for displaying information about all PCI buses in the system and all devices connected to them.
<b>setpci</b>	is an utility for querying and configuring PCI devices.
<b>update-pciids</b>	fetches the current version of the PCI ID list. Requires cURL-7.30.0, Lynx-2.8.8dev.15 or Wget-1.14.
<b>libpci.so</b>	is library that allows applications to access the PCI subsystem.

# Raptor-2.0.9

## Introduction to Raptor

Raptor is a C library that provides a set of parsers and serializers that generate Resource Description Framework (RDF) triples.

This package is known to build and work properly using an LFS-7.2 platform.

## Package Information

- Download (HTTP): <http://download.librdf.org/source/raptor2-2.0.9.tar.gz>
- 
- Download MD5 sum: 4ceb9316488b0ea01acf011023cf7fff
- Download size: 1.8 MB
- Estimated disk space required: 30 MB
- Estimated build time: 0.2 SBU

## Raptor Dependencies

### Required

cURL-7.30.0 and libxslt-1.1.28

### Optional

GTK-Doc-1.18, ICU-51.1 and *libyajl*

## Installation of Raptor

Install Raptor by running the following commands:

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

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

Now, as the root user:

```
make install
```

## Command Explanations

**--disable-static**: This switch prevents installation of static versions of the libraries.

**--with-icu-config=/usr/bin/icu-config**: Use this switch if you have installed ICU-51.1 and wish to build Raptor with its support.

## Contents

<b>Installed Programs:</b>	raptor
<b>Installed Libraries:</b>	libraptor2.so
<b>Installed Directories:</b>	/usr/include/raptor2 and /usr/share/gtk-doc/html/raptor2

## Short Descriptions

**raptor** is a RDF parsing and serializing utility.

**libraptor2.so** contains the Raptor API functions.

# Rasql-0.9.30

## Introduction to Rasql

Rasql is a C library that handles Resource Description Framework (RDF) query language syntaxes, query construction and execution of queries returning results as bindings, boolean, RDF graphs/triples or syntaxes. It is required by Soprano to build Nepomuk.

This package is known to build and work properly using an LFS-7.3 platform.

## Package Information

- Download (HTTP): <http://download.librdf.org/source/rasql-0.9.30.tar.gz>
- 
- Download MD5 sum: b12c5f9cfdb6b04efce5a4a186b8416b
- Download size: 1.5 MB
- Estimated disk space required: 23 MB
- Estimated build time: 0.2 SBU

## Rasql Dependencies

### Required

Raptor-2.0.9

### Optional

libgcrypt-1.5.2

## Installation of Rasql

Install Rasql by running the following commands:

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

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

Now, as the root user:

```
make install
```

## Command Explanations

**--disable-static**: This switch prevents installation of static versions of the libraries.

## Contents

<b>Installed Programs:</b>	rasql-config and roqet
<b>Installed Library:</b>	librasql.so
<b>Installed Directories:</b>	/usr/include/rasql and /usr/share/gtk-doc/html/rasql

## Short Descriptions

**rasql-config** is a utility for retrieving the installation options of Rasql.

**roqet** is an RDF query utility.

# Redland-1.0.16

## Introduction to Redland

Redland is a set of free software C libraries that provide support for the Resource Description Framework (RDF). It is required by Soprano to build Nepomuk.

This package is known to build and work properly using an LFS-7.3 platform.

## Package Information

- Download (HTTP): <http://download.librdf.org/source/redland-1.0.16.tar.gz>
- 
- Download MD5 sum: 32f8e1417a64d3c6f2c727f9053f55ea
- Download size: 1.6 MB
- Estimated disk space required: 21 MB
- Estimated build time: 0.2 SBU

## Redland Dependencies

### Required

Rasqal-0.9.30

### Optional

Berkeley DB-5.3.21, libiodbc-3.52.8, SQLite-3.7.16.2, MySQL-5.6.11, PostgreSQL-9.2.4, Virtuoso-6.1.6 and 3store

## Installation of Redland

Install Redland by running the following commands:

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

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

Now, as the root user:

```
make install
```

## Command Explanations

**--disable-static**: This switch prevents installation of static versions of the libraries.

## Contents

<b>Installed Programs:</b>	rdfproc, redland-config and redland-db-upgrade
<b>Installed Libraries:</b>	librdf.so and /usr/lib/redland/librdf_storage_*.so
<b>Installed Directories:</b>	/usr/lib/redland, /usr/share/gtk-doc/html/redland and /usr/share/redland

## Short Descriptions

**rdfproc** is the Redland RDF processor utility.

**redland-config**

is a script to get information about the installed version of Redland.

**redland-db-upgrade**

upgrades older Redland databases to 0.9.12 format.

# sg3\_utils-1.35

## Introduction to sg3\_utils

The sg3\_utils package contains low level utilities for devices that use a SCSI command set. Apart from SCSI parallel interface (SPI) devices, the SCSI command set is used by ATAPI devices (CD/DVDs and tapes), USB mass storage devices, Fibre Channel disks, IEEE 1394 storage devices (that use the "SBP" protocol), SAS, iSCSI and FCoE devices (amongst others).

This package is known to build and work properly using an LFS-7.3 platform.

## Package Information

- Download (HTTP): [http://sg.danny.cz/sg/p/sg3\\_utils-1.35.tar.xz](http://sg.danny.cz/sg/p/sg3_utils-1.35.tar.xz)
- 
- Download MD5 sum: 01600b51611388c65b6954d99197d529
- Download size: 636 KB
- Estimated disk space required: 21 MB
- Estimated build time: 0.3 SBU

## Installation of sg3\_utils

Install sg3\_utils by running the following commands:

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

This package does not come with a test suite.

Now, as the root user:

```
make install
```

## Command Explanations

*--disable-static*: This switch prevents installation of static versions of the libraries.

## Contents

<b>Installed Programs:</b>	sg_compare_and_write, sg_copy_results, sg_dd, sg_decode_sense, sg_emc_trespass, sg_format, sg_get_config, sg_get_lba_status, sg_ident, sginfo, sg_inq, sg_logs, sg_luns, sg_map, sg_map26, sgm_dd, sg_modes, sg_opcodes, sgp_dd, sg_persist, sg_prevent, sg_raw, sg_rbuf, sg_rdac, sg_read, sg_read_block_limits, sg_read_buffer, sg_readcap, sg_read_long, sg_reassign, sg_referrals, sg_requests, sg_reset, sg_rmsn, sg_rtpg, sg_safte, sg_sanitize, sg_sat_identify, sg_sat_phy_event, sg_sat_set_features, sg_scan, sg_senddiag, sg_ses, sg_start, sg_stpg, sg_sync, sg_test_rwbuf, sg_turs, sg_unmap, sg_verify, sg_vpd, sg_write_buffer, sg_write_long, sg_write_same, sg_wr_mode and sg_xcopy
<b>Installed Library:</b>	libsgutils2.so
<b>Installed Directories:</b>	None

## Short Descriptions

<b>sg_compare_and_write</b>	sends the SCSI COMPARE AND WRITE command to device.
<b>sg_copy_results</b>	sends the SCSI RECEIVE COPY RESULTS command (XCOPY related).
<b>sg_dd</b>	copies data to and from files and devices. Specialised for devices that understand the SCSI command set.
<b>sg_decode_sense</b>	takes SCSI sense data in binary or as a sequence of ASCII hexadecimal bytes and decodes it.
<b>sg_emc_trespass</b>	changes ownership of a LUN from another Service-Processor to this one.
<b>sg_format</b>	format or resize a SCSI disk (perhaps change its block size).
<b>sg_get_config</b>	sends a SCSI GET CONFIGURATION command (MMC-4 +).
<b>sg_get_lba_status</b>	sends the SCSI GET LBA STATUS command.
<b>sg_ident</b>	sends a SCSI REPORT or SET IDENTIFYING INFORMATION command.
<b>sginfo</b>	access mode page information for a SCSI (or ATAPI) device.
<b>sg_inq</b>	sends a SCSI INQUIRY or ATA IDENTIFY (PACKET) DEVICE command and outputs the response.
<b>sg_logs</b>	access log pages with SCSI LOG SENSE command.
<b>sg_luns</b>	sends the SCSI REPORT LUNS command.
<b>sg_map</b>	displays mapping between linux sg and other SCSI devices.
<b>sg_map26</b>	maps a special file to a SCSI generic (sg) device (or vice versa).
<b>sgm_dd</b>	copies data to and from files and devices. Specialized for devices that understand the SCSI command set and does memory mapped transfers from sg devices.
<b>sg_modes</b>	reads mode pages with SCSI MODE SENSE command.
<b>sg_opcodes</b>	reports information on supported SCSI commands or task management functions.
<b>sgp_dd</b>	copies data to and from files and devices. Specialized for devices that understand the SCSI command set.
<b>sg_persist</b>	sends a SCSI PERSISTENT RESERVE (IN or OUT) command to manipulate registrations and reservations.
<b>sg_prevent</b>	sends a SCSI PREVENT ALLOW MEDIUM REMOVAL command.
<b>sg_raw</b>	sends an arbitrary SCSI command to a device.
<b>sg_rbuf</b>	reads data using SCSI READ BUFFER command.
<b>sg_rdac</b>	Display or Modify RDAC Redundant Controller Page.
<b>sg_read</b>	read blocks of data continually from same offset.
<b>sg_read_block_limits</b>	sends a SCSI READ BLOCK LIMITS command.
<b>sg_read_buffer</b>	sends a SCSI READ BUFFER command.
<b>sg_readcap</b>	sends a SCSI READ CAPACITY command.
<b>sg_read_long</b>	sends a SCSI READ LONG command.
<b>sg_reassign</b>	sends a SCSI REASSIGN BLOCKS command.

<b>sg_referrals</b>	sends the SCSI REPORT REFERRALS command.
<b>sg_requests</b>	sends one or more SCSI REQUEST SENSE commands.
<b>sg_reset</b>	sends SCSI device, target, bus or host reset; or checks reset state.
<b>sg_rmsn</b>	sends a SCSI READ MEDIA SERIAL NUMBER command.
<b>sg_rtpg</b>	sends a SCSI REPORT TARGET PORT GROUPS command.
<b>sg_safte</b>	fetch status from a SCSI Accessed Fault-Tolerant Enclosure (SAF-TE) device.
<b>sg_sanitize</b>	sends a SCSI SANITIZE command.
<b>sg_sat_identify</b>	sends a ATA IDENTIFY (PACKET) DEVICE command via a SCSI to ATA Translation (SAT) layer.
<b>sg_sat_phy_event</b>	sends an ATA READ LOG EXT command via a SAT pass through to fetch log page 11h which contains SATA phy event counters.
<b>sg_sat_set_features</b>	sends a ATA SET FEATURES command via a SCSI to ATA Translation (SAT) layer.
<b>sg_scan</b>	does a scan of sg devices (or given SCSI/ATAPI/ATA devices) and prints the results.
<b>sg_senddiag</b>	performs a SCSI SEND DIAGNOSTIC command.
<b>sg_ses</b>	sends controls and fetch status from a SCSI Enclosure Services (SES) device.
<b>sg_start</b>	sends SCSI START STOP UNIT command to start, stop, load or eject medium.
<b>sg_stpg</b>	sends a SCSI SET TARGET PORT GROUPS command.
<b>sg_sync</b>	sends the scsi command synchronize cache.
<b>sg_test_rwbuf</b>	tests the SCSI host adapter by issuing write and read operations on a device's buffer and calculating checksums.
<b>sg_turs</b>	sends one or more SCSI TEST UNIT READY commands.
<b>sg_unmap</b>	sends a SCSI UNMAP command.
<b>sg_verify</b>	invoke SCSI VERIFY command(s) on a block device.
<b>sg_vpd</b>	fetches Vital Product Data (VPD) pages using a SCSI INQUIRY command.
<b>sg_write_buffer</b>	sends a SCSI WRITE BUFFER command.
<b>sg_write_long</b>	sends the SCSI WRITE LONG command.
<b>sg_write_same</b>	sends the SCSI WRITE SAME command.
<b>sg_wr_mode</b>	writes mode page.
<b>sg_xcopy</b>	copies data to and from files and devices using SCSI EXTENDED COPY (XCOPY).
<b>libsgutils2.so</b>	contains the sg3_utils API functions.

# Strigi-0.7.8

## Introduction to Strigi

Strigi is a desktop search engine.

This package is known to build and work properly using an LFS-7.2 platform.

## Package Information

- Download (HTTP): <http://www.vandenoever.info/software/strigi/strigi-0.7.8.tar.bz2>
- 
- Download MD5 sum: d69443234f4286d71997db9de543331a
- Download size: 811 KB
- Estimated disk space required: 52 MB
- Estimated build time: 1.2 SBU

## Strigi Dependencies

### Required

CMake-2.8.11, expat-2.1.0 or libxml2-2.9.1

### Recommended

Qt-4.8.4 and D-Bus-1.6.10

### Optional

Gamin-0.1.10 (or FAM), FFmpeg-1.2.1, Exiv2-0.23, *CLucene* and *log4cxx*

## Installation of Strigi

Install strigi by running the following commands:

```
mkdir build &&
cd build &&
cmake -DCMAKE_INSTALL_PREFIX=/usr .. &&
make
```

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

Now, as the **root** user:

```
make install
```

## Contents

<b>Installed Programs:</b>	deepfind, deepgrep, rdfindexer, strigiclient, strigicmd, strigidaemon and xmlindexer
<b>Installed Libraries:</b>	libsearchclient.so, libstreamanalyzer.so, libstreams.so, libstrigihmlgui.so, libstrigiqtdbusclient.so and several in /usr/lib/strigi
<b>Installed Directories:</b>	/usr/include/strigi, /usr/lib/strigi and /usr/share/strigi

# Sysstat-10.0.5

## 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.

This package is known to build and work properly using an LFS-7.2 platform.

## Package Information

- Download (HTTP): <http://perso.wanadoo.fr/sebastien.godard/sysstat-10.0.5.tar.bz2>
- 
- Download MD5 sum: 688b34df4828a7575c5b44df88d1d910
- Download size: 280 KB
- Estimated disk space required: 7.1 MB
- Estimated build time: less than 0.1 SBU

## Sysstat Dependencies

There are no build-time requirements for this package; however, it is designed to be controlled by a cron daemon such as Fcron-3.1.2.

## Installation of Sysstat

Install Sysstat by running the following commands:

```
sa_lib_dir=/usr/lib/sa      \
sa_dir=/var/log/sa          \
conf_dir=/etc/sysconfig     \
./configure --prefix=/usr   \
              --disable-man-group &&
make
```

This package does not come with a test suite.

Now, as the **root** user:

```
make install
```

## Command Explanations

**sa\_lib\_dir**: This environment variable specifies the location of the package-specific library directory.

**sa\_dir**: This environment variable specifies the location of the directory containing the data files.

**conf\_dir**: This environment variable specifies the location of the system configuration directory.

**--disable-man-group**: This parameter causes the installation to ignore the man group variable resulting in the man files having **root:root** ownership.

Run **./configure --help** to see other influential environment variables you can pass to **configure**. You may want to use the **history** and **compressafter** variables to customize the amount of data files kept on the system.

# Configuring Sysstat

## Cron Information

To begin gathering Sysstat history information, you must add to, or create a privileged user's crontab. The 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-20130512 package using the following command as the root user:

```
make install-sysstat
```

## Contents

<b>Installed Programs:</b>	cifsiostat, iostat, mpstat, nfsiostat, pidstat, sadf, and sar
<b>Installed Libraries:</b>	None
<b>Installed Directories:</b>	/usr/lib/sa, /usr/share/doc/sysstat-10.0.5 and /var/log/sa

## Short Descriptions

<b>cifsiostat</b>	displays statistics about read and write operations on CIFS filesystems.
<b>iostat</b>	reports CPU statistics and input/output statistics for devices and partitions.
<b>mpstat</b>	writes activities for each available processor.
<b>nfsiostat</b>	displays statistics about read and write operations on NFS filesystems.
<b>pidstat</b>	is used for monitoring individual tasks currently being managed by the Linux kernel.
<b>sadf</b>	is used for displaying the contents of data files created by the <b>sar</b> command. But unlike <b>sar</b> , <b>sadf</b> can write its data in many different formats.
<b>sar</b>	is used for displaying the contents of elected cumulative activity counters in the operating system.

# Udev-Installed LFS Version

## Introduction to Udev



### Note

If you installed LFS from SVN-20120719, LFS-7.2, or later, use udev-extras (from systemd) instead of this page.

Udev was indeed installed in LFS and there is no reason to reinstall it unless you are going to install a package such as UPower. This installation of Udev enables extra features which includes gudev, a requirement for UPower and optionally used by other packages.

Unlike any other package in the BLFS book, there is no set version of Udev specified to download. Several version updates to LFS and none to BLFS means there are probably many different versions of Udev on the platforms that BLFS is being built upon. Therefore, you should download and use the version of Udev your computer currently uses. The BLFS team has no experience updating (or reverting to an older version) the Udev package “on the fly.” To discover the version of Udev your computer currently uses, issue **/sbin/udevadm --version**.

You should look at the LFS instructions for the version you used, to check that you are using the correct testfiles (for some versions, this was a separate tarball, extracted in the udev directory with `--strip-components=1`) and to compare the configure options you are about to use against those which you used to build the version you are running (sometimes, the options change).

This package is known to build and work properly using an LFS-7.0 platform. (Using Udev-173)

This package is known to build and work properly using an LFS-7.1 platform. (Using Udev-182)

## Package Information

- Download (HTTP): <http://www.kernel.org/pub/linux/utils/kernel/hotplug/>
- 
- Download size: ~500 KB
- Estimated disk space required: ~10 MB
- Estimated build time: ~1.8 SBU

## Udev Dependencies

### Required

acl-2.2.51, GLib-2.34.3, Gperf-3.0.4, pciutils-3.2.0, and usbutils-006

### Optional

gobject-introspection-1.34.2

## Installation of Udev

Install Udev by running the following commands:

```
./configure --prefix=/usr \
            --sysconfdir=/etc \
            --sbin=/sbin \
            --with-rootlibdir=/lib \
            --libexecdir=/lib \
            --with-systemdsystemunitdir=no \
            --disable-introspection \
            --docdir=/usr/share/doc/<udev-Installed LFS Version> &&
make
```

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

Now, as the root user:

```
make install
```

## Command Explanations

--enable-gtk-doc: Use this parameter if GTK-Doc is installed and you wish to rebuild and install the API documentation.

--disable-introspection: Remove this option if the optional dependency gobject-introspection is installed.

--with-systemdsystemunitdir=no: systemd is not used in (B)LFS.

## Contents

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

The following is some additional content information.

**Installed Programs:** findkeyboards, firmware, input\_id, keyboard-force-release.sh, keymap, modem-modeswitch, pci-db, udev-acl, usb-db, and v4l\_id

**Installed Library:** libgudev-1.0.so

**Installed Directories:** /lib/udev/keymaps/force-release, /usr/{include/gudev-1.0/gudev,share/{doc/udev-Installed LFS Version, gtk-doc/html/gudev}}

## Short Descriptions

**keymap** configures computer model specific key mappings.

**libgudev-1.0.so** is a GObject-based wrapper library for libudev.

# Udev Extras (from systemd)

## Introduction to Udev Extras

In 2012, the Udev code distribution was merged with systemd. Systemd is a set of programs that replace the SysVInit package used by LFS and is much more complex. It is not compatible with the LFS bootscripts and has many problems and few advantages for most LFS users.

The procedures below extract libraries and programs from the systemd sources that could not be built in LFS due to library dependency issues.

Unlike any other package in the BLFS book, there is no set version of systemd specified to download. Several version updates to LFS and BLFS means there are probably many different versions of Udev on the platforms that BLFS is being built upon. Therefore, you should download and use the version of systemd your computer currently uses. The BLFS team has no experience updating (or reverting to an older version) the Udev programs “on the fly.” To discover the version of Udev your computer currently uses, issue **/sbin/udevadm --version**.

This package is known to build and work properly using an LFS-7.3 platform.

## Package Information

- Download (HTTP): <http://www.freedesktop.org/wiki/Software/systemd/>
- 
- Download size: ~1.3 MB
- Estimated disk space required: ~16 MB
- Estimated build time: ~0.1 SBU

## Udev Extras Dependencies

### Required

<http://anduin.linuxfromscratch.org/sources/other/> (match the udev-lfs-???.tar.bz2 tarball version to the systemd version used in LFS). GLib-2.34.3 (for the gudev library), Gperf-3.0.4 (for keymap), and gobject-introspection-1.34.2 (for gir-data, needed for Gnome)

### Optional

acl-2.2.51

### Optional Runtime Dependencies

pciutils-3.2.0 and usbutils-006

## Installation of Udev Extras

First, put the custom LFS files in place:

```
tar -xf ../udev-lfs-186.tar.bz2
```

### Note

For udev-lfs-197-2.tar.bz2, there is a minor error in the Makefile. For that version, run:

```
sed -i -e '/samsung-9/d' udev-lfs-197-2/makefile-incl.keymap
```

## keymap

Support for special keys for many laptops is provided by the **keymap** program and supporting files. If the **keymap** capability is desired, use:

```
make -f udev-lfs-186/Makefile.lfs keymap
```

To install **keymap** and its associated files, issue the following command as the **root** user:

```
make -f udev-lfs-186/Makefile.lfs install-keymap
```

## gudev

To build the libgudev-1.0 library and interface files, run:

```
make -f udev-lfs-186/Makefile.lfs gudev
```

Install the **gudev** library, run, as the **root** user:

```
make -f udev-lfs-186/Makefile.lfs install-gudev
```

## GObject Files

To build the gobject-introspection interface (gir) files for the **libgudev-1.0** library, run:

```
make -f udev-lfs-186/Makefile.lfs gir-data
```

Install the gir data, as the **root** user:

```
make -f udev-lfs-186/Makefile.lfs install-gir-data
```



### Caution

There is a shortcut to build and install all of the udev components at once using the *all* and *install-all* **Makefile.lfs** targets. The installation of this target will overwrite the base LFS udev files and has not been thoroughly tested at the time of this writing. If using this procedure, the udev daemon should be stopped before overwriting the existing **udevd** and **udev** libraries.

## Contents

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

The following is some additional content information.

**Installed Programs:** findkeyboards, keyboard-force-release.sh, and keymap

**Installed Library:** libgudev-1.0.so

**Installed Directories:** /lib/udev/keymaps/force-release, /usr/include/gudev-1.0/gudev, /usr/lib/girepository-1.0, /usr/share/gir-1.0, and /usr/share/gtk-doc/html/gudev

## Short Descriptions

**keymap** configures computer model specific key mappings.

**libgudev-1.0.so** is a GObject-based wrapper library for libudev.

# UDisks-1.0.4

## Introduction to UDisks

The UDisks package provides a storage daemon that implements well-defined D-Bus interfaces that can be used to query and manipulate storage devices.

This package is known to build and work properly using an LFS-7.3 platform.

### Package Information

- Download (HTTP): <http://hal.freedesktop.org/releases/udisks-1.0.4.tar.gz>
- 
- Download MD5 sum: 86c63b2b5484f2060499a052b5b6256b
- Download size: 704 KB
- Estimated disk space required: 12 MB
- Estimated build time: 0.4 SBU

## udisks Dependencies

### Required

D-Bus GLib Bindings-0.100.2, libata-smart-0.19, LVM2-2.02.98, parted-3.1, Polkit-0.111, sg3\_utils-1.35, and udev- Installed LFS Version or udev-extras (from systemd) (for gudev)

### Optional

GTK-Doc-1.18 and Sudo-1.8.6p3 (to run the test)

## Installation of UDisks

Install UDisks by running the following commands:

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

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

Now, as the root user:

```
make install
```

## Command Explanations

**--enable-gtk-doc**: Use this parameter if GTK-Doc is installed and you wish to rebuild and install the API documentation.

## Contents

**Installed Programs:** udisks, udisks-daemon, udisks-tcp-bridge and umount.udisks

**Installed Libraries:** None

**Installed Directories:** /usr/lib/udisks, /usr/share/gtk-doc/html/udisks and /var/lib/udisks

## Short Descriptions

- udisks** is a simple command line interface for the UDisks Daemon.
- udisks-tcp-bridge** is the UDisks TCP/IP bridge.
- udisks-daemon** is the UDisks Daemon.

# UDisks-2.1.0

## Introduction to UDisks

The UDisks package provides a daemon, tools and libraries to access and manipulate disks and storage devices. This package is known to build and work properly using an LFS-7.2 platform.

### Package Information

- Download (HTTP): <http://udisks.freedesktop.org/releases/udisks-2.1.0.tar.bz2>
- 
- Download MD5 sum: a8c806034f096a8b10dfae1c4a917d0c
- Download size: 808 KB
- Estimated disk space required: 45 MB
- Estimated build time: 0.3 SBU

## UDisks Dependencies

### Required

acl-2.2.51, libatasmart-0.19, libxslt-1.1.28, Polkit-0.111, and udev-Installed LFS Version or udev-extras (from systemd) (for GUdev)

### Optional (Required if building GNOME)

gobject-introspection-1.34.2

### Optional

GTK-Doc-1.18

## Installation of UDisks

Install UDisks by running the following commands:

```
./configure --prefix=/usr \
            --sysconfdir=/etc \
            --localstatedir=/var \
            --disable-static &&
make
```

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

Now, as the **root** user:

```
make install
```

## Command Explanations

**--disable-static**: This switch prevents installation of static versions of the libraries.

**--enable-gtk-doc**: Use this parameter if GTK-Doc is installed and you wish to rebuild and install the API documentation.

## Contents

<b>Installed Programs:</b>	udisksctl, udisksd and umount.udisks2
<b>Installed Library:</b>	libudisks2.so
<b>Installed Directories:</b>	/etc/udisks2, /usr/include/udisks2, /usr/lib/udisks2, /usr/share/gtk-doc/html/udisks2 and /var/lib/udisks2

## Short Descriptions

<b>udisksctl</b>	is a command-line program used to interact with the <b>udisksd</b> daemon.
<b>udisksd</b>	is the UDisks daemon itself.
<b>libudisks2.so</b>	contains the UDisks API functions.

# UnRar-4.2.4

## Introduction to UnRar

The UnRar package contains a RAR extraction utility used for extracting files from RAR archives. RAR archives are usually created with WinRAR, primarily in a Windows environment.

This package is known to build and work properly using an LFS-7.3 platform.

## Package Information

- Download (HTTP): <http://www.rarlab.com/rar/unrarsrc-4.2.4.tar.gz>
- Download (FTP):
- Download MD5 sum: 8ea9d1b4139474b282d76e627a2de3e4
- Download size: 164 KB
- Estimated disk space required: 2 MB
- Estimated build time: 0.1 SBU

## Installation of UnRar

Install UnRar by running the following commands:

```
make -f makefile.unix
```

This package does not come with a test suite.

Now, as the `root` user:

```
install -v -m755 unrar /usr/bin
```

## Contents

<b>Installed Program:</b>	unrar
<b>Installed Libraries:</b>	None
<b>Installed Directories:</b>	None

## Short Descriptions

**unrar**   uncompresses a RAR archive.

# UnZip-6.0

## 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.

This package is known to build and work properly using an LFS-7.3 platform.



### Caution

The previous version of the UnZip package had some locale related issues. Currently there are no BLFS editors capable of testing these local issues. Therefore, the locale related information is left on this page, but has not been tested. A more general discussion of these problems can be found in the Program Assumes Encoding section of the Locale Related Issues page.

## Package Information

- Download (HTTP): <http://downloads.sourceforge.net/infozip/unzip60.tar.gz>
- 
- Download MD5 sum: 62b490407489521db863b523a7f86375
- Download size: 1.3 MB
- Estimated disk space required: 9 MB
- Estimated build time: Less than 0.1 SBU

## UnZip Locale Issues



### Note

Use of UnZip in the JDK, Mozilla, DocBook or any other BLFS package installation is not a problem, as BLFS instructions never use UnZip to extract a file with non-ASCII characters in the file's name.

The UnZip package assumes that filenames stored in the ZIP archives created on non-Unix systems are encoded in CP850, and that they should be converted to ISO-8859-1 when writing files onto the filesystem. Such assumptions are not always valid. In fact, inside the ZIP archive, filenames are encoded in the DOS codepage that is in use in the relevant country, and the filenames on disk should be in the locale encoding. In MS Windows, the OemToChar() C function (from User32 .DLL) does the correct conversion (which is indeed the conversion from CP850 to a superset of ISO-8859-1 if MS Windows is set up to use the US English language), but there is no equivalent in Linux.

When using **unzip** to unpack a ZIP archive containing non-ASCII filenames, the filenames are damaged because **unzip** uses improper conversion when any of its encoding assumptions are incorrect. For example, in the ru\_RU.KOI8-R locale, conversion of filenames from CP866 to KOI8-R is required, but conversion from CP850 to ISO-8859-1 is done, which produces filenames consisting of undecipherable characters instead of words (the closest equivalent understandable example for English-only users is rot13). There are several ways around this limitation:

- 1) For unpacking ZIP archives with filenames containing non-ASCII characters, use *WinZip* while running the *Wine* Windows emulator.
- 2) After running **unzip**, fix the damage made to the filenames using the **convmv** tool (<http://j3e.de/linux/convmv/>). The following is an example for the ru\_RU.KOI8-R locale:

Step 1. Undo the conversion done by **unzip**:

```
convmv -f iso-8859-1 -t cp850 -r --nosmart --notest \
</path/to/unzipped/files>
```

Step 2. Do the correct conversion instead:

```
convmv -f cp866 -t koi8-r -r --nosmart --notest \
</path/to/unzipped/files>
```

## Installation of UnZip

```
case `uname -m` in
i?86)
    sed -i -e 's/DASM"/DASM -DNO_LCHMOD"/' unix/Makefile
    make -f unix/Makefile linux
    ;;
*)
    sed -i -e 's/CFLAGS="-O -Wall/& -DNO_LCHMOD/' unix/Makefile
    make -f unix/Makefile linux_noasm
    ;;
esac
```

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

Now, as the root user:

```
make prefix=/usr install
```

## Command Explanations

**sed ...:** This command ensures an obsolete system call is not made.

**linux, linux\_noasm:** The `linux` target in the `Makefile` makes assumptions that are useful for a Linux system when compiling the executables, but also uses some 32-bit x86 assembler code. The `linux_noasm` target will build on all linux hosts. To obtain alternatives to these targets, use **make -f unix/Makefile list**

## Contents

<b>Installed Programs:</b>	funzip, unzip, unzipfsx, zipgrep, and zipinfo
<b>Installed Libraries:</b>	None
<b>Installed Directories:</b>	None

## Short Descriptions

<b>funzip</b>	allows the output of <b>unzip</b> commands to be redirected.
<b>unzip</b>	lists, tests or extracts files from a ZIP archive.
<b>unzipfsx</b>	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.
<b>zipgrep</b>	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.

# UPower-0.9.20

## Introduction to UPower

The UPower package provides an interface to enumerating power devices, listening to device events and querying history and statistics. Any application or service on the system can access the org.freedesktop.UPower service via the system message bus.

This package is known to build and work properly using an LFS-7.3 platform.

## Package Information

- Download (HTTP): <http://upower.freedesktop.org/releases/upower-0.9.20.tar.xz>
- 
- Download MD5 sum: f175984d142dc8d2353a7da609836b69
- Download size: 404 KB
- Estimated disk space required: 13 MB
- Estimated build time: 0.2 SBU

## UPower Dependencies

### Required

D-Bus GLib Bindings-0.100.2, Intltool-0.50.2, libusb-1.0.9, Polkit-0.111, and udev-Installed LFS Version or udev-extras (from systemd) (for GUdev)

### Optional (Required if building GNOME)

gobject-introspection-1.34.2

### Optional

GTK-Doc-1.18 and Python-3.3.2 (used only in the testsuite).

## Installation of UPower

Install UPower by running the following commands:

```
./configure --prefix=/usr \
            --sysconfdir=/etc \
            --localstatedir=/var \
            --libexecdir=/usr/lib/upower \
            --enable-deprecated \
            --disable-static &&
make
```

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

Now, as the root user:

```
make install
```

## Command Explanations

- enable-deprecated: This switch enables deprecated functionality which is still needed by some applications.
- disable-static: This switch prevents installation of static versions of the libraries.
- enable-gtk-doc: Use this parameter if GTK-Doc is installed and you wish to rebuild and install the API documentation.

## Configuring your kernel for UPower

To use the command **upower -w** for information about processor wakeups (this command is used by gnome-power-manager-3.6.0) you need to enable CONFIG\_TIMER\_STATS. This is achieved in **make menuconfig** by going to the 'kernel-hacking' menu and selecting 'Collect kernel timers statistics'.

## Contents

<b>Installed Programs:</b>	upower and upowerd
<b>Installed Libraries:</b>	libupower-glib.so
<b>Installed Directories:</b>	/etc/UPower, /usr/include/libupower-glib, /usr/lib/upower and /var/lib/upower

## Short Descriptions

<b>upower</b>	is the UPower command line tool.
<b>upowerd</b>	is the UPower Daemon. It provides the org.freedesktop.UPower service on the system message bus.
<b>libupower-glib.so</b>	contains the UPower API functions.

# usbutils-006

## Introduction to USB Utils

The USB Utils package contains an utility used to display information about USB buses in the system and the devices connected to them.

This package is known to build and work properly using an LFS-7.3 platform.

### Package Information

- Download (HTTP): <http://ftp.kernel.org/pub/linux/utils/usb/usbutils/usbutils-006.tar.xz>
- Download (FTP): <ftp://ftp.kernel.org/pub/linux/utils/usb/usbutils/usbutils-006.tar.xz>
- Download MD5 sum: c9aa14ee3d6c991fda183f42cf72a8a8
- Download size: 400 KB
- Estimated disk space required: 6.0 MB
- Estimated build time: 0.1 SBU

## USB Utils Dependencies

### Required

libusb-1.0.9 and pkg-config-0.28

## Installation of USB Utils

Install USB Utils by running the following commands:

```
./configure --prefix=/usr \
            --datadir=/usr/share/misc \
            --disable-zlib &&
make
```

This package does not come with a test suite.

Now, as the root user:

```
make install &&
mv -v /usr/sbin/update-usbids.sh /usr/sbin/update-usbids
```

## Command Explanations

--disable-zlib: This stops USB Utils from installing a compressed `usb.ids` alongside the uncompressed one.

## Configuring USB Utils

The `usb.ids` data file is constantly being updated. To get a current version of this file, run **update-usbids** as the root user. This program requires the `which-2.20` script or program to find `Lynx-2.8.8dev.15` or `Wget-1.14` which are used to download the most current file, and replace the existing file in `/usr/share/misc`.

You may wish to add an entry to root's (or any other user who has write privilege to `/usr/share/misc`) crontab to automatically update the `usb.ids` file periodically.

## Contents

<b>Installed Programs:</b>	lsusb, update-usbids, usb-devices and usbhid-dump
<b>Installed Libraries:</b>	None
<b>Installed Directories:</b>	None

## Short Descriptions

<b>lsusb</b>	is an utility for displaying information about all USB buses in the system and all devices connected to them.
<b>update-usbids</b>	downloads the current version of the USB ID list. Requires Lynx-2.8.8dev.15 or Wget-1.14.
<b>usb-devices</b>	is a shell script that displays details of USB buses and devices connected to them. It is designed to be used if /proc/bus/usb/devices is not available on your system.
<b>usbhid-dump</b>	is used to dump report descriptors and streams from HID (human interface device) interfaces of USB devices.

# Which-2.20 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.

This package is known to build and work properly using an LFS-7.3 platform.

## Introduction to Which

### Package Information

- Download (HTTP): <http://www.xs4all.nl/~carlo17/which/which-2.20.tar.gz>
- Download (FTP): <ftp://ftp.gnu.org/gnu/which/which-2.20.tar.gz>
- Download MD5 sum: 95be0501a466e515422cde4af46b2744
- Download size: 135 KB
- Estimated disk space required: 1 MB
- 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

<b>Installed Program:</b>	which
<b>Installed Libraries:</b>	None
<b>Installed Directories:</b>	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.

# Zip-3.0

## Introduction to Zip

The Zip package contains Zip utilities. These are useful for compressing files into ZIP archives.

This package is known to build and work properly using an LFS-7.3 platform.

### Package Information

- Download (HTTP): <http://downloads.sourceforge.net/infozip/zip30.tar.gz>
- Download (FTP): <ftp://ftp.info-zip.org/pub/infozip/src/zip30.tgz>
- Download MD5 sum: 7b74551e63f8ee6aab6fbc86676c0d37
- Download size: 1.1 MB
- Estimated disk space required: 6.4 MB
- Estimated build time: 0.1 SBU

## Installation of Zip

Install Zip by running the following commands:

```
make -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

**make prefix=/usr -f unix/Makefile install:** This command overrides the `prefix` variable that is set to `/usr/local` in the `unix/Makefile`. Alternatives to `generic_gcc` can be seen with a **make -f unix/Makefile list** command.

## Contents

<b>Installed Programs:</b>	zip, zipcloak, zipnote, and zipsplit
<b>Installed Libraries:</b>	None
<b>Installed Directories:</b>	None

## Short Descriptions

<b>zip</b>	compresses files into a ZIP archive.
<b>zipcloak</b>	is a utility to encrypt and decrypt a ZIP archive.
<b>zipnote</b>	reads or writes comments stored in a ZIP file.
<b>zipsplit</b>	is a utility to split ZIP files into smaller files.

# Chapter 13. 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.

# bzr-2.5.0

## Introduction to Bazaar

Bazaar is a version control system that helps track project history over time and collaborate with others. This package is known to build and work properly using an LFS-7.2 platform.

### Package Information

- Download (HTTP): <https://launchpad.net/bzr/2.5/2.5.0/+download/bzr-2.5.0.tar.gz>
- Download MD5 sum: 44eb47b77995098a28f017e2daa606b6
- Download size: 9.5 MB
- Estimated disk space required: 69 MB
- Estimated build time: 0.2 SBU

### Required Additional Downloads

- Pyrex-0.9.9 (<http://www.cosc.canterbury.ac.nz/greg.ewing/python/Pyrex/>)

### Bazaar Dependencies

#### Required

Python-2.7.5

#### Optional

OpenSSH-6.2p1, *pyCrypto*, *paramiko*, and *bzrtools*

## Installation of Bazaar

Install Bazaar by first installing a required package.

```
tar -xf ..../Pyrex-0.9.9.tar.gz
```

Now, as the root user:

```
pushd Pyrex-0.9.9          &&
python setup.py install      &&
install -v -m755 -d /usr/share/doc/Pyrex &&
cp      -v -R Doc/* /usr/share/doc/Pyrex &&
popd
```

Continue with installing the main package as the root user:

```
python setup.py install
```

## Contents

<b>Installed Programs:</b>	bzr, pyrexc
<b>Installed Libraries:</b>	None
<b>Installed Directories:</b>	/usr/share/doc/Pyrex, /usr/lib/python2.7/site-packages/bzrlib

## Short Descriptions

**bzr** is a command-line client program used to access bcr repositories.

**pyrexc** is a Python-like compiler that is used to create C modules for Python.

# Check-0.9.10

## Introduction to Check

Check is a unit testing framework for C. It was installed by LFS in the temporary /tools directory. These instructions install it permanently.

This package is known to build and work properly using an LFS-7.3 platform.

## Package Information

- Download (HTTP): <http://downloads.sourceforge.net/check/check-0.9.10.tar.gz>
- 
- Download MD5 sum: 6d10a8efb9a683467b92b3bce97aeb30
- Download size: 637 KB
- Estimated disk space required: 7.4 MB
- Estimated build time: 0.1 SBU

## Installation of Check

Install Check by running the following commands:

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

To test the installation, issue **make check**.

Now, as the root user:

```
make docdir=/usr/share/doc/check-0.9.10 install
```

## Command Explanations

**--disable-static**: This switch prevents installation of static versions of the libraries.

## Contents

<b>Installed Program:</b>	checkmk
<b>Installed Library:</b>	libcheck.so
<b>Installed Directory:</b>	/usr/share/doc/check-0.9.10

## Short Descriptions

**checkmk** is an Awk script used for generating C unit tests for use with the Check unit testing framework.  
**libcheck.so** contains the Check API functions.

# CMake-2.8.11

## Introduction to CMake

The CMake package contains a modern toolset used for generating Makefiles. It is a successor of the auto-generated **configure** script and aims to be platform- and compiler-independent. A significant user of CMake is KDE since version 4.

This package is known to build and work properly using an LFS-7.3 platform.

## Package Information

- Download (HTTP): <http://www.cmake.org/files/v2.8/cmake-2.8.11.tar.gz>
- 
- Download MD5 sum: be6008f2299613d23fe82ab53ef7472e
- Download size: 5.7 MB
- Estimated disk space required: 275 MB (including tests)
- Estimated build time: 1.9 SBU (additional 3.1 SBU for the test suite)

## CMake Dependencies

### Required

cURL-7.30.0, libarchive-3.1.2 and expat-2.1.0

### Optional

Subversion-1.7.8 (for testing) and Qt-4.8.4 (for the Qt-based GUI)

## Installation of CMake

Install CMake by running the following commands:

```
./bootstrap --prefix=/usr      \
            --system-libs    \
            --mandir=/share/man \
            --docdir=/share/doc/cmake-2.8.11 &&
make
```

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

Now, as the root user:

```
make install
```

## Command Explanations

**--system-libs**: This switch forces the build system to link against Zlib, Bzip2, cURL and Expat installed on the system.

**--qt-gui**: This switch enables building of the Qt-based GUI for CMake.

## Contents

<b>Installed Programs:</b>	ccmake, cmake, cmake-gui, cpack and ctest
<b>Installed Libraries:</b>	None
<b>Installed Directories:</b>	/usr/share/cmake-2.8 and /usr/share/doc/cmake-2.8.11

## Short Descriptions

<b>ccmake</b>	is a curses based interactive frontend to <b>cmake</b> .
<b>cmake</b>	is the makefile generator.
<b>cmake-gui</b>	is the Qt-based frontend to <b>cmake</b> .
<b>cpack</b>	is the CMake packaging program.
<b>ctest</b>	is a testing utility for cmake-generated build trees.

# CVS-1.11.23

## 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.

This package is known to build and work properly using an LFS-7.3 platform.

## Package Information

- Download (HTTP): <http://ftp.gnu.org/non-gnu/cvs/source/stable/1.11.23/cvs-1.11.23.tar.bz2>
- Download (FTP): <ftp://ftp.gnu.org/non-gnu/cvs/source/stable/1.11.23/cvs-1.11.23.tar.bz2>
- Download MD5 sum: 0213ea514e231559d6ff8f80a34117f0
- Download size: 2.9 MB
- Estimated disk space required: 32.3 MB
- Estimated build time: 0.3 SBU (additional ~20 SBU to run the test suite)

## Additional Downloads

- Recommended patch: <http://www.linuxfromscratch.org/patches/blfs/svn/cvs-1.11.23-zlib-1.patch>

## CVS Dependencies

### Optional

Tcsh-6.18.01, OpenSSH-6.2p1, *krb4*, MIT Kerberos V5-1.11.2 (for the GSSAPI libraries), ghostscript-9.06, and an MTA (that provides a **sendmail** command)

CVS will invoke a default text editor to create a commit message if the *-m "Commit message"* parameter was not used when changes are committed to a repository. CVS looks for the following text editors, in the order shown below, during configuration to determine the default. This default can always be overridden by the CVSEditor or EDITOR environment variables and can be specified directly by passing the *--with-editor=<desired text editor>* parameter to the **configure** script.

- Vim-7.3
- Emacs-24.2
- nano-2.3.2
- Re-alpine-2.02 (for Pico)

## 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 system shared Zlib library, apply the following patch:

```
patch -Np1 -i ../../cvs-1.11.23-zlib-1.patch
```

Now fix a conflict with newer libraries:

```
sed -i -e 's/getline /getline /' lib/getline.{c,h}
```

Install CVS by running the following commands:

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

If you have texlive-20120701 installed and wish to create HTML or text docs from the documentation source files, issue the following command:

```
make -C doc html txt
```

To test the results, issue: **make check**. This will take quite a while. If you don't have **rsh** configured for access to the host you are building on (or you didn't pass the **--with-rsh=** parameter to the **configure** script, some tests may fail. If you passed the **--with-rsh=ssh** parameter to enable **ssh** as the default remote shell program, you'll need to issue the following command so that the tests will complete without any failures:

```
sed -e 's/rsh};/ssh};/' \
-e 's/g=rw,o=r$/g=r,o=r/' \
-i src/sanity.sh
```

Now, as the **root** user:

```
make install &&
install -v -m755 -d      /usr/share/doc/cvs-1.11.23 &&
install -v -m644 FAQ README /usr/share/doc/cvs-1.11.23 &&
install -v -m644 doc/*.pdf /usr/share/doc/cvs-1.11.23
```

If you created any additional documentation, install it by issuing the following commands as the **root** user:

```
install -v -m644 doc/*.txt /usr/share/doc/cvs-1.11.23          &&
install -v -m755 -d      /usr/share/doc/cvs-1.11.23/html/cvs{,client} &&
install -v -m644 doc/cvs.html/* \
                    /usr/share/doc/cvs-1.11.23/html/cvs          &&
install -v -m644 doc/cvsclient.html/* \
                    /usr/share/doc/cvs-1.11.23/html/cvsclient
```

## 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` contains passwords used to complete logins to servers.

## Contents

**Installed Programs:** cvs, cvsbug, and rcs2log  
**Installed Libraries:** None  
**Installed Directories:** /usr/share/cvs and /usr/share/doc/cvs-1.11.23

## 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.

# 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-1.11.23 and OpenSSH-6.2p1

## 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
```

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

<b>Installed Programs:</b>	None
<b>Installed Libraries:</b>	None
<b>Installed Directories:</b>	/srv/cvsroot

# DejaGnu-1.5.1

## 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). It was installed by LFS in the temporary `/tools` directory. These instructions install it permanently.

This package is known to build and work properly using an LFS-7.3 platform.

## Package Information

- Download (HTTP): <http://ftp.gnu.org/pub/gnu/dejagnu/dejagnu-1.5.1.tar.gz>
- Download (FTP): <ftp://ftp.gnu.org/pub/gnu/dejagnu/dejagnu-1.5.1.tar.gz>
- Download MD5 sum: 8386e04e362345f50ad169f052f4c4ab
- Download size: 568 KB
- Estimated disk space required: 5.0 MB
- Estimated build time: less than 0.1 SBU

## DejaGnu Dependencies

### Required (Run-time Only)

Expect-5.45

### Optional

DocBook-utils-0.6.14 and *docbook2X* (both looked for by the **configure** script but not used in the build)

## Installation of DejaGnu

Install DejaGnu by running the following commands:

```
./configure --prefix=/usr &&
makeinfo --html --no-split -o doc/dejagnu.html doc/dejagnu.texi &&
makeinfo --plaintext -o doc/dejagnu.txt doc/dejagnu.texi
```

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

Now, as the **root** user:

```
make install &&
install -v -dm755 /usr/share/doc/dejagnu-1.5.1 &&
install -v -m644 doc/dejagnu.{html,txt} \
/usr/share/doc/dejagnu-1.5.1
```

## Contents

<b>Installed Program:</b>	runttest
<b>Installed Libraries:</b>	None
<b>Installed Directory:</b>	/usr/share/dejagnu

## Short Descriptions

**runttest** is the DejaGnu test driver program. It is used to control what tests to run, and variations on how to run them.

# Doxxygen-1.8.4

## 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. It 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, inheritance diagrams, and collaboration diagrams, which are all generated automatically.

This package is known to build and work properly using an LFS-7.3 platform.

## Package Information

- Download (HTTP): <http://ftp.stack.nl/pub/doxygen/doxygen-1.8.4.src.tar.gz>
- Download (FTP): <ftp://ftp.stack.nl/pub/doxygen/doxygen-1.8.4.src.tar.gz>
- Download MD5 sum: 5f460b91c0d8c34a76173cf22015c2fc
- Download size: 6.2 MB
- Estimated disk space required: 90 MB
- Estimated build time: 1.4 SBU (includes building the GUI frontend and all docs)

## Doxxygen Dependencies

### Optional

Graphviz-2.30.1, ghostscript-9.06, Python-2.7.5, Qt-4.8.4 (for doxywizard) and texlive-20120701

## Installation of Doxygen

Install Doxygen by running the following commands:

```
./configure --prefix /usr \
            --docdir /usr/share/doc/doxygen-1.8.4 &&
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 Python, TeX Live (for HTML docs) and Ghostscript (for PDF docs) installed, then issue the following command as the `root` user:

```
make install_docs
```

## Command Explanations

--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-2.7.5 installed. If you require formulas to create PDF documentation, then you must have texlive-20120701 installed. If you require formulas to convert PostScript files to bitmaps, then you must have ghostscript-9.06 installed.

## Contents

<b>Installed Programs:</b>	doxygen and optionally, doxywizard
<b>Installed Libraries:</b>	None
<b>Installed Directory:</b>	/usr/share/doc/doxygen-1.8.4

## Short Descriptions

<b>doxygen</b>	is a command-line based utility used to generate template configuration files and then generate documentation from these templates. Use <b>doxygen --help</b> for an explanation of the command-line parameters.
<b>doxywizard</b>	is a GUI front-end for configuring and running <b>doxygen</b> .

# Expect-5.45

## Introduction to Expect

The Expect package was installed in the LFS temporary tools directory for testing other packages. These procedures install it in a permanent location. It 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.

This package is known to build and work properly using an LFS-7.3 platform.

## Package Information

- Download (HTTP): <http://prdownloads.sourceforge.net/expect/expect5.45.tar.gz>
- 
- Download MD5 sum: 44e1a4f4c877e9ddc5a542dfa7ecc92b
- Download size: 620 KB
- Estimated disk space required: 4.1 MB
- Estimated build time: 0.2 SBU

## Expect Dependencies

### Required

Tcl-8.6.0

### Optional

Tk-8.6.0

## Installation of Expect

Install Expect by running the following commands:

```
./configure --prefix=/usr \
            --with-tcl=/usr/lib \
            --with-tclinclude=/usr/include \
            --enable-shared &&
make
```

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

Now, as the root user:

```
make install &&
ln -svf expect5.45/libexpect5.45.so /usr/lib
```

## Command Explanations

**--with-tcl=/usr/lib**: This parameter is used to tell the **configure** script where the **tclConfig.sh** is located.

**--enable-shared**: This option enables building the shared library.

**In -sf ...:** This command creates a required link to the shared 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

<b>Installed Programs:</b>	autoexpect, autopasswd, cryptdir, decryptdir, dislocate, expect, ftp-rfc, kibitz, lunlock, mkpasswd, passmass, rftp, rlogin-cwd, timed-read, timed-run, unbuffer, weather, and optionally (if Expect was linked against Tk), multixterm, tknewsbiff, tkpasswd, xkibitz, and xpstat
<b>Installed Library:</b>	libexpect5.45.so
<b>Installed Directory:</b>	/usr/lib/expect5.45

## Short Descriptions

<b>autoexpect</b>	generates an Expect script from watching a session.
<b>autopasswd</b>	is a wrapper to make <b>passwd(1)</b> be non-interactive.
<b>cryptdir</b>	encrypts all files in a directory.
<b>decryptdir</b>	decrypts all files in a directory.
<b>dislocate</b>	allows processes to be disconnected and reconnected to a terminal.
<b>expect</b>	is a program that “talks” to other interactive programs according to a script.
<b>ftp-rfc</b>	retrieves an RFC (or the index) from UUNET.
<b>kibitz</b>	allows two (or more) people to interact with one shell (or any arbitrary program).
<b>lunlock</b>	unhangs a printer which claims it is “waiting for lock”.
<b>mkpasswd</b>	generates passwords and can apply them automatically to users.
<b>passmass</b>	changes a password on multiple machines.
<b>rftp</b>	is much like <b>ftp</b> except it uses ~g and ~p instead of mget and mput.
<b>rlogin-cwd</b>	is <b>rlogin</b> except it uses the local current directory as the current working directory on the remote machine.
<b>timed-read</b>	reads a complete line from stdin and aborts after a given number of seconds.
<b>timed-run</b>	runs a program for a given amount of time.
<b>unbuffer</b>	disables the output buffering that occurs when program output is redirected.
<b>weather</b>	retrieves a weather report (courtesy University of Michigan) for a given city or geographical area.

<b>multixterm</b>	creates multiple <b>xterms</b> that can be driven together or separately.
<b>tknewsbiff</b>	pops up a window when there is unread news in your favorite newsgroups and removes the window after you've read the news.
<b>tkpasswd</b>	is a script to change passwords using <b>expect</b> and Tk.
<b>xkibitz</b>	allows users in separate <b>xterms</b> to share one shell (or any program that runs in an <b>xterm</b> ).
<b>xpstat</b>	is a script that acts as a front-end for <b>xpilot</b> .
<b>libexpect5.45.so</b>	contains functions that allow Expect to be used as a Tcl extension or to be used directly from C or C++ (without Tcl).

# GCC-4.7.2

## Introduction to GCC

The GCC package contains GNU compilers. This package is useful for compiling programs written in C, C++, Fortran, Java, Objective C, Objective C++, Ada, and Go. You should ensure you actually need one of these additional compilers (C and C++ are installed in LFS) before you install them. Additionally, there are instructions in the BLFS book to install OpenJDK-1.7.0.9, which can be used instead of the Java provided by the GCC package. Many consider the Iced Tea version to be a more robust Java environment than the one provided by GCC.

This package is known to build and work properly using an LFS-7.3 platform.



### Caution

If you are upgrading GCC from any other version prior to 4.7.2, then you must be careful compiling 3rd party kernel modules. You should ensure that the kernel and all its native modules are also compiled using the same version of GCC that you use to build the 3rd party module. This issue does not affect native kernel (and kernel modules) updates, as the instructions below are a complete reinstallation of GCC. If you have existing 3rd party modules installed, ensure they are recompiled using the updated version of GCC. As always, never update the kernel headers from the ones used when Glibc was compiled during LFS.

## Package Information

- Download (HTTP): <http://ftp.gnu.org/gnu/gcc/gcc-4.7.2/gcc-4.7.2.tar.bz2>
- Download (FTP): <ftp://ftp.gnu.org/gnu/gcc/gcc-4.7.2/gcc-4.7.2.tar.bz2>
- Download MD5 sum: cc308a0891e778cfda7a151ab8a6e762
- Download size: 80 MB
- Estimated disk space required: ~6.1 GB (build, test and install all compilers)
- Estimated build time: 150 SBU (build, test and install all compilers)

## GCC Dependencies

### Recommended

DejaGnu-1.5.1

### Required if building java

Zip-3.0, UnZip-6.0, and which-2.20



### 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. At the AdaCore download page, choose your platform and 2011, then select the file to download. You probably want the x86-linux or x86\_64-linux file.

## GNAT GPL 2011 Package Information

- Download (HTTP): <https://libre.adacore.com/download/>

## Installation of GNAT

Before unpacking and changing into the GCC source directory, first unpack the GNAT tarball and change into the newly created directory and install GNAT by running the following command:

```
make ins-all prefix=<Your build directory>/gnat
```

The GNAT compiler can be invoked by executing the **gcc** binary installed in `<Your build directory>/gnat/bin`.

You may now remove the GNAT source directory:

```
cd .. &&
rm -rf gnat-2011-*
```

Prepare to compile GCC by placing the GNAT version of **gcc** at the beginning of the **PATH** variable by using the following commands:

```
PATH_HOLD=$PATH &&
export PATH=<Your build directory>/gnat/bin:$PATH_HOLD
```

Doing so has the drawback that the GCC and Binutils executables are taken from the just installed GNAT package, but the versions of those executables are outdated compared to those installed in LFS. This is not important for the GCC compilers, since they recompile themselves during the bootstrap process. On the other hand, the outdated **ld** and **as** tools are used all along. In order to use the LFS tools, issue:

```
find <Your build directory>/gnat -name ld -exec mv -v \{\} \{\}.old \;
find <Your build directory>/gnat -name as -exec mv -v \{\} \{\}.old \;
```

## Installation of GCC

Install GCC by running the following commands:

### Important

The installation process may overwrite your existing GCC **gcc** and **c++** compilers and libraries. Having the Tcl, Expect and DejaGnu packages installed before beginning the build is highly recommended so you can run the full suite of tests.

Do not continue with the **make install** command until you are confident the build was successful. You can compare your test results with those found at <http://gcc.gnu.org/ml/gcc-testresults/>. You may also want to refer to the information found in the GCC section of Chapter 6 in the LFS book (<http://www.linuxfromscratch.org/lfs/view/development/chapter06/gcc.html>).

The instructions below let the build machinery perform a “bootstrap” intentionally. This is necessary if you install the ADA compiler anyway. Even if you don't, a bootstrap is recommended for robustness.

```

sed -i 's/^(install.*:)\ install-.*recursive/\1/' libffi/Makefile.in &&
sed -i 's/^(install-data-am:).*\1/' libffi/include/Makefile.in &&
sed -i 's/install_to_$(INSTALL_DEST) //' libiberty/Makefile.in &&
sed -i 's@./fixinc.sh@c true@'           gcc/Makefile.in      &&

case `uname -m` in
    i?86) sed -i 's/^T_CFLAGS =$/& -fomit-frame-pointer/' gcc/Makefile.in ;;
esac &&

mkdir ../gcc-build &&
cd     ../gcc-build &&

../gcc-4.7.2/configure \
  --prefix=/usr \
  --libdir=/usr/lib \
  --libexecdir=/usr/lib \
  --with-system-zlib \
  --enable-shared \
  --enable-threads=posix \
  --enable-__cxa_atexit \
  --disable-multilib \
  --enable-locale=gnu \
  --enable-lto \
  --enable-languages=c,c++,fortran,ada,go,java,objc,obj-c++ &&

make &&
make -k check &&

../gcc-4.7.2/contrib/test_summary

```

Now, as the root user:

```

make install &&

ln -v -sf ../usr/bin/cpp /lib &&
ln -v -sf gcc /usr/bin/cc &&

chown -v -R root:root \
  /usr/lib/gcc/*linux-gnu/4.7.2/include{,-fixed} \
  /usr/lib/gcc/*linux-gnu/4.7.2/ada{lib,include}

```

You should now become the unprivileged user and remove the GNAT installation and perform other cleanups:

```

rm -rf <Your build directory>/gnat &&
export PATH=$PATH_HOLD &&
unset PATH_HOLD

```

## Command Explanations

The first two **sed** commands prevent the installation of the libffi library bundled with GCC, since it is outdated compared to libffi-3.0.13. The three other **sed** commands are the same ones used during the build of LFS.

**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 parameters are required to build the C++ libraries to published standards.

**--disable-multilib:** This parameter ensures that files are created for the specific architecture of your computer.

**--enable-locale-gnu:** This parameter is a failsafe for incomplete locale data.

**--enable-lto:** Setting this parameter allows to build a compiler which is able to perform “link time optimization (lto)”.

**--enable-languages=c,c++,fortran,java,objc,obj-c++,ada,go:** This command identifies which languages to build. You may modify this command to remove undesired languages.

**make -k check:** This command runs the test suite without stopping if any errors are encountered.

**..../gcc-4.7.2/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 -v -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 -v -sf gcc /usr/bin/cc:** This link is created as some packages refer to the C compiler using an alternate name.

**chown -v -R root:root /usr/lib/gcc/\*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 the root user and group . Omit the command changing the Ada directories if you did not include Ada as one of the installed languages.

## Contents

**Installed Programs:** aot-compile, gappletviewer, gc-analyze, gccgo, gcj, gcj-dbtool, gcjh, gfortran, gjj, gjar, gjarsigner, gjavah, gkeytool, gnat, gnatbind, gnatchop, gnatclean, gnatfind, gnative2ascii, gnatkr, gnatlink, gnatls, gnatmake, gnatname, gnatprep, gnatxref, gorbd, grmic, grmid, grmiregistry, gserialver, gtnameserv, jcf-dump, jv-convert, rebuild-gcj-db, and architecture specific names

**Installed Libraries:** libgcj\_bc.so, libgcj.so, libgcj-tools.so, libgfortran.{so,a}, libgij.so, libgo.{so,a}, libgobegin.a, libobjc.{so,a} and numerous other run-time libraries and executables in /usr/lib/gcc

**Installed Directories:** /usr/include/c++/4.7.2/{gcj.gnu.java,javax.org,sun}, /usr/lib/gcc/<arch-model>-linux-gnu/4.7.2/ada{include,lib}, /usr/lib/gcj-4.7.2-13, /usr/lib/go, /usr/lib/security, and /usr/share/java

Some program and library names and descriptions are not listed here, but can be found at <http://lfs/view/development/chapter06/gcc.html#contents-gcc> as they were initially installed during the building of LFS.

## Short Descriptions

<b>aot-compile</b>	searches a directory for Java bytecode and uses <b>gcj</b> to compile it to native code.
<b>gappletviewer</b>	loads and run a Java applet.
<b>gc-analyze</b>	analyzes garbage collector (GC) memory dumps from Java code.
<b>gccgo</b>	is a GCC-based compiler for the Go language.
<b>gcj</b>	is an ahead-of-time compiler for the Java language.
<b>gcj-dbtool</b>	is a tool for creating and manipulating class file mapping databases.
<b>gcjh</b>	generates header files from Java class files.
<b>gfortran</b>	is the Fortran compiler invoked by <b>gcc</b> .
<b>gij</b>	is the GNU interpreter for Java bytecode.
<b>gjar</b>	is an (partial) implementation of the <b>jar</b> utility that comes with Sun's JDK.
<b>gjarsigner</b>	is a Java ARchive (JAR) file signing and verification tool.
<b>gjavah</b>	generates header files from Java class files.
<b>gkeytool</b>	manages private keys and public certificates in a Java environment.
<b>gnat</b>	is the Ada compiler invoked by <b>gcc</b> .
<b>gnatbind</b>	is used to bind compiled objects.
<b>gnatchop</b>	is useful for renaming files to meet the standard Ada default file naming conventions.
<b>gnatclean</b>	is used to remove files associated with a GNAT project.
<b>gnatfind</b>	is the GNAT definition/use finder.
<b>gnative2ascii</b>	is an encoding converter for Java.
<b>gnatkr</b>	is used to determine the crunched name for a given file, when crunched to a specified maximum length.
<b>gnatlink</b>	is used to link programs and build an executable file.
<b>gnatls</b>	is the compiled unit browser.
<b>gnatmake</b>	is an automatic <b>make</b> facility.
<b>gnatname</b>	will list the files associated with a GNAT project.
<b>gnatprep</b>	is the GNAT external preprocessor.
<b>gnatxref</b>	is the GNAT cross-referencer.
<b>gorbd</b>	is an object request broker daemon.
<b>grmic</b>	generates stubs for Remote Method Invocation.
<b>grmid</b>	RMI activation system daemon.
<b>grmiregistry</b>	starts a remote object registry on the current host.
<b>gserialver</b>	prints the serialVersionUID of the specified class.
<b>gtnameserv</b>	starts a naming service.
<b>jcf-dump</b>	prints information about Java class files.
<b>jv-convert</b>	converts files from one encoding to another.

**rebuild-gcj-db**

Merge the per-solib databases made by aot-compile into one system-wide database.

## GC-7.2d

### Introduction to GC

The GC package contains the Boehm-Demers-Weiser conservative garbage collector, which can be used as a garbage collecting replacement for the C malloc function or C++ new operator. It allows you to allocate memory basically as you normally would, without explicitly deallocating memory that is no longer useful. The collector automatically recycles memory when it determines that it can no longer be otherwise accessed. The collector is also used by a number of programming language implementations that either use C as intermediate code, want to facilitate easier interoperation with C libraries, or just prefer the simple collector interface. Alternatively, the garbage collector may be used as a leak detector for C or C++ programs, though that is not its primary goal.

This package is known to build and work properly using an LFS-7.2 platform.

### Package Information

- Download (HTTP): [http://www.hpl.hp.com/personal/Hans\\_Boehm/gc/gc\\_source/gc-7.2d.tar.gz](http://www.hpl.hp.com/personal/Hans_Boehm/gc/gc_source/gc-7.2d.tar.gz)
- 
- Download MD5 sum: 91340b28c61753a789eb6077675d87d2
- Download size: 1.3 MB
- Estimated disk space required: 13 MB
- Estimated build time: 0.2 SBU

### Optional

libatomic\_ops-7.2d (Gc contains a copy of Libatomic\_ops-7.2d which it will compile and statically link if configure doesn't find Libatomic\_ops installed on your system)

### Installation of GC

Install GC by running the following commands:

```
sed -i 's#AM_CONFIG_HEADER#AC_CONFIG_HEADERS#' configure.ac &&
sed -i 's#AM_CONFIG_HEADER#AC_CONFIG_HEADERS#' libatomic_ops/configure.ac &&
sed -i 's#pkgdata#doc#' doc/doc.am &&
autoreconf -fi &&
./configure --prefix=/usr      \
            --enable-cplusplus \
            --disable-static   \
            --docdir=/usr/share/doc/gc-7.2d &&
make
```

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

Now, as the root user:

```
make install &&
install -v -m644 doc/gc.man /usr/share/man/man3/gc_malloc.3 &&
ln -sfv gc_malloc.3 /usr/share/man/man3/gc.3
```

## Command Explanations

**sed -i 's#AM\_CONFIG\_HEADER ...:** This **sed** fixes building with Automake 1.13.

**sed -i 's#pkgdata#doc#' doc/doc.am** and **--docdir=/usr/share/doc/gc-7.2d:** These commands are used so the package will install the documentation in a versioned directory.

**autoreconf -fi:** This regenerates the **configure** script and the **Makefile.in** files.

**--enable-cplusplus:** This parameter enables the building and installing the C++ library along with the standard C library.

**--disable-static:** This switch prevents installation of static versions of the libraries.

## Contents

**Installed Programs:** None

**Installed Libraries:** libcord.so, libgc.so and libgccpp.so

**Installed Directories:** /usr/include/gc and /usr/share/doc/gc

## Short Descriptions

**libgc.so** contains a C interface to the conservative garbage collector, primarily designed to replace the C malloc function.

**libgccpp.so** contains a C++ interface to the conservative garbage collector.

# GDB-7.6

## Introduction to GDB

GDB, the GNU Project debugger, allows you to see what is going on “inside” another program while it executes -- or what another program was doing at the moment it crashed. Note that GDB is most effective when tracing programs and libraries that were built with debugging symbols and not stripped.

This package is known to build and work properly using an LFS-7.3 platform.

## Package Information

- Download (HTTP): <http://ftp.gnu.org/gnu/gdb/gdb-7.6.tar.bz2>
- Download (FTP): <ftp://ftp.gnu.org/gnu/gdb/gdb-7.6.tar.bz2>
- Download MD5 sum: fda57170e4d11cdde74259ca575412a8
- Download size: 24 MB
- Estimated disk space required: 360 MB (450 MB with checks)
- Estimated build time: 2.0 SBU (6.0 SBU with checks)

## GDB Dependencies

### Optional

DejaGnu-1.5.1 (for tests) and Python-2.7.5

## Installation of GDB

Install GDB by running the following commands:

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

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

Now, as the root user:

```
make -C gdb install
```

## Contents

<b>Installed Programs:</b>	gdb and gdbserver
<b>Installed Library:</b>	libinproctrace.so
<b>Installed Directories:</b>	/usr/include/gdb and /usr/share/gdb

## Short Descriptions

<b>gdb</b>	is the GNU Debugger.
<b>gdbserver</b>	is a remote server for the GNU debugger (it allows programs to be debugged from a different machine).
<b>libinproctrace.so</b>	contains functions for the in-process tracing agent. The agent allows for installing fast tracepoints, listing static tracepoint markers, probing static tracepoints markers, and starting trace monitoring.

# Git-1.8.2.3

## Introduction to Git

Git is a free and open source, distributed version control system designed to handle everything from small to very large projects with speed and efficiency. Every Git clone is a full-fledged repository with complete history and full revision tracking capabilities, not dependent on network access or a central server. Branching and merging are fast and easy to do. Git is used for version control of files, much like tools such as Mercurial, Bazaar, Subversion-1.7.8, CVS-1.11.23, Perforce, and Team Foundation Server.

This package is known to build and work properly using an LFS-7.3 platform.

## Package Information

- Download (HTTP): <http://git-core.googlecode.com/files/git-1.8.2.3.tar.gz>
- 
- Download MD5 sum: 03ebfd403a8cf355da0e3f15e53b8925
- Download size: 4.3 MB
- Estimated disk space required: 225 MB
- Estimated build time: 5.0 SBU (including tests)

## Additional Downloads

- <http://git-core.googlecode.com/files/git-manpages-1.8.2.3.tar.gz> (only needed if you've not installed asciidoc and xmlto)
- <http://git-core.googlecode.com/files/git-htmldocs-1.8.2.3.tar.gz> and other docs (only needed if you've not installed asciidoc).

## Git Dependencies

### Recommended

cURL-7.30.0 (needed to use Git over http, https, ftp or ftps), expat-2.1.0, OpenSSL-1.0.1e and Python-2.7.5

### Optional

PCRE-8.32 and Tk-8.6.0 (gitk, a simple Git repository viewer, uses Tk at runtime)

### Optional (to create the man pages and html docs)

AsciiDoc and xmlto-0.0.25

## Installation of Git

Install Git by running the following commands:

```
./configure --prefix=/usr \
            --libexecdir=/usr/lib \
            --with-gitconfig=/etc/gitconfig &&
make
```

If you have installed *AsciiDoc* you can create the html version of the man pages and other docs:

```
make html
```

If you have installed *AsciiDoc* and *xmlto-0.0.25* you can create the man pages:

```
make man
```

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

Now, as the root user:

```
make install
```

If you created the man pages, install them as the root user:

```
make install-man
```

If you created the html docs, install them as the root user:

```
make htmdir=/usr/share/doc/git-1.8.2.3 install-html      &&
mkdir -p /usr/share/doc/git-1.8.2.3/man-pages/{html,text}    &&
mv      /usr/share/doc/git-1.8.2.3/{git*.txt,man-pages/text}   &&
mv      /usr/share/doc/git-1.8.2.3/{git*,index.,man-pages/}html &&
mkdir   /usr/share/doc/git-1.8.2.3/technical/{html,text}       &&
mv      /usr/share/doc/git-1.8.2.3/technical/{*.txt,text}     &&
mv      /usr/share/doc/git-1.8.2.3/technical/{*,}html         &&
mkdir   /usr/share/doc/git-1.8.2.3/howto/{html,text}        &&
mv      /usr/share/doc/git-1.8.2.3/howto/{*.txt,text}       &&
mv      /usr/share/doc/git-1.8.2.3/howto/{*,}html           &&
```

Alternatively, If you downloaded the man pages untar them as the root user:

```
tar -xf ../git-manpages-1.8.2.3.tar.gz -C /usr/share/man --no-same-owner
```

If you downloaded the html docs untar them as the root user:

```
mkdir -p /usr/share/doc/git-1.8.2.3/man-pages/{html,text}      &&
tar -xf ../git-htmldocs-1.8.2.3.tar.gz \
-C /usr/share/doc/git-1.8.2.3 --no-same-owner                &&
mv      /usr/share/doc/git-1.8.2.3/{git*.txt,man-pages/text}   &&
mv      /usr/share/doc/git-1.8.2.3/{git*,index.,man-pages/}html &&
mkdir   /usr/share/doc/git-1.8.2.3/technical/{html,text}       &&
mv      /usr/share/doc/git-1.8.2.3/technical/{*.txt,text}     &&
mv      /usr/share/doc/git-1.8.2.3/technical/{*,}html         &&
mkdir   /usr/share/doc/git-1.8.2.3/howto/{html,text}        &&
mv      /usr/share/doc/git-1.8.2.3/howto/{*.txt,text}       &&
mv      /usr/share/doc/git-1.8.2.3/howto/{*,}html           &&
```

## Command Explanations

--with-gitconfig=/etc/gitconfig: This sets */etc/gitconfig* as the file that stores the default, system wide, Git settings.

--without-python: Use this switch if Python is not installed.

--with-libpcre: Use this switch if PCRE is installed.

**tar -xf ..git-manpages-1.8.2.3.tar.gz -C /usr/share/man --no-same-owner:** This untars `git-manpages-1.8.2.3.tar.gz`. The `-C` option makes tar change directory to `/usr/share/man` before it starts to decompress the docs. The `--no-same-owner` option stops tar from preserving the user and group details of the files. This is useful as that user or group may not exist on your system; this could (potentially) be a security risk.

**mv /usr/share/doc/git-1.8.2.3 ...:** These commands move some of the files into subfolders to make it easier to sort through the docs and find what you're looking for.

## Configuring Git

### Config Files

`~/.gitconfig` and `/etc/gitconfig`

### Configuration Information

If you want to use `git svn` you will need to install Subversion-1.7.8 and its Perl bindings.

To be able to use git to pull from a https source you need first install the Certificate Authority Certificates and then configure git to know where they are. To set the default location of the SSL certificates, as the `root` user:

```
git config --system http.sslCAPath /etc/ssl/certs
```

## Contents

<b>Installed Programs:</b>	git, git-cvsserver, gitk, git-receive-pack, git-shell, git-upload-archive and git-upload-pack
<b>Installed Libraries:</b>	None
<b>Installed Directories:</b>	/usr/lib/git-core, /usr/share/doc/git-1.8.2.3, /usr/share/git-core, /usr/share/git-gui, /usr/share/gitk and /usr/share/gitweb

### Short Descriptions

<b>git</b>	is the stupid content tracker.
<b>git-cvsserver</b>	is a CVS server emulator for Git.
<b>gitk</b>	is a graphical Git repository browser (needs Tk-8.6.0).
<b>git-receive-pack</b>	is invoked by <code>git send-pack</code> and updates the repository with the information fed from the remote end.
<b>git-shell</b>	is a login shell for SSH accounts to provide restricted Git access.
<b>git-upload-archive</b>	is invoked by <code>git archive --remote</code> and sends a generated archive to the other end over the git protocol.
<b>git-upload-pack</b>	is invoked by <code>git fetch-pack</code> , it discovers what objects the other side is missing, and sends them after packing.

# Guile-2.0.9

## Introduction to Guile

The Guile package contains the Project GNU's extension language library. Guile also contains a stand alone Scheme interpreter.

This package is known to build and work properly using an LFS-7.3 platform.

### Package Information

- Download (HTTP): <http://ftp.gnu.org/pub/gnu/guile/guile-2.0.9.tar.xz>
- Download (FTP): <ftp://ftp.gnu.org/pub/gnu/guile/guile-2.0.9.tar.xz>
- Download MD5 sum: a69b575d4a633bdd9118f3a4a1e97766
- Download size: 4.4 MB
- Estimated disk space required: 120 MB
- Estimated build time: 8.0 SBU

## Guile Dependencies

### Required

GC-7.2d, libffi-3.0.13 and libunistring-0.9.3

### Optional

Emacs-24.2

## Installation of Guile

Install Guile by running the following commands:

```
./configure --prefix=/usr --disable-static &&
make      &&
make html &&

makeinfo --plaintext -o doc/r5rs/r5rs.txt doc/r5rs/r5rs.texi &&
makeinfo --plaintext -o doc/ref/guile.txt doc/ref/guile.texi
```

If you have texlive-20120701 installed and wish to build alternate formats (PDF and postscript) of the documentation, issue the following commands:

```
for DIRNAME in r5rs ref
do make -k -C doc/${DIRNAME} pdf ps
done &&
unset DIRNAME
```

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

Now, as the root user:

```
make install &&

find examples -name "Makefile*" -exec rm {} \; &&
install -v -dm755 /usr/share/doc/guile-2.0.9 &&
cp -vR examples /usr/share/doc/guile-2.0.9 &&

for DIRNAME in r5rs ref
do
    install -v -dm755 /usr/share/doc/guile-2.0.9/${DIRNAME} &&
    install -v -m644 doc/${DIRNAME}/*.txt \
        /usr/share/doc/guile-2.0.9/${DIRNAME} &&
    if [ -d
        cp -Rv
            doc/${DIRNAME}/${DIRNAME}.html ]; then
            doc/${DIRNAME}/${DIRNAME}.html \
                /usr/share/doc/guile-2.0.9/${DIRNAME}
    fi
done

cp -vR doc/ref/guile.html /usr/share/doc/guile-2.0.9/ref
```

If you built the alternate formats of the documentation, install them using the following commands issued by the root user:

```
for DIRNAME in r5rs ref
do
    install -v -m644 doc/${DIRNAME}/*.{pdf,ps,dvi} \
        /usr/share/doc/guile-2.0.9/${DIRNAME}
done
```

## Command Explanations

*--disable-static*: This switch prevents installation of static versions of the libraries.

## Contents

<b>Installed Programs:</b>	guild, guile, guile-config, guile-snarf and guile-tools
<b>Installed Libraries:</b>	libguile-2.0.so and libguilereadline-v-18.so
<b>Installed Directories:</b>	/usr/include/guile, /usr/lib/guile, /usr/share/doc/guile-2.0.9 and /usr/share/guile

## Short Descriptions

<b>guile</b>	is a stand-alone Scheme interpreter for Guile.
<b>guile-config</b>	is a Guile script which provides the information necessary to link your programs against the Guile library, in much the same way PkgConfig does.
<b>guile-snarf</b>	is a script to parse declarations in your C code for Scheme visible C functions.
<b>guild</b>	is a wrapper program installed along with <b>guile</b> , which knows where a particular module is installed and calls it, passing its arguments to the program.
<b>guile-tools</b>	is a symlink to <b>guild</b> .

# OpenJDK-1.7.0.9

## Introduction to OpenJDK and IcedTea

IcedTea provides a build harness for the OpenJDK package, Oracle's open-sourced Java development environment. In order to provide a completely free runtime environment, similar to Oracle's closed distribution, the IcedTea build harness also provides free, and arguably better versions of parts of the JDK which have not been open-sourced to date. OpenJDK is useful for developing Java programs and provides a complete runtime environment to run Java programs.

This package is known to build and work properly using an LFS-7.2 platform.



### Note

The browser plugin and webstart implementation have been split off into a separate project. To provide a complete implementation, you will need to later install IcedTea-Web-1.3.

OpenJDK is GPL'd code, however, it should be explained that there has been a special exception made for non-free projects to use these classes in their proprietary products. In similar fashion to the LGPL, which allows non-free programs to link to libraries provided by free software, the *GNU General Public License, version 2, with the Classpath Exception* allows third party programs to use classes provided by free software without the requirement that the third party software also be free. As with the LGPL, any modifications made to the free software portions of a third party application, must also be made freely available.



### Note

The IcedTea build environment includes a very thorough, open source test suite titled JTreg. JTreg is intended to test the just built JDK for reasonable compatibility with the closed Oracle JDK. However, in order for an independent implementation to claim compatibility, including the Oracle sponsored OpenJDK project, it must pass a closed JCK/TCK test suite. No claims of compatibility, even partial compatibility, may be made without passing an approved test suite.

Oracle does provide free community access, on a case by case basis, to a closed toolkit to ensure 100% compatibility with its proprietary JDK. The binary version provided here has not been tested against the TCK. Any version that is built using the instructions given, cannot claim to be compatible with the proprietary JDK, without the user applying for, and completing the compatibility tests themselves.

With that in mind, the binaries produced using this build method are regularly tested against the TCK by the members listed on the site above. In addition to the community license above, an educational, non-commercial license for the TCK can be obtained from *here*.

## Source Package Information

- IcedTea Source Package

Download: <http://icedtea.classpath.org/download/source/icedtea-2.3.3.tar.gz>

Download MD5 sum: 26a514047494c8697bb97eac10d83bae

Download Size: 4.9 MB

The following may be downloaded separately or be done as a part of the **make** process.

- Corba Source  
Download: <http://anduin.linuxfromscratch.org/files/BLFS/OpenJDK-1.7.0.9/corba.tar.gz>  
Download MD5 sum: be19ef74664ce672417a4ba0f91f3d04  
Download Size: 1.4 MB
- Hotspot Source  
Download: <http://anduin.linuxfromscratch.org/files/BLFS/OpenJDK-1.7.0.9/hotspot.tar.gz>  
Download MD5 sum: 91dec9320e95b0ab8fe00cfb5389d335  
Download Size: 9.2 MB
- IcedTea Build Source  
Download: <http://anduin.linuxfromscratch.org/files/BLFS/OpenJDK-1.7.0.9/openjdk.tar.gz>  
Download MD5 sum: 43f1697a104ea383083ef7ce305b4f60  
Download Size: 128 KB
- JAXP Source  
Download: <http://anduin.linuxfromscratch.org/files/BLFS/OpenJDK-1.7.0.9/jaxp.tar.gz>  
Download MD5 sum: 75c2b17d0e37b1a9aa5d913487b7da98  
Download Size: 3.7 MB
- JAXWS Source  
Download: <http://anduin.linuxfromscratch.org/files/BLFS/OpenJDK-1.7.0.9/jaxws.tar.gz>  
Download MD5 sum: 61bdab3bb55e5ab6c12cb3a0daecc199  
Download Size: 2.7 MB
- Langtools Source  
Download: <http://anduin.linuxfromscratch.org/files/BLFS/OpenJDK-1.7.0.9/langtools.tar.gz>  
Download MD5 sum: 6cc42ee41fd64f531ec4aea256b67495  
Download Size: 2.3 MB
- OpenJDK Source  
Download: <http://anduin.linuxfromscratch.org/files/BLFS/OpenJDK-1.7.0.9/jdk.tar.gz>  
Download MD5 sum: a2a793aea6d01d00150a78246a29967a  
Download Size: 43 MB
- Estimated disk space required: 5.0-7.2 GB
- Estimated build time: 45 SBU (an additional 130 SBU for testsuite)

## Binary Package Information

- Binary download (x86): <http://anduin.linuxfromscratch.org/files/BLFS/OpenJDK-1.7.0.9/OpenJDK-1.7.0.9-i686-bin.tar.xz>
- Download MD5 sum: d52b7a6b1b0fcc065c661efc22022f86
- Download size (binary): 159 MB
- Estimated disk space required: 464 MB
- Binary download (x86\_64): [http://anduin.linuxfromscratch.org/files/BLFS/OpenJDK-1.7.0.9/OpenJDK-1.7.0.9-x86\\_64-bin.tar.xz](http://anduin.linuxfromscratch.org/files/BLFS/OpenJDK-1.7.0.9/OpenJDK-1.7.0.9-x86_64-bin.tar.xz)
- Download MD5 sum: d67f23dedd26d8b8fd5c0dd007cd5e37
- Download size (binary): 134 MB
- Estimated disk space required: 358 MB

## Additional Downloads

### Required Patches

- [http://www.linuxfromscratch.org/patches/blfs/svn/icedtea-2.3.3-add\\_cacerts-1.patch](http://www.linuxfromscratch.org/patches/blfs/svn/icedtea-2.3.3-add_cacerts-1.patch)

- [http://www.linuxfromscratch.org/patches/blfs/svn/icedtea-2.3.3-fixed\\_paths-1.patch](http://www.linuxfromscratch.org/patches/blfs/svn/icedtea-2.3.3-fixed_paths-1.patch)
- [http://www.linuxfromscratch.org/patches/blfs/svn/icedtea-2.3.3-fix\\_tests-1.patch](http://www.linuxfromscratch.org/patches/blfs/svn/icedtea-2.3.3-fix_tests-1.patch)

## Required JAR

- Rhino Java Script

Download: [ftp://ftp.mozilla.org/pub.mozilla.org/js/rhino1\\_7R3.zip](ftp://ftp.mozilla.org/pub.mozilla.org/js/rhino1_7R3.zip)

Download MD5 sum: 99d94103662a8d0b571e247a77432ac5

Download Size: 4.5 MB

## OpenJDK Dependencies

### Runtime Dependencies (required for binary installation)

Certificate Authority Certificates, Cups-1.6.2, GTK+-3.6.4, giflib-4.1.6, NSPR-4.9.6, PulseAudio-3.0 and Xorg Libraries

### Additional Requirements (for source build, including runtime dependencies)

apache-ant-1.8.4, cpio-2.11, UnZip-6.0, Wget-1.14, which-2.20 and Zip-3.0

## Installation of OpenJDK

The instructions below install both the binary and source versions. You may stop after installing the binary version or continue on installing the source version. You can choose to keep either or both.

### OpenJDK Binary Installation

Begin by extracting the appropriate binary tarball and changing to the extracted directory. Install the binary OpenJDK with the following commands as the `root` user:

```
install -vdm755 /opt/OpenJDK-1.7.0.9-bin &&
mv -v * /opt/OpenJDK-1.7.0.9-bin           &&
chown -R root:root /opt/OpenJDK-1.7.0.9-bin
```

Configure the temporary OpenJDK installation with the following commands:

```
export CLASSPATH=.::/usr/share/java &&
export PATH="$PATH:/opt/OpenJDK-1.7.0.9-bin/bin"
```

The binary version is now installed. If you don't want to compile the sources, skip ahead to the configuration section.

### OpenJDK Source Installation



#### Note

The source build of OpenJDK requires apache-ant-1.8.4. You'll need to build that first to satisfy the circular dependency, and return to this section to continue building OpenJDK.

Unlike other packages in BLFS, the OpenJDK source packages are distributed in multiple downloads. Since the IcedTea build harness will be used to build OpenJDK, begin by extracting the IcedTea package and changing into the extracted directory.

The IcedTea OpenJDK distribution requires that `js.jar` (from the Rhino package) be in place in order to provide a java-script implementation for the free JDK. If you have not installed the `js.jar` file in another way, do so with the following commands as the root user:

```
unzip ../rhino1_7R3.zip      &&
install -v -d -m755 /usr/share/java &&
install -v -m755 rhino1_7R3/*.jar /usr/share/java
```

As mentioned previously, OpenJDK is composed of several individual projects of the proprietary JDK that have been relicensed under an open source license. If you have already downloaded all of the individual components, place them into the source tree with the following commands:

```
cp -v ../corba.tar.gz . &&
cp -v ../hotspot.tar.gz . &&
cp -v ../jaxp.tar.gz . &&
cp -v ../jaxws.tar.gz . &&
cp -v ../jdk.tar.gz . &&
cp -v ../langtools.tar.gz . &&
cp -v ../openjdk.tar.gz .
```

Apply a patch to generate a valid cacerts file using the system CA certificates:

```
patch -Np1 -i ../icedtea-2.3.3-add_cacerts-1.patch
```

Apply a patch to replace fixed paths with ones appropriate for BLFS:

```
patch -Np1 -i ../icedtea-2.3.3-fixed_paths-1.patch
```

Apply a patch to exclude known broken tests from the test suite:

```
patch -Np1 -i ../icedtea-2.3.3-fix_tests-1.patch
```

Configure and build the package with the following commands:

```
unset JAVA_HOME &&
./autogen.sh &&
./configure --with-jdk-home=/opt/OpenJDK-1.7.0.9-bin \
            --enable-nss \
            --enable-pulse-java &&
make
```



### Note

If you have not installed the tarballs specified above, they will be automatically downloaded here.

To test the results, issue: **`make jtregcheck`**. The included version of jtreg is old, and the test suite is also very dependent on the host system and the environment that it is run in. You should expect to see anywhere between 40 and 100 failures in jdk with up to 10 errors in the tests themselves. The majority of the 6000+ tests should pass. The reason for the greatly varying results is due to how stringent the testing environment must be. Varying architectures, different versions of dependent libraries, unexpected X Window environment and window managers, the CA certificates used to generate the cacerts file, and even any user input or power management or screen saver interruptions during the

testing can lead to various failures. While the known broken tests have been removed, with the fix\_tests patch above, the graphics tests failures cannot be pre-determined (short of removing them all). The best bet for the minimal number of failures is to run the test suite in a framebuffer on a different screen (Xvfb). Even still, Disk I/O can cause failures.

Install the package with the following commands as the `root` user:

```
chmod 0644 openjdk.build/j2sdk-image/lib/sa-jdi.jar &&
cp -R openjdk.build/j2sdk-image /opt/OpenJDK-1.7.0.9 &&
chown -R root:root /opt/OpenJDK-1.7.0.9
```

## Command Explanations

**`./autogen.sh`**: This command forces rebuilding of auto-generated files to account for new options added to `configure`.

**`--with-jdk-home`**: This switch provides the location of the temporary JDK.

**`--enable-pulse-java`**: This switch enables building of the pulseaudio libraries (needed to provide a complete implementation that is reasonably compatible with the proprietary JDK).

**`chmod -v 0644 ...sa-jdi.jar`**: Fix permissions in a generated file so all users can access it.

## Configuring OpenJDK

### Configuration Information

There are now two OpenJDK SDKs installed in `/opt`. You should decide on which one you would like to use as the default. For example if you decide to use the precompiled OpenJDK, do the following as the `root` user:

```
ln -v -nsf OpenJDK-1.7.0.9-bin /opt/jdk
```

The information below assumes your system is set up using the instructions found in “The Bash Shell Startup Files”. You may need to extract the relevant information below and incorporate it into your system’s startup files if your system is set up differently.

Add the following `openjdk.sh` shell startup file to the `/etc/profile.d` directory with the following commands as the `root` user:

```
cat > /etc/profile.d/openjdk.sh << "EOF"
# Begin /etc/profile.d/openjdk.sh

# Set JAVA_HOME directory
JAVA_HOME=/opt/jdk

# Adjust PATH
pathappend $JAVA_HOME/bin PATH

# Auto Java CLASSPATH
# Copy jar files to, or create symlinks in this directory

AUTO_CLASSPATH_DIR=/usr/share/java

pathprepend . CLASSPATH

for dir in `find ${AUTO_CLASSPATH_DIR} -type d 2>/dev/null`; do
    pathappend $dir CLASSPATH
done

for jar in `find ${AUTO_CLASSPATH_DIR} -name "*.jar" 2>/dev/null`; do
    pathappend $jar CLASSPATH
done

export JAVA_HOME CLASSPATH
unset AUTO_CLASSPATH_DIR dir jar

# End /etc/profile.d/openjdk.sh
EOF
```

Finally, add the man pages to `man_db`'s configuration. As the `root` user:

```
cat >> /etc/man_db.conf << "EOF" &&
MANDATORY_MANPATH      /opt/jdk/man
MANPATH_MAP             /opt/jdk/bin      /opt/jdk/man
MANDB_MAP               /opt/jdk/man     /var/cache/man/jdk
EOF
mandb -c /opt/OpenJDK/man
```

## Contents

<b>Installed Programs:</b>	appletviewer, apt, extcheck, idlj, jar, jarsigner, java, javac, javadoc, javah, javap, java-rmi.cgi, jcmd, jconsole, jdb, jhat, jinfo, jmap, jps, jrunscript, jsadebugd, jstack, jstat, jstard, keytool, native2ascii, orbd, pack200, policytool, rmic, rmid, rmiregistry, schemagen, serialver, servertool, tnameserv, unpack200, wsgen, wsimport, and xjc
<b>Installed Libraries:</b>	/opt/OpenJDK-1.7.0.9/lib/*, and /opt/OpenJDK-1.7.0.9/jre/lib/*
<b>Installed Directory:</b>	/opt/OpenJDK-1.7.0.9

## Short Descriptions

<b>appletviewer</b>	allows you to run applets outside of a web browser.
<b>apt</b>	is an annotation processing tool.
<b>extcheck</b>	checks a specified jar file for title and version conflicts with any extensions installed in the OpenJDK software.
<b>idlj</b>	generates Java bindings from a given IDL file.
<b>jar</b>	combines multiple files into a single jar archive.
<b>jarsigner</b>	signs jar files and verifies the signatures and integrity of a signed jar file.
<b>java</b>	launches a Java application by starting a Java runtime environment, loading a specified class and invoking its main method.
<b>javac</b>	reads class and interface definitions, written in the Java programming language, and compiles them into bytecode class files.
<b>javadoc</b>	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.
<b>javah</b>	generates C header and source files that are needed to implement native methods.
<b>javap</b>	disassembles a Java class file.
<b>java-rmi.cgi</b>	is the Java RMI client.
<b>jcmd</b>	is a utility to send diagnostic command requests to a running Java Virtual Machine.
<b>jconsole</b>	is a graphical console tool to monitor and manage both local and remote Java applications and virtual machines.
<b>jdb</b>	is a simple command-line debugger for Java classes.
<b>jhat</b>	parses a java heap dump file and allows viewing in a web browser.
<b>jinfo</b>	prints Java configuration information for a given Java process, core file, or a remote debug server.
<b>jmap</b>	prints shared object memory maps or heap memory details of a given process, core file, or a remote debug server.
<b>jps</b>	lists the instrumented JVMs on the target system.
<b>jrunscript</b>	is a command line script shell.
<b>jsadebugd</b>	attaches to a Java process or core file and acts as a debug server.
<b>jstack</b>	prints Java stack traces of Java threads for a given Java process, core file, or a remote debug server.

<b>jstat</b>	displays performance statistics for an instrumented JVM.
<b>jstadv</b>	is an RMI server application that monitors for the creation and termination of instrumented JVMs.
<b>keytool</b>	is a key and certificate management utility.
<b>native2ascii</b>	converts files that contain non-supported character encoding into files containing Latin-1 or Unicode-encoded characters.
<b>orbd</b>	is used to enable clients to transparently locate and invoke persistent objects on servers in the CORBA environment.
<b>pack200</b>	is a Java application that transforms a jar file into a compressed pack200 file using the Java gzip compressor.
<b>policytool</b>	creates and manages a policy file graphically.
<b>rmic</b>	generates stub and skeleton class files for remote objects from the names of compiled Java classes that contain remote object implementations.
<b>rmid</b>	starts the activation system daemon.
<b>rmiregistry</b>	creates and starts a remote object registry on the specified port on the current host.
<b>schemagen</b>	is a Java XML binding schema generator.
<b>serialver</b>	returns the serialVersionUID for one or more classes in a form suitable for copying into an evolving class.
<b>servertool</b>	provides an ease-of-use interface for application programmers to register, unregister, startup and shutdown a server.
<b>tnameserv</b>	starts the Java IDL name server.
<b>unpack200</b>	is a native implementation that transforms a packed file produced by pack200 into a jar file.
<b>wsgen</b>	generates JAX-WS portable artifacts used in JAX-WS web services.
<b>wsimport</b>	generates JAX-WS portable artifacts.
<b>xjc</b>	is a Java XML binding compiler.

# JUnit-4.10

## Introduction to JUnit

The JUnit package contains a simple, open source framework to write and run repeatable tests. It is an instance of the xUnit architecture for unit testing frameworks. JUnit features include assertions for testing expected results, test fixtures for sharing common test data, and test runners for running tests.

This package is known to build and work properly using an LFS-7.2 platform.

## Package Information

- Download (HTTP): <http://downloads.sourceforge.net/junit/junit4.10.zip>
- 
- Download MD5 sum: 0666bd1b9a7296ff2b6ee478c82a516b
- Download size: 1.7 MB
- Estimated disk space required: 15 MB
- Estimated build time: less than 0.1 SBU

## JUnit Dependencies

### Required

UnZip-6.0

## Installation of JUnit

Install JUnit by running the following commands as the root user:

```
install -v -m755 -d /usr/share/{,doc/}junit-4.10 &&
chown -R root:root .
cp -v -R junit* org /usr/share/junit-4.10 &&
cp -v -R *.html *doc /usr/share/doc/junit-4.10
```

Add the junit-4.10.jar and /usr/share/junit-4.10 directory to your system CLASSPATH environment variable:

```
export CLASSPATH=$CLASSPATH:\
/usr/share/junit-4.10/junit-4.10.jar:/usr/share/junit-4.10
```

To run the JUnit regression self-tests, you'll need to have OpenJDK-1.7.0.9, or *Jikes* installed and the CLASSPATH environment variable updated. Then, as an unprivileged user, issue:

```
java org.junit.runner.JUnitCore org.junit.tests.AllTests
```

## Contents

<b>Installed Programs:</b>	None
<b>Installed Library:</b>	junit-4.10.jar
<b>Installed Directories:</b>	/usr/share/junit-4.10, /usr/share/doc/junit-4.10

## Short Descriptions

junit-4.10.jar contains java classes to support the xUnit framework testing architecture.

# Librep-0.92.2.1

## 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.

This package is known to build and work properly using an LFS-7.2 platform.

## Package Information

- Download (HTTP): <http://download.tuxfamily.org/librep/librep-0.92.2.1.tar.xz>
- 
- Download MD5 sum: e4d7492b373fc9168f1129fd7bf3350c
- Download size: 600 KB
- Estimated disk space required: 16 MB
- Estimated build time: 0.4 SBU

## Librep Dependencies

### Optional

i libffi-3.0.13

## Installation of Librep

Install librep 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

<b>Installed Programs:</b>	rep, rep-config, rep-remote, rep-xgettext, and repdoc
<b>Installed Libraries:</b>	librep.so and numerous modules installed in the /usr/lib/rep hierarchy
<b>Installed Directories:</b>	/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.

# LLVM-3.2

## Introduction to LLVM

The LLVM package contains a collection of modular and reusable compiler and toolchain technologies. The Low Level Virtual Machine (LLVM) Core libraries provide a modern source and target-independent optimizer, along with code generation support for many popular CPUs (as well as some less common ones!). These libraries are built around a well specified code representation known as the LLVM intermediate representation ("LLVM IR").

The optional Clang and Compiler RT packages provide a new C, C++, Objective C and Objective C++ front-ends and runtime libraries for the LLVM.

This package is known to build and work properly using an LFS-7.3 platform.

## Package Information

- Download (HTTP): <http://llvm.org/releases/3.2/llvm-3.2.src.tar.gz>
- 
- Download MD5 sum: 71610289bbc819e3e15fdd562809a2d7
- Download size: 12 MB
- Estimated disk space required: 800 MB
- Estimated build time: 13.0 SBU (Additional 7.0 SBU for Clang)

## Additional Downloads

- Required patch: [http://www.linuxfromscratch.org/patches/blfs/svn/llvm-3.2-blfs\\_paths-1.patch](http://www.linuxfromscratch.org/patches/blfs/svn/llvm-3.2-blfs_paths-1.patch)

## Recommended Patches

- LLVM R600 Backend: <http://people.freedesktop.org/~tstellar/llvm/3.2/R600-Mesa-9.1.patch>
- LLVM R600 Backend MD5 sum: a6f9ec35fa847c4298213ab28fb868ce
- LLVM R600 Backend Fixes: [http://www.linuxfromscratch.org/patches/blfs/svn/llvm-3.2-r600\\_fixes-1.patch](http://www.linuxfromscratch.org/patches/blfs/svn/llvm-3.2-r600_fixes-1.patch)

## Optional Downloads

- Clang: <http://llvm.org/releases/3.2/clang-3.2.src.tar.gz>
- Clang MD5 sum: 3896ef4334df08563b05d0848ba80582
- Clang size: 8.4 MB
- Compiler RT: <http://llvm.org/releases/3.2/compiler-rt-3.2.src.tar.gz>
- Compiler RT MD5 sum: a9a30ccd7bbe6f68a3ca3020af0d852
- Compiler RT size: 1.4 MB



### Warning

If you are going to build radeonsi Gallium3D driver from MesaLib-9.1.3, you will need the recommended patches.

## LLVM Dependencies

### Recommended

libffi-3.0.13

## Optional

Doxygen-1.8.4, Graphviz-2.30.1, libxml2-2.9.1, Zip-3.0, *OCaml*, *Sphinx* and *Valgrind*

## Installation of LLVM

If you have downloaded the optional packages, install them into the source tree by running the following commands:

```
tar -xf ../clang-3.2.src.tar.gz -C tools &&
tar -xf ../compiler-rt-3.2.src.tar.gz -C projects &&

mv tools/clang-3.2.src tools/clang &&
mv projects/compiler-rt-3.2.src projects/compiler-rt &&

sed -e "s@..../lib/libprofile_rt.a@..../lib/llvm/libprofile_rt.a@g" \
-i tools/clang/lib/Driver/Tools.cpp
```

If you have downloaded the recommended patches, apply them by running the following commands:

```
patch -Np1 -i ../R600-Mesa-9.1.patch &&
patch -Np1 -i ../llvm-3.2-r600_fixes-1.patch
```

Install LLVM by running the following commands:

```
patch -Np1 -i ../llvm-3.2-blfs_paths-1.patch &&
CC=gcc CXX=g++ \
./configure --prefix=/usr \
--sysconfdir=/etc \
--libdir=/usr/lib/llvm \
--enable-libffi \
--enable-optimized \
--enable-shared \
--enable-targets=all \
--disable-assertions \
--disable-debug-runtime \
--disable-expensive-checks \
--enable-experimental-targets=R600 &&
make
```

If you have installed Sphinx and wish to generate manual pages, issue the following command:

```
make -C docs -f Makefile.sphinx man
```

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

Now, as the **root** user:

```
make install &&
chmod -v 644 /usr/lib/llvm/*.a &&
echo /usr/lib/llvm >> /etc/ld.so.conf &&
ldconfig
```

If you have built manual pages, install them by running the following command as the `root` user:

```
install -m644 docs/_build/man/* /usr/share/man/man1
```

## Command Explanations

`--enable-libffi`: This switch enables LLVM to use libffi. Remove if you did not install libffi.

`--enable-optimized`: This switch enables compiler optimizations in order to speed up the code and reduce its size.

`--enable-shared`: This switch enables building of the LLVM shared library which contains all of static libraries linked into single library.

`--enable-targets=all`: This switch ensures that all LLVM targets are built.

`--disable-*`: These switches disable features which are used for debugging and are not necessary on a production system.

`--enable-experimental-targets=R600`: This switch enables R600 target which is required by Mesa to build the radeonsi 3D driver. It can be used for r600 LLVM backend and OpenCL state tracker in Mesa. Remove it if you did not apply the recommended patches.

## Contents

**Installed Programs:** bugpoint, c-index-test, clang, clang++, clang-check, clang-tblgen, llc, lli, llvm-ar, llvm-as, llvm-bcanalyzer, llvm-config, llvm-cov, llvm-diff, llvm-dis, llvm-dwarfdump, llvm-extract, llvm-link, llvm-mc, llvm-mcmarkup, llvm-nm, llvm-objdump, llvm-prof, llvm-ranlib, llvm-readobj, llvm-rtdyld, llvm-size, llvm-stress, llvm-tblgen, macho-dump and opt

**Installed Libraries:** libclang.so, libLLVM-3.2.so, libprofile\_rt.so and numerous libraries in /usr/lib/llvm

**Installed Directories:** /usr/include/clang, /usr/include/clang-c, /usr/include/llvm, /usr/include/llvm-c, /usr/lib/clang, /usr/lib/llvm and /usr/share/doc/llvm

## Short Descriptions

<b>bugpoint</b>	is the automatic test case reduction tool.
<b>clang</b>	is the Clang C, C++, and Objective-C compiler.
<b>llc</b>	is the LLVM static compiler.
<b>lli</b>	is used to directly execute programs from LLVM bitcode.
<b>llvm-ar</b>	is the LLVM archiver.
<b>llvm-as</b>	is the LLVM assembler.
<b>llvm-bcanalyzer</b>	is the LLVM bitcode analyzer.
<b>llvm-config</b>	Prints LLVM compilation options.
<b>llvm-cov</b>	is used to emit coverage information.
<b>llvm-diff</b>	is the LLVM structural 'diff'.
<b>llvm-dis</b>	is the LLVM disassembler.
<b>llvm-extract</b>	is used to extract a function from an LLVM module.

<b>llvm-link</b>	is the LLVM linker.
<b>llvm-nm</b>	is used to list LLVM bitcode and object file's symbol table.
<b>llvm-prof</b>	is used to print execution profile of LLVM program.
<b>llvm-ranlib</b>	is used to generate index for LLVM archive.
<b>llvm-stress</b>	is used to generate random .ll files.
<b>llvm-tblgen</b>	is the LLVM Target Description To C++ Code Generator.
<b>opt</b>	is the LLVM optimizer.
<b>libLLVM-3.2.so</b>	contains the LLVM API functions.
<b>libprofile_rt.so</b>	is the C, C++ and Objective-C runtime library for Clang.

# mercurial-2.5.2

## Introduction to Mercurial

Mercurial is a distributed source control management tool similar to CVS, Subversion and Git. Mercurial is written in Python and is used by projects such as Mozilla, Vim and Audacious.

This package is known to build and work properly using an LFS-7.3 platform.

## Package Information

- Download (HTTP): <http://mercurial.selenic.com/release/mercurial-2.5.2.tar.gz>
- 
- Download MD5 sum: 6b467f41a262e2537cf927ed42d0fdda
- Download size: 3.7 MB
- Estimated disk space required: 40 MB
- Estimated build time: 0.1 SBU (additional 8.5 SBU for tests)

## Mercurial Dependencies

### Required

Python-2.7.5

### Optional

*Docutils* (required to build the documentation), git-1.8.2.3, **gpg2** (with Python bindings), Subversion-1.7.8 (with Python bindings), bazaar-2.5.0, CVS-1.11.23, *pyflakes*, *pygments*, and *pyOpenSSL*

## Installation of Mercurial

Build Mercurial by issuing the following command:

```
make build
```

To build the documentation (requires Docutils), issue:

```
make doc
```

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

Install Mercurial by running the following command (as root):

```
make PREFIX=/usr install-bin
```

If you built the documentation, install it by running the following command (as root):

```
make PREFIX=/usr install-doc
```

## Contents

<b>Installed Programs:</b>	hg
<b>Installed Libraries:</b>	none
<b>Installed Directories:</b>	/usr/lib/python2.7/site-packages/hgext and /usr/lib/python2.7/site-packages/mercurial

## Short Descriptions

**hg** is the program file for mercurial.

# NASM-2.10.07

## Introduction to NASM

NASM (Netwide Assembler) is an 80x86 assembler designed for portability and modularity. It includes a disassembler as well.

This package is known to build and work properly using an LFS-7.3 platform.

## Package Information

- Download (HTTP): <http://www.nasm.us/pub/nasm/releasebuilds/2.10.07/nasm-2.10.07.tar.xz>
- 
- Download MD5 sum: b13c433bbf3cfe055c5b830066aed4ba
- Download size: 668 KB
- Estimated disk space required: 26 MB
- Estimated build time: 0.1 SBU

## Additional Downloads

- Optional documentation: <http://www.nasm.us/pub/nasm/releasebuilds/2.10.07/nasm-2.10.07-xdoc.tar.xz>

## Installation of NASM

If you downloaded the optional documentation, put it into the source tree:

```
tar -xf ../nasm-2.10.07-xdoc.tar.xz --strip-components=1
```

Install NASM 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
```

If you downloaded the optional documentation, install it with the following instructions as the root user:

```
install -m755 -d /usr/share/doc/nasm-2.10.07/html &&
cp -v doc/html/*.html /usr/share/doc/nasm-2.10.07/html &&
cp -v doc/*.{txt,ps,pdf} /usr/share/doc/nasm-2.10.07 &&
cp -v doc/info/* /usr/share/info &&
install-info /usr/share/info/nasm.info /usr/share/info/dir
```

## Contents

<b>Installed Programs:</b>	nasm and ndisasm
<b>Installed Libraries:</b>	None
<b>Installed Directory:</b>	/usr/share/doc/nasm-2.10.07

## Short Descriptions

**nasm** is a portable 80x86 assembler.

**ndisasm** is an 80x86 binary file disassembler.

# 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. Installation of the modules shown on this page should be accomplished by installing the dependencies in the order listed. The Perl Module standard build and installation instructions are shown at the bottom of this page.

### Archive::Zip-1.30

The Archive::Zip module allows a Perl program to create, manipulate, read, and write Zip archive files. This module uses the standard build and installation instructions.

- *Archive::Zip-1.30* (MD5 sum: 40153666e7538b410e001aa8a810e702)

### Crypt::SSLeay-0.64

The Crypt::SSLeay module provides support for the HTTPS protocol under LWP, to allow an LWP::UserAgent object to perform GET, HEAD and POST requests. This module and the dependency modules use the standard build and installation instructions.

- *Crypt::SSLeay-0.64* (MD5 sum: 4812f14d6e8c71714a26c0ad733666dc)
  - OpenSSL-1.0.1e
  - *LWP::Protocol::https*
    - libwww-perl-6.04
    - *IO::Socket::SSL*
      - *Net::SSLeay*
      - *Mozilla::CA*
    - *Try::Tiny*

### Date::Manip-6.38

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. This module and the dependency module use the standard build and installation instructions.

- *Date::Manip-6.38* (MD5 sum: 1fa6a10ee3efec82a9ba27dc918001bc)
  - *Test::Inter* (optionally used for the tests)

### Finance::Quote-1.18

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. This module and the dependency modules are installed using the standard build and installation instructions.



### Note

To run the regression test suite, you'll need a working Internet connection and then create a symbolic link to the `t/test` directory using the following command after unpacking the tarball and changing into the root directory of the source tree:

```
ln -s test t
```

Some tests will fail depending on certain conditions. See the `INSTALL` file for full details.

- *Finance::Quote-1.18* (MD5 sum: 339e8327a6c18d8194f6c5d1eea3bbde)
  - libwww-perl-6.04
  - Crypt::SSLeay-0.64
  - HTML::TableExtract-2.11

## Glib-1.280

This module is a Perl wrapper around GLib that attempts to provide a perlish interface while remaining as true as possible to the underlying C API, so that any reference materials you can find on using GLib may still apply to using the libraries from Perl. This module and the dependency modules use the standard build and installation instructions.

- *Glib-1.280* (MD5 sum: 1d81a8aec5f7f1182a96cfaaf119d866)
  - ExtUtils::PkgConfig
  - ExtUtils::Depends

## HTML::Parser-3.69

The `HTML::Parser` distribution is a collection of modules that parse and extract information from HTML documents. This module and the dependency modules use the standard build and installation instructions.

- *HTML::Parser-3.69* (MD5 sum: d22cc6468ce670a56034be907e4e7c54)
  - *HTML::Tagset*
  - libwww-perl-6.04 (circular; however, it can be installed after `HTML::Parser` as it is only a run-time requirement for the included `HTML::HeadParser` module)

## HTML::TableExtract-2.11

`HTML::TableExtract` is a module that simplifies the extraction of the content contained in tables within HTML documents, extracted either as text or encoded element trees. Tables of note may be specified using Headers, Depth, Count, Attributes, or some combination of the four. This module and dependency modules use the standard build and installation instructions.

- *HTML::TableExtract-2.11* (MD5sum: ac1b8fa092d53931a9f3fdbba330f5b0)
  - *HTML::Element::Extended*
  - *HTML::Tree*

- `HTML::Parser-3.69`
- *Test::Fatal* (optionally used in the test suite)
  - *Try::Tiny*

## **libwww-perl-6.04 (a.k.a. LWP)**

The libwww-perl (LWP) collection is a set of Perl modules which provide 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 collection and all its dependency modules use the standard build and installation instructions. The dependencies should be installed in the order listed below. Ensure you install the dependency chain for each module before installing the modules.

- *libwww-perl-6.04* (MD5 sum: 24acf2fe33b2295f048f8859e9665ee3)
  - *Encode::Locale*
  - *HTML::Form*
    - *URI-1.60*
  - *HTML::Parser-3.69*
  - *HTTP::Message*
    - *HTTP::Date*
    - *IO::HTML*
    - *LWP::MediaTypes*
  - *HTTP::Cookies*
  - *HTTP::Negotiate*
  - *Net::HTTP*
  - *WWW::RobotRules*
  - *HTTP::Daemon*
  - *File::Listing*

If you want the LWP installation to support the HTTPS protocol, install the following modules:

- *OpenSSL-1.0.1e*
- *LWP::Protocol::https*
  - *IO::Socket::SSL*
    - *Net::SSLeay*
  - *Mozilla::CA*

## **Net::DNS-0.70**

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 are installed using the standard build and installation instructions.

- *Net::DNS-0.70* (MD5 sum: 3c91eba5c44426e0abd84f0eb43c4158)

- *Digest::HMAC*
- *IO::Socket::INET* (required for IPv6 support)
  - *Socket6*

## SGMLSpm-1.1

The SGMLSpm module is a Perl library used for parsing the output from James Clark's SGMLS and NSGMLS parsers. This module uses the standard build and installation instructions. Before beginning the build, issue the following command to prevent an error:

```
chmod -v 644 MYMETA.yml
```

- *SGMLSpm-1.1* (MD5 sum: 746c74ae969992cedb1a2879b4168090)

## URI-1.60

This module implements the URI class. Objects of this class represent "Uniform Resource Identifier references" as specified in RFC 2396 (and updated by RFC 2732). A Uniform Resource Identifier is a compact string of characters that identifies an abstract or physical resource. A Uniform Resource Identifier can be further classified as either a Uniform Resource Locator (URL) or a Uniform Resource Name (URN). The distinction between URL and URN does not matter to the URI class interface. A "URI-reference" is a URI that may have additional information attached in the form of a fragment identifier. This module uses the standard build and installation instructions.

- *URI-1.60* (MD5 sum: 70f739be8ce28b8baba7c5920ffee4dc)

## XML::Parser-2.41

The XML::Parser module is a Perl extension interface to James Clark's XML parser, expat. The module uses the standard build and installation instructions.

- *XML::Parser-2.41* (MD5 sum: c320d2ffa459e6cdc6f9f59c1185855e)
  - expat-2.1.0
  - libwww-perl-6.04 (optionally used in the test suite)

## XML::Simple-2.20

The XML::Simple module is a Perl extension that provides an easy API to read and write XML (especially config files). This module and all dependency modules use the standard build and installation instructions.

- *XML::Simple-2.20* (MD5 sum: 4d10964e123b76eca36678464daa63cd)
  - *XML::SAX::Expat*
    - XML::Parser-2.41
  - *XML::SAX*
    - *XML::NamespaceSupport*
    - *XML::SAX::Base*
  - *XML::LibXML* (recommended for faster parsing)
  - *Tie::IxHash* (optionally used in the test suite)

## 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
```

### Note

When reinstalling a Perl module, sometimes older versions of the module being reinstalled are in other directories specified in `@INC`. To delete all other versions of the module being reinstalled (not simply older ones) set the `UNINST` variable:

```
make install UNINST=1
```

## (Alternate) Auto Installation of Perl Modules.

There is an alternate way of installing the modules using the `cpan` shell `install` command. The command automatically downloads the source from the CPAN archive, extracts it, runs the compilation, testing and installation commands mentioned above, and removes the build source tree. You may still need to install dependent library packages before running the automated installation method.

The first time you run `cpan`, you'll be prompted to enter some information regarding download locations and methods. This information is retained in files located in `~/ .cpan`. Start the `cpan` shell by issuing '`cpan`' as the `root` user. Any module may now be installed from the `cpan>` prompt with the command:

```
install <Module::Name>
```

For additional commands and help, issue '`help`' from the `cpan>` prompt.

Alternatively, for scripted or non-interactive installations, use the following syntax as the `root` user to install one or more modules:

```
cpan -i <Module1::Name> <Module2::Name>
```

Review the `cpan .1` man page for additional parameters you can pass to `cpan` on the command line.

# PHP-5.4.11

## 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. It is also useful as a general purpose scripting language.

This package is known to build and work properly using an LFS-7.3 platform.

## Package Information

- Download (HTTP): <http://us2.php.net/distributions/php-5.4.11.tar.bz2>
- Download (FTP): <ftp://ftp.isu.edu.tw/pub/Unix/Web/PHP/distributions/php-5.4.11.tar.bz2>
- Download MD5 sum: 9975e68c22b86b013b934743ad2d2276
- Download size: 10.6 MB
- Estimated disk space required: 522 MB (includes installing all documentation)
- Estimated build time: 2.6 SBU (additional 2.2 SBU to run the test suite)

## Additional Downloads

- Pre-built documentation (optional): <http://www.php.net/download-docs.php>

## PHP Dependencies

### Required

Apache-2.4.4

### Recommended

libxml2-2.9.1

## Optional System Utilities and Libraries

libxslt-1.1.28, PCRE-8.32, Aspell-0.60.6.1, enchant-1.6.0, pkg-config-0.28, expat-2.1.0 (deprecated alternative to libxml2-2.9.1), OSSP *mm*, Net-SNMP, Pth-2.0.7, re2c, XMLRPC-EPI, Dmalloc, and an MTA (that provides a **sendmail** command)

## Optional Graphics Utilities and Libraries

libjpeg-turbo-1.2.1, LibTIFF-4.0.3, libpng-1.6.2, libexif-0.6.21, FreeType-2.4.12, X Window System, ClibPDF, GD (*has bugs*), *t1lib*, and *FDF Toolkit*

## Optional Web Utilities

cURL-7.30.0, HTML Tidy-cvs\_20101110, mnoGoSearch, Hyperwave, Roxen WebServer, Caudium, and WDDX

## Optional Data Management Utilities and Libraries

OpenLDAP-2.4.35, Berkeley DB-5.3.21, MySQL-5.6.11, PostgreSQL-9.2.4, unixODBC-2.3.1, SQLite-3.7.16.2, QDBM, cdb, Mini SQL, Empress, Birdstep, DBMaker, Adabas, FrontBase, and Monetra

PHP also provides support for many commercial database tools such as Oracle, SAP and ODBC Router.

## Optional Security/Encryption Utilities and Libraries

OpenSSL-1.0.1e, Cyrus SASL-2.1.26, MIT Kerberos V5-1.11.2, libmcrypt, and mhash

## Installation of PHP

You can use PHP for server-side scripting, command-line scripting or client-side GUI applications. This book provides instructions for setting up PHP for server-side scripting as it is the most common form.



### Note

PHP has many more **configure** options that will enable support for various 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. An example of a **configure** command that utilizes many of the most common dependencies can be found at [http://anduin.linuxfromscratch.org/files/BLFS/svn/php\\_configure.txt](http://anduin.linuxfromscratch.org/files/BLFS/svn/php_configure.txt).

If, for whatever reason, you don't have libxml2-2.9.1 installed, you need to add **--disable-libxml** to the **configure** command in the instructions below. Note that this will prevent the **pear** command from being built.

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=shared \
            --with-gdbm \
            --with-gmp \
            --enable-ftp \
            --with-gettext \
            --enable-mbstring \
            --with-readline &&
make
```

To test the results, issue: **make test**. Some of the tests are known to fail.

Now, as the root user:

```
make install &&
install -v -m644 php.ini-production /etc/php.ini &&

install -v -m755 -d /usr/share/doc/php-5.4.11 &&
install -v -m644      CODING_STANDARDS EXTENSIONS INSTALL NEWS \
                    README* UPGRADING* php.gif \
                    /usr/share/doc/php-5.4.11 &&
ln -v -sfn          /usr/lib/php/doc/Archive_Tar/docs/Archive_Tar.txt \
                    /usr/share/doc/php-5.4.11 &&
ln -v -sfn          /usr/lib/php/doc/Structures_Graph/docs \
                    /usr/share/doc/php-5.4.11
```

The pre-built HTML documentation is packaged in two forms: a tarball containing many individual files, useful for quick loading into your browser, and one large individual file, which is useful for using the search utility of your browser. If you downloaded either, or both, of the documentation files, issue the following commands as the `root` user to install them (note these instructions assume English docs, modify the tarball names below if necessary).

For the “Single HTML” file:

```
install -v -m644 ../php_manual_en.html.gz \
    /usr/share/doc/php-5.4.11 &&
gunzip -v /usr/share/doc/php-5.4.11/php_manual_en.html.gz
```

For the “Many HTML files” tarball:

```
tar -xvf ../php_manual_en.tar.gz \
    -C /usr/share/doc/php-5.4.11 --no-same-owner
```

## Command Explanations

`--with-apxs2`: This parameter builds the Apache HTTPD 2.0 module.

`--with-config-file-path=/etc`: This parameter makes PHP look for 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`: Adds support for Bzip2 compression functions.

`--enable-calendar`: This parameter provides support for calendar conversion.

`--enable-dba=shared`: This parameter enables support for database (dbm-style) abstraction layer functions.

`--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-readline`: This parameter enables command line Readline support.

`--disable-libxml`: This option allows building PHP without libxml2 installed.

## Configuring PHP

### Config Files

`/etc/php.ini` and `/etc/pear.conf`

### Configuration Information

The file used as the default `/etc/php.ini` configuration file is recommended by the PHP development team. This file modifies the default behavior of PHP. If no `/etc/php.ini` is used, all configuration settings fall to the defaults. You should review the comments in this file and ensure the changes are acceptable in your particular environment.

You may have noticed the following from the output of the `make install` command:

```
You may want to add: /usr/lib/php to your php.ini include_path
```

If desired, add the entry using the following command as the `root` user:

```
sed -i 's@php/includes"@@&\ninclude_path = ".:/usr/lib/php"@" \\\n/etc/php.ini
```

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\nAddType application/x-httdp-php .php
```

Additionally, it can be useful to add an entry for `index.php` to the `DirectoryIndex` directive of the `httpd.conf` file. Lastly, adding a line to setup the `.phps` extension to show highlighted PHP source may be desirable:

```
AddType application/x-httdp-php-source .phps
```

You'll need to restart the Apache web server after making any modifications to the `httpd.conf` file.

## Contents

<b>Installed Programs:</b>	pear, peardev, pecl, php, php-config and phpize
<b>Installed Library:</b>	libphp5.so Apache module
<b>Installed Directories:</b>	/usr/include/php, /usr/lib/php and /usr/share/doc/php-5.4.11

## 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.

# pkg-config-0.28

## Introduction to pkg-config

The pkg-config package contains a tool for passing the include path and/or library paths to build tools during the **configure** and **make** file execution.

This package is known to build and work properly using an LFS-7.2 platform.



### Note

Pkg-config is part of LFS, but was omitted from the 7.0 and 7.1 releases. If you are using a system which includes it, there is nothing more to do. If not, you should follow these instructions.

## Package Information

- Download (HTTP): <http://pkgconfig.freedesktop.org/releases/pkg-config-0.28.tar.gz>
- Download (FTP):
- Download MD5 sum: aa3c86e67551adc3ac865160e34a2a0d
- Download size: 1.9 MB
- Estimated disk space required: 30 MB
- Estimated build time: 0.3 SBU

## Installation of pkg-config

Install pkg-config by running the following commands:

```
./configure --prefix=/usr \
            --docdir=/usr/share/doc/pkg-config-0.28 \
            --with-internal-glib \
            --disable-host-tool &&
make
```

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

Now, as the **root** user:

```
make install
```

## Command Explanations

**--with-internal-glib**: This switch causes the package to use the shipped version of GLib2.

**--disable-host-tool**: This switch disables creation of the unnecessary symlink.

## Configuring pkg-config

The default setting for **PKG\_CONFIG\_PATH** is **/usr/lib/pkgconfig:/usr/share/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 .pc 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** returns meta information for the specified library or package.

# Python-2.7.5

## Introduction to Python 2

The Python 2 package contains the Python development environment. It is useful for object-oriented programming, writing scripts, prototyping large programs or developing entire applications. This version is for backward compatibility with other dependent packages.

This package is known to build and work properly using an LFS-7.3 platform.

## Package Information

- Download (HTTP): <http://www.python.org/ftp/python/2.7.5/Python-2.7.5.tar.xz>
- 
- Download MD5 sum: 5eea8462f69ab1369d32f9c4cd6272ab
- Download size: 9.8 MB
- Estimated disk space required: 235 MB
- Estimated build time: 1.0 SBU

## Additional Downloads

### Optional HTML Documentation

- Download (HTTP): <http://docs.python.org/ftp/python/doc/2.7.5/python-2.7.5-docs-html.tar.bz2>
- Download MD5 sum: 77ae8fd6b456c6339a1a62d57425335b
- Download size: 4.3 MB

## Python 2 Dependencies

### Recommended

expat-2.1.0, libffi-3.0.13 and pkg-config-0.28

### Optional

BlueZ-4.101

### Optional (For Additional Modules)

Berkeley DB-5.3.21, OpenSSL-1.0.1e, SQLite-3.7.16.2 and Tk-8.6.0

## Installation of Python 2

Install Python 2 by running the following commands:

```
./configure --prefix=/usr      \
            --enable-shared   \
            --with-system-expat \
            --with-system-ffi   \
            --enable-unicode=ucs4 &&
make
```

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

Now, as the root user:

```
make install &&
chmod -v 755 /usr/lib/libpython2.7.so.1.0
```

If you have downloaded the preformatted documentation from <http://docs.python.org/download.html>, install it as the root user:

```
install -v -dm755 /usr/share/doc/python-2.7.5 &&
tar --strip-components=1 -C /usr/share/doc/python-2.7.5 \
-xvf ../python-2.7.5-docs-html.tar.bz2 &&
find /usr/share/doc/python-2.7.5 -type d -exec chmod 0755 {} \; &&
find /usr/share/doc/python-2.7.5 -type f -exec chmod 0644 {} \;
```

## Command Explanations

**--with-system-expat**: This switch enables linking against system version of Expat. Remove if you have not installed expat-2.1.0.

**--with-system-ffi**: This switch enables linking against system version of libffi. Remove if you have not installed libffi-3.0.13.

**--enable-unicode=ucs4**: This switch enables 32bit Unicode support in Python.

**--with-dbmliborder=bdb:gdbm:ndbm**: Use this switch if you want to build Python DBM Module against Berkeley DB instead of GDBM.

**chmod ...**: Fix permissions for libraries to be consistent with other libraries.

## Configuring Python 2

In order for **python** to find the installed documentation, you must add the following environment variable to individual user's or the system's profile:

```
export PYTHONDOKS=/usr/share/doc/python-2.7.5
```

## Contents

<b>Installed Programs:</b>	2to3, pydoc, python, python-config, python2, python2-config, python2.7, python2.7-config, smtpd.py, and optionally if Tk is installed, idle
<b>Installed Library:</b>	libpython2.7.so
<b>Installed Directories:</b>	/usr/include/python2.7, /usr/lib/python2.7, and /usr/share/doc/python-2.7.5

## Short Descriptions

<b>2to3</b>	is a Python program that reads Python 2.x source code and applies a series of fixers to transform it into valid Python 3.x code.
<b>idle</b>	is a wrapper script that opens a Python aware GUI editor.
<b>pydoc</b>	is the Python documentation tool.
<b>python</b>	is an interpreted, interactive, object-oriented programming language.
<b>python2.7</b>	is a version-specific name for the <b>python</b> program.

**smtpd.py** is an SMTP proxy implemented in Python.

# Python-3.3.2

## Introduction to Python 3

The Python 3 package contains the Python development environment. This is useful for object-oriented programming, writing scripts, prototyping large programs or developing entire applications.

This package is known to build and work properly using an LFS-7.3 platform.

### Package Information

- Download (HTTP): <http://www.python.org/ftp/python/3.3.2/Python-3.3.2.tar.xz>
- 
- Download MD5 sum: c94b78ea3b68a9bbc9906af4d5b4fdc7
- Download size: 12 MB
- Estimated disk space required: 260 MB
- Estimated build time: 0.9 SBU

### Additional Downloads

#### Optional HTML Documentation

- Download (HTTP): <http://docs.python.org/ftp/python/doc/3.3.2/python-3.3.2-docs-html.tar.bz2>
- Download MD5 sum: b5eee2b290338fb08c1512bfc79bb999
- Download size: 4.7 MB

### Python 3 Dependencies

#### Recommended

expat-2.1.0, libffi-3.0.13 and pkg-config-0.28

#### Optional

BlueZ-4.101

#### Optional (For Additional Modules)

Berkeley DB-5.3.21, OpenSSL-1.0.1e, SQLite-3.7.16.2 and Tk-8.6.0

## Installation of Python 3

Install Python 3 by running the following commands:

```
./configure --prefix=/usr      \
            --enable-shared   \
            --with-system-expat \
            --with-system-ffi &&
make
```

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

Now, as the root user:

```
make install &&
chmod -v 755 /usr/lib/libpython3.3m.so &&
chmod -v 755 /usr/lib/libpython3.so
```

If you have downloaded the preformatted documentation from <http://docs.python.org/download.html>, install it as the root user:

```
install -v -dm755 /usr/share/doc/python-3.3.2/html &&
tar --strip-components=1 \
    --no-same-owner \
    --no-same-permissions \
    -C /usr/share/doc/python-3.3.2/html \
    -xvf ../python-3.3.2-docs-html.tar.bz2
```

## Command Explanations

**--with-system-expat**: This switch enables linking against system version of Expat. Remove if you have not installed recommended dependency expat-2.1.0.

**--with-system-ffi**: This switch enables linking against system version of libffi. Remove if you have not installed recommended dependency libffi-3.0.13.

**--with-dbmliborder=bdb:gdbm:ndbm**: Use this switch if you want to build Python DBM Module against Berkeley DB instead of GDBM.

**chmod ...**: Fix permissions for shared libraries to be consistent with other libraries.

## Configuring Python 3

In order for **python3** to find the installed documentation, you must add the following environment variable to individual user's or the system's profile:

```
export PYTHONDOCS=/usr/share/doc/python-3.3.2/html
```

## Contents

**Installed Programs:** 2to3 (symbolic link to 2to3-3.3), 2to3-3.3, pydoc3 (symbolic link to pydoc3.3), pydoc3.3, python3 (hard link to python3.3m), python3.3 (hard link to python3.3m), python3.3m, python3-config (symbolic link to python3.3-config), python3.3-config (symbolic link to python3-config), python3.3m-config, and optionally if Tk is installed, idle3 (symbolic link to idle3.3), idle3.3

**Installed Libraries:** libpython3.3m.so and libpython3.so

**Installed Directories:** /usr/include/python3.3m, /usr/lib/python3.3, and /usr/share/doc/python-3.3.2

## Short Descriptions

**idle3** is a wrapper script that opens a Python aware GUI editor.

**pydoc3** is the Python documentation tool.

**python3** is an interpreted, interactive, object-oriented programming language.

**python3.3** is a version-specific name for the **python** program.

# Python Modules

## Introduction to Python Modules

The Python module packages add useful objects to the Python language. Modules utilized by packages throughout BLFS are listed here, along with their dependencies. Installation of the modules shown on this page is meant to follow from top to bottom to handle optional dependencies in each module.

- Notify Python-0.1.1
- Py2cairo-1.10.0
- PyGObject-2.28.6
- PyGObject-3.4.2
- PyGTK-2.24.0
- pyatspi2-2.6.0
- Pyrex-0.9.9

## Notify Python-0.1.1

### Introduction to Notify Python Module

Notify Python provides Python 2 bindings to the libnotify.

This package is known to build and work properly using an LFS-7.2 platform.

### Package Information

- Download (HTTP): <http://www.galago-project.org/files/releases/source/notify-python/notify-python-0.1.1.tar.bz2>
- Download MD5 sum: d247cf79b46cef7495deb0a76334f81d
- Download size: 212 KB
- Estimated disk space required: 2.3 MB
- Estimated build time: less than 0.1 SBU

### Additional Downloads

- Required patch: <http://www.linuxfromscratch.org/patches/blfs/svn/notify-python-0.1.1-libnotify-0.7-1.patch>

### Notify Python Dependencies

#### Required

libnotify-0.7.5 and PyGTK-2.24.0 (with GTK+-2.24.17 support).

### Installation of Notify Python

Install Notify Python by running the following commands:

```
patch -Np1 -i ../notify-python-0.1.1-libnotify-0.7-1.patch &&
./configure --prefix=/usr &&
make
```

This package does not come with a testsuite.

Now, as the `root` user:

```
make install
```

## Contents

<b>Installed Programs:</b>	None
<b>Installed Libraries:</b>	None
<b>Installed Directory:</b>	/usr/lib/python2.7/site-packages/gtk-2.0/pynotify

## Py2cairo-1.10.0

### Introduction to Py2cairo Module

Py2cairo provides Python 2 bindings to Cairo.

This package is known to build and work properly using an LFS-7.3 platform.

### Package Information

- Download (HTTP): <http://cairographics.org/releases/py2cairo-1.10.0.tar.bz2>
- 
- Download MD5 sum: 20337132c4ab06c1146ad384d55372c5
- Download size: 400 KB
- Estimated disk space required: 3.6 MB
- Estimated build time: less than 0.1 SBU

### Py2cairo Dependencies

#### Required

Python-2.7.5 and Cairo-1.12.14

#### Optional

*pytest*

## Installation of Py2cairo

Install Py2cairo by running the following commands:

```
./waf configure --prefix=/usr &&
./waf build
```

The test suite must be run after the package is installed.

Now, as the `root` user:

```
./waf install
```

The test suite requires the optional `pytest` package. If installed, it is run by changing to the `test` directory and running `py.test` as an unprivileged user.

## Contents

<b>Installed Programs:</b>	None
<b>Installed Library:</b>	_cairo.so
<b>Installed Directory:</b>	/usr/include/pycairo and /usr/lib/python2.7/site-packages/cairo

## PyGObject-2.28.6

### Introduction to PyGObject Module

PyGObject-2.28.6 provides Python 2 bindings to the GObject class from GLib.

This package is known to build and work properly using an LFS-7.3 platform.

### Package Information

- Download (HTTP): <http://ftp.gnome.org/pub/gnome/sources/pygobject/2.28/pygobject-2.28.6.tar.xz>
- Download (FTP): <ftp://ftp.gnome.org/pub/gnome/sources/pygobject/2.28/pygobject-2.28.6.tar.xz>
- Download MD5 sum: 9415cb7f2b3a847f2310cce258b101e
- Download size: 730 KB
- Estimated disk space required: 25 MB
- Estimated build time: 0.2 SBU

### Additional Downloads

- Required patch (if you have installed gobject-introspection-1.34.2): <http://www.linuxfromscratch.org/patches/blfs/svn/pygobject-2.28.6-introspection-1.patch>

### PyGObject Dependencies

#### Required

GLib-2.34.3 and Py2cairo-1.10.0

#### Optional

libxslt-1.1.28 (to Build Documentation)

### Installation of PyGObject

Install PyGObject by running the following commands:

```
patch -p1 < ../pygobject-2.28.6-introspection-1.patch &&
./configure --prefix=/usr &&
make
```

This package does not have a working testsuite.

Now, as the root user:

```
make install
```

### Command Explanations

--disable-docs: This option disables the rebuilding of the html documentation if libxslt-1.1.28 is installed.

## Contents

<b>Installed Programs:</b>	pygobject-codegen-2.0
<b>Installed Libraries:</b>	libpyglib-2.0-python.so, _gio.so, unix.so, _glib.so and _gobject.so.
<b>Installed Directories:</b>	/usr/include/pygtk-2.0, /usr/lib/python2.7/site-packages/gtk-2.0/{gio,glib,gobject}, /usr/share/gtk-doc/html/pygobject and /usr/share/pygobject/2.0

## PyGObject-3.4.2

### Introduction to PyGObject Module

PyGObject-3.4.2 provides Python 2 bindings to the GObject class from GLib.

This package is known to build and work properly using an LFS-7.2 platform.

### Package Information

- Download (HTTP): <http://ftp.gnome.org/pub/gnome/sources/pygobject/3.4/pygobject-3.4.2.tar.xz>
- Download (FTP): <ftp://ftp.gnome.org/pub/gnome/sources/pygobject/3.4/pygobject-3.4.2.tar.xz>
- Download MD5 sum: a17b3897507f179d643e02f5abf111ac
- Download size: 604 KB
- Estimated disk space required: 16 MB
- Estimated build time: 0.1 SBU

### PyGObject Dependencies

#### Required

gobject-introspection-1.34.2 and Py2cairo-1.10.0

#### Optional

libxslt-1.1.28 (to Build Documentation)

### Installation of PyGObject

Install PyGObject 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

**--disable-docs**: This option disables the rebuilding of the html documentation if libxslt-1.1.28 is installed.

## Contents

<b>Installed Programs:</b>	None
<b>Installed Library:</b>	libpyglib-gi-2.0-python.so
<b>Installed Directories:</b>	/usr/include/pygobject-3.0 and /usr/lib/python2.7/site-packages/gi

# PyGTK-2.24.0

## Introduction to PyGTK Module

PyGTK lets you to easily create programs with a graphical user interface using the Python programming language.

This package is known to build and work properly using an LFS-7.3 platform.

### Package Information

- Download (HTTP): <http://ftp.gnome.org/pub/gnome/sources/pygtk/2.24/pygtk-2.24.0.tar.bz2>
- Download (FTP): <ftp://ftp.gnome.org/pub/gnome/sources/pygtk/2.24/pygtk-2.24.0.tar.bz2>
- Download MD5 sum: a1051d5794fd7696d3c1af6422d17a49
- Download size: 2.2 MB
- Estimated disk space required: 83 MB
- Estimated build time: 0.7 SBU

## PyGTK Dependencies

### Required

PyGObject-2.28.6

### Required (atk module)

ATK-2.6.0

### Required (pango module)

Pango-1.32.5

### Required (pangocairo module)

Py2cairo-1.10.0 and Pango-1.32.5

### Required (gtk and gtk\_unixprint modules)

Py2cairo-1.10.0 and GTK+-2.24.17.

### Required (gtk.libglade module)

Py2cairo-1.10.0 and libglade-2.6.4.

### Optional

*NumPy*

### Optional (to Build Documentation)

libxslt-1.1.28

## Installation of PyGTK

Install PyGTK by running the following commands:

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

The tests must be run from an active X display. If this is so, issue: **make check**.

Now, as the root user:

```
make install
```

## Command Explanations

--enable-docs: This option enables rebuilding the html documentation if libxslt-1.1.28 is installed.

## Contents

<b>Installed Programs:</b>	pygtk-codegen-2.0 and pygtk-demo.
<b>Installed Libraries:</b>	atk.so, _gtk.so, glade.so, gtkunixprint.so, pango.so and pangocairo.so.
<b>Installed Directories:</b>	/usr/include/pygtk-2.0, /usr/lib/pygtk, /usr/lib/python2.7/site-packages/gtk-2.0, /usr/share/gtk-doc/html/pygtk and /usr/share/pygtk.

## Short Descriptions

**pygtk-codegen-2.0** is a wrapper script to run the PyGTK codegen module.

**pygtk-demo** is a Python wrapper to run the PyGTK demo program.

## pyatspi2-2.6.0

### Introduction to pyatspi2

The pyatspi2 package contains Python2 bindings for the core components of GNOME Accessibility.

This package is known to build and work properly using an LFS-7.2 platform.

### Package Information

- Download (HTTP): <http://ftp.gnome.org/pub/gnome/sources/pyatspi/2.6/pyatspi-2.6.0.tar.xz>
- Download (FTP): <ftp://ftp.gnome.org/pub/gnome/sources/pyatspi/2.6/pyatspi-2.6.0.tar.xz>
- Download MD5 sum: 95c48cae83d1f6d6cd13615df14124e5
- Download size: 284 KB
- Estimated disk space required: 3.5 MB
- Estimated build time: less than 0.1 SBU

### pyatspi2 Dependencies

#### Required

PyGObject-3.4.2

#### Recommended

at-spi2-core-2.6.3

## Installation of pyatspi2

Install pyatspi2 by running the following commands:

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

This package does not come with a testsuite.

Now, as the `root` user:

```
make install
```

## Contents

<b>Installed Programs:</b>	None
<b>Installed Libraries:</b>	None
<b>Installed Directory:</b>	/usr/lib/python2.7/site-packages/pyatspi

## Pyrex-0.9.9

### Introduction to Pyrex Module

Pyrex is language used for writing Python extension modules.

This package is known to build and work properly using an LFS-7.2 platform.

### Package Information

- Download (HTTP): <http://www.cosc.canterbury.ac.nz/~greg/python/Pyrex/Pyrex-0.9.9.tar.gz>
- 
- Download MD5 sum: 515dee67d15d4393841e2d60e8341947
- Download size: 252 KB
- Estimated disk space required: 4.0 MB
- Estimated build time: less than 0.1 SBU

### Pyrex Dependencies

#### Required

Python-2.7.5

### Installation of Pyrex

Install pyrex by running the following commands as the `root` user:

```
python setup.py install
```

## Command Explanations

**python setup.py install:** This command installs the package. There are other options available, see **python setup.py --help-commands** for details.

## Contents

<b>Installed Program:</b>	pyrexc
<b>Installed Libraries:</b>	None
<b>Installed Directory:</b>	/usr/lib/python2.7/site-packages/Pyrex

# Ruby-1.9.3-p429

## Introduction to Ruby

The Ruby package contains the Ruby development environment. This is useful for object-oriented scripting. This package is known to build and work properly using an LFS-7.3 platform.

## Package Information

- 
- Download (FTP): <ftp://ftp.ruby-lang.org/pub/ruby/1.9/ruby-1.9.3-p429.tar.bz2>
- Download MD5 sum: c2b2de5ef15ea9b1aaa3152f9112af1b
- Download size: 9.6 MB
- Estimated disk space required: 890 MB
- Estimated build time: 4.0 SBU

## Ruby Dependencies

### Optional

Berkeley DB-5.3.21, Doxygen-1.8.4, Graphviz-2.30.1, *libyaml*, OpenSSL-1.0.1e and Tk-8.6.0

## Installation of Ruby

Install Ruby by running the following commands:

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

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

Now, as the root user:

```
make install
```

## Command Explanations

**--enable-shared**: This switch enables building of the *libruby* shared library.

## Contents

<b>Installed Programs:</b>	erb, gem, irb, rake, rdoc, ri, ruby and testrb
<b>Installed Libraries:</b>	libruby.so, libruby-static.a and numerous modules located in the /usr/lib/ruby hierarchy.
<b>Installed Directories:</b>	/usr/include/ruby-1.9.1, /usr/lib/ruby, /usr/share/doc/ruby and /usr/share/ri

## Short Descriptions

<b>ruby</b>	is an interpreted scripting language for quick and easy object-oriented programming.
<b>irb</b>	is the interactive interface for Ruby.
<b>erb</b>	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.

# S-Lang-2.2.4

## Introduction to S-Lang

S-Lang is an interpreted language that may be embedded into an application to make the application extensible. It provides facilities required by interactive applications such as display/screen management, keyboard input and keymaps.

This package is known to build and work properly using an LFS-7.2 platform.

## Package Information

- 
- Download (FTP): <ftp://space.mit.edu/pub/davis/slang/v2.2/slang-2.2.4.tar.bz2>
- Download MD5 sum: 7fcfd447e378f07dd0c0bae671fe6487
- Download size: 1.4 MB
- Estimated disk space required: 9.4 MB
- Estimated build time: 0.4 SBU

## S-Lang Dependencies

### Optional

libpng-1.6.2, PCRE-8.32, and *Oniguruma*

## Installation of S-Lang

Install S-Lang by running the following commands:

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

To test the results, issue: **make check**. Note that this will also create a static version of the library which will then be installed in the next step.

Now, as the root user:

```
make install_doc_dir=/usr/share/doc/slang-2.2.4 \
SLSH_DOC_DIR=/usr/share/doc/slang-2.2.4/sls \
install-all &&

chmod -v 755 /usr/lib/libslang.so.2.2.4 \
/usr/lib/slang/v2/modules/*.so
```

## Command Explanations

**make install\_doc\_dir=/usr/share/doc/slang-2.2.4 SLSH\_DOC\_DIR=/usr/share/doc/slang-2.2.4/sls install-all**

This command installs the static library as well as the dynamic shared version and related modules. It also changes the documentation installation directories to a versioned directory.

--with-readline-gnu: Use this parameter to use the Gnu Readline parser instead of the S-Lang internal version.

# Configuring S-Lang

## Config Files

`~/.slshrc` and `/etc/slsh.rc`

## Contents

<b>Installed Program:</b>	slsh
<b>Installed Libraries:</b>	<code>libslang.{so,a}</code> and numerous support modules
<b>Installed Directories:</b>	<code>/usr/lib/slang</code> , <code>/usr/share/doc/slang-2.2.4</code> and <code>/usr/share/slsh</code>

## Short Descriptions

**slsh** is a simple program for interpreting S-Lang scripts. It supports dynamic loading of S-Lang modules and includes a Readline interface for interactive use.

# Subversion-1.7.8

## 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.

This package is known to build and work properly using an LFS-7.3 platform.

## Package Information

- Download (HTTP): <http://archive.apache.org/dist/subversion/subversion-1.7.8.tar.bz2>
- 
- Download MD5 sum: 454b9f398415c3504435bf8c3f6ed127
- Download size: 5.8 MB
- Estimated disk space required: 115 MB (additional 585 MB for tests)
- Estimated build time: 0.9 SBU (additional 19 SBU for tests)

## Subversion Dependencies

### Required

SQLite-3.7.16.2, Apr-Util-1.5.2 and neon-0.29.6 or *serf*

If you require the Berkeley DB back-end hooks in Subversion to build or support BDB based repositories, you must have APR-util linked to the Berkeley DB library.

### Optional

Python-2.7.5 (required to run the test suite), Berkeley DB-5.3.21, Cyrus SASL-2.1.26, OpenSSL-1.0.1e, D-Bus GLib Bindings-0.100.2, gnome-keyring-3.6.3, kdelibs-4.10.3 (for *KWallet* support) and Apache-2.4.4

### Optional (for the Java Bindings)

One of OpenJDK-1.7.0.9, *Dante*, or *Jikes*, and JUnit-4.10 (to test the Java bindings)

### Optional (for the SWIG Bindings)

*SWIG* and Python-2.7.5

## Installation of Subversion

Install Subversion by running the following commands:

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

If you have Doxygen-1.8.4 installed and you wish to build the API documentation, issue: **doxygen doc/doxygen.conf**.

If you passed the **--enable-javahl** parameter to **configure** and wish to build the Java bindings, issue the following command:

```
make javahl
```

## Perl and/or Python

If you have a multi core CPU and normally run **make** with multiple jobs (eg **make -j4**) then a bug in the **Makefile** will prevent the Perl bindings compiling correctly. Fix the **Makefile** with this sed:

```
sed -i 's#Makefile.PL.in$##& libsvn_swig_perl#' Makefile.in
```

To compile the Perl and/or Python bindings issue any or all of the following commands:

```
make swig-pl &&
make swig-py
```

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

To test the results of the Java bindings build, issue **make check-javahl**. Note you must have the JUnit testing framework installed.

To test the results of any or all of the SWIG bindings, you can use the following commands:

```
make check-swig-pl &&
make check-swig-py
```

Now, as the root user:

```
make install &&
install -v -m755 -d /usr/share/doc/subversion-1.7.8 &&
cp      -v -R      doc/* \
          /usr/share/doc/subversion-1.7.8
```

If you built the Java bindings, issue the following command as the root user to install them:

```
make install-javahl
```

If you built any of the SWIG bindings, issue any or all of the following commands as the root user to install them:

```
make install-swig-pl &&
make install-swig-py
```

In order for Python to automatically discover the bindings, add `/usr/lib/svn-python` to the `PYTHONPATH` environment variable to the system or personal profiles.

## Command Explanations

`--disable-static`: This switch prevents installation of static versions of the libraries.

## 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

<b>Installed Programs:</b>	svn, svnadmin, svndumpfilter, svnlook, svnserve, svnsync and svnversion
<b>Installed Libraries:</b>	libsvn*.so and optionally, a Java library, the mod_dav_svn.so, and mod_authz_svn.so Apache HTTP DSO modules and various Perl and Python modules.
<b>Installed Directories:</b>	/usr/include/subversion-1, /usr/lib/perl5/site_perl/<5.x.y>/<arch-linux>/auto/SVN (optional), /usr/lib/perl5/site_perl/<5.x.y>/<arch-linux>/SVN (optional), /usr/lib/ruby/site_ruby/<x.y>/i686-linux/svn (al), /usr/lib/svn-javahl (optional), /usr/lib/svn-python (optional) and /usr/share/doc/subversion-1.7.8

## Short Descriptions

<b>svn</b>	is a command-line client program used to access Subversion repositories.
<b>svnadmin</b>	is a tool for creating, tweaking or repairing a Subversion repository.
<b>svndumpfilter</b>	is a program for filtering Subversion repository dumpfile format streams.
<b>svnlook</b>	is a tool for inspecting a Subversion repository.
<b>svnrdbmp</b>	is a tool for dumping or loading a remote Subversion repository.
<b>svnserve</b>	is a custom standalone server program, able to run as a daemon process or invoked by SSH.
<b>svnsync</b>	is a Subversion repository synchronisation tool.
<b>svnversion</b>	is used to report the version number and state of a working Subversion repository copy.
<b>libsvn_* .so</b>	are the support libraries used by the Subversion programs.
<b>mod_authz_svn .so</b>	is a plug-in module for the Apache HTTP server, used to authenticate users to a Subversion repository over the Internet or an intranet.
<b>mod_dav_svn .so</b>	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.

# 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-1.7.8 and OpenSSH-6.2p1

## 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 -a 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>.

Create a new Subversion repository with the following commands:

```
install -v -m 0755 -d /srv &&
install -v -m 0755 -o svn -g svn -d /srv/svn/repositories &&
svnadmin create --fs-type fsfs /srv/svn/repositories/svntest
```

Now that the repository is created, it should be populated with something useful. You'll need to have a predefined directory layout set up 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 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 -a <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, return to an unprivileged user account, and take a look at the 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 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

To start the server at boot time, install the svn bootscript included in the blfs-bootscripts-20130512 package.

```
make install-svn
```

# Tcl-8.6.0

## Introduction to Tcl

The Tcl package contains the Tool Command Language, a robust general-purpose scripting language. This package is known to build and work properly using an LFS-7.3 platform.

### Package Information

- Download (HTTP): <http://downloads.sourceforge.net/tcl/tcl8.6.0-src.tar.gz>
- 
- Download MD5 sum: 573aa5fe678e9185ef2b3c56b24658d3
- Download size: 8.3 MB
- Estimated disk space required: 80 MB (includes documentation installation)
- Estimated build time: 0.5 SBU

### Additional Downloads

#### Optional Documentation

- Download (HTTP): <http://downloads.sourceforge.net/tcl/tcl8.6.0-html.tar.gz>
- Download MD5 sum: e53baf609df8b55f091c258886b6f994
- Download size: 913 KB

## Installation of Tcl

This package is also installed in LFS during the bootstrap phase. As it is not installed during Chapter 6 of LFS, installation instructions are included here in BLFS.

If you downloaded the optional documentation, unpack the tarball by issuing the following command:

```
tar -xf ..../tcl8.6.0-html.tar.gz --strip-components=1
```

Install Tcl by running the following commands:

```
cd unix &&
./configure --prefix=/usr \
            --mandir=/usr/share/man \
            --without-tzdata \
            ${([ $(uname -m) = x86_64 ] && echo --enable-64bit) &&
make &&

sed -e "s@^\\(TCL_SRC_DIR='\\').*@\\1/usr/include'@" \
      -e "/TCL_B/s@='\\(-L\\)\\?.*unix@='\\1/usr/lib@" \
      -i tclConfig.sh
```

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

Now, as the root user:

```
make install &&
make install-private-headers &&
ln -v -sf tclsh8.6 /usr/bin/tclsh &&
chmod -v 755 /usr/lib/libtcl8.6.so
```

If you downloaded the optional documentation, install it by issuing the following commands as the `root` user:

```
mkdir -v -p /usr/share/doc/tcl-8.6.0 &&
cp -v -r ../html/* /usr/share/doc/tcl-8.6.0
```

## Command Explanations

`--without-tzdata`: This switch prevents installation of the shipped timezone data which are older than the ones provided in LFS.

`$([ $(uname -m) = x86_64 ] && echo --enable-64bit)`: This switch is used to enable 64 bit support in Tcl on 64 bit operating systems.

**make install-private-headers**: This command is used to install the Tcl library interface headers used by other packages if they link to the Tcl library.

**ln -v -sf tclsh8.6 /usr/bin/tclsh**: This command is used to create a compatibility symbolic link to the **tclsh8.6** file as many packages expect a file named **tclsh**.

**sed -e ... tclConfig.sh**: The Tcl package expects that its source tree is preserved so that packages depending on it for their compilation can utilize it. This **sed** removes the references to the build directory and replaces them with saner system-wide locations.

## Contents

**Installed Programs:** tclsh and tclsh8.6

**Installed Libraries:** libtcl8.6.so and libtclstub8.6.a

**Installed Directories:** /usr/lib/tcl8, /usr/lib/thread2.7.0, /usr/lib/tdbcodbc1.0.0, /usr/lib/tdbc1.0.0, /usr/lib/sqlite3.7.15.1, /usr/lib/tdbcpostgres1.0.0, /usr/lib/tcl8.6, /usr/lib/tdbcmysql1.0.0, /usr/lib/itcl4.0.0, /usr/share/man/mann and optionally /usr/share/doc/8.6.0

## Short Descriptions

**tclsh** is a symlink to the **tclsh8.6** program.

**tclsh8.6** is a simple shell containing the Tcl interpreter.

**libtcl8.6.so** contains the API functions required by Tcl.

# Tk-8.6.0

## Introduction to Tk

The Tk package contains a TCL GUI Toolkit.

This package is known to build and work properly using an LFS-7.3 platform.

## Package Information

- Download (HTTP): <http://downloads.sourceforge.net/tcl/tk8.6.0-src.tar.gz>
- 
- Download MD5 sum: b883a1a3c489c17413fb602a94bf54e8
- Download size: 4.1 MB
- Estimated disk space required: 30 MB
- Estimated build time: 0.3 SBU

## Tk Dependencies

### Required

Tcl-8.6.0 and Xorg Libraries

## Installation of Tk

Install Tk by running the following commands:

```
cd unix &&
./configure --prefix=/usr \
            --mandir=/usr/share/man \
            $([ $(uname -m) = x86_64 ] && echo --enable-64bit) &&

make &&

sed -e "s@^\\(TK_SRC_DIR='\\').*@\\1/usr/include'@" \
      -e "/TK_B/s@='\\(-L\\)\\?.*unix@='\\1/usr/lib@" \
      -i tkConfig.sh
```

Running the tests is not recommended. Some tests may crash your X Server. To test the results anyway, issue: **make test**. Ensure you run it from an X Window display device with the GLX extensions loaded, otherwise the tests will hang.

Now, as the root user:

```
make install &&
make install-private-headers &&
ln -v -sf wish8.6 /usr/bin/wish &&
chmod -v 755 /usr/lib/libtk8.6.so
```

## Command Explanations

`$([ $(uname -m) = x86_64 ] && echo --enable-64bit)`: This switch is used to enable 64 bit support in Tk on 64 bit operating systems.

**make install-private-headers:** This command is used to install the Tk library interface headers used by other packages if they link to the Tk library.

**ln -v -sf wish8.6 /usr/bin/wish:** This command is used to create a compatibility symbolic link to the **wish8.6** file as many packages expect a file named **wish**.

**sed -e ... tkConfig.sh:** The Tk package expects that its source tree is preserved so that packages depending on it for their compilation can utilize it. This **sed** removes the references to the build directory and replaces them with saner system-wide locations.

## Contents

<b>Installed Programs:</b>	wish and wish8.6
<b>Installed Libraries:</b>	libtk8.6.so and libtkstub8.6.a
<b>Installed Directory:</b>	/usr/lib/tk8.6

## Short Descriptions

<b>wish</b>	is a symlink to the <b>wish8.6</b> program.
<b>wish8.6</b>	is a simple shell containing the Tk toolkit that creates a main window and then processes Tcl commands.
<b>libtk8.6.so</b>	contains the API functions required by Tk.

# Vala-0.18.1

## Introduction to Vala

Vala is a new programming language that aims to bring modern programming language features to GNOME developers without imposing any additional runtime requirements and without using a different ABI compared to applications and libraries written in C.

This package is known to build and work properly using an LFS-7.3 platform.

## Package Information

- Download (HTTP): <http://ftp.gnome.org/pub/gnome/sources/vala/0.18/vala-0.18.1.tar.xz>
- Download (FTP): <ftp://ftp.gnome.org/pub/gnome/sources/vala/0.18/vala-0.18.1.tar.xz>
- Download MD5 sum: 0d684cbddd3a7655fe54c030e4183dbd
- Download size: 2.5 MB
- Estimated disk space required: 100 MB
- Estimated build time: 1.0 SBU

## Vala Dependencies

### Required

GLib-2.34.3

### Optional

D-Bus-1.6.10 (Required for the tests) and libxslt-1.1.28 (Required for generating the documentation)

## Installation of Vala

Install Vala by running the following commands:

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

To test the results, issue: **make check**. Note that a D-Bus session daemon must be running for the tests to succeed.

Now, as the root user:

```
make install
```

## Contents

<b>Installed Programs:</b>	vala, vala-0.18, valac, valac-0.18, vala-gen-introspect, vala-gen-introspect-0.18, vapicheck, vapicheck-0.18, vapigen and vapigen-0.18
<b>Installed Library:</b>	libvala-0.18.so
<b>Installed Directories:</b>	/usr/include/vala-0.18, /usr/lib/vala-0.18, /usr/share/devhelp/books/vala-0.18, /usr/share/vala and /usr/share/vala-0.18

## Short Descriptions

<b>valac</b>	is a compiler that translates Vala source code into C source and header files.
--------------	--

**vala-gen-introspect**

generates a GI file for GObject and GLib based packages.

**vapicheck**

verifies the generated bindings.

**vapigen**

is a utility which generates Vala API (VAPI) files from GI files.

**libvala-0.18.so**

contains the Vala API functions.

# yasm-1.2.0

## Introduction to yasm

Yasm is a complete rewrite of the NASM-2.10.07 assembler. It supports the x86 and AMD64 instruction sets, accepts NASM and GAS assembler syntaxes and outputs binary, ELF32 and ELF64 object formats.

This package is known to build and work properly using an LFS-7.3 platform.

## Package Information

- Download (HTTP): <http://www.tortall.net/projects/yasm/releases/yasm-1.2.0.tar.gz>
- 
- Download MD5 sum: 4cf0686cf5350dd1305c4d905eb55a6
- Download size: 1.4 MB
- Estimated disk space required: 41 MB
- Estimated build time: 0.2 SBU

## yasm Dependencies

### Optional

Python-2.7.5 or Python-3.3.2, and *Cython*

## Installation of yasm

Install yasm by running the following commands:

```
sed -i 's#) ytasm.*#)##' Makefile.in &&
./configure --prefix=/usr &&
make
```

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

Now, as the root user:

```
make install
```

## Command Explanations

**sed -i 's#) ytasm.\*#)##' Makefile.in**: This sed prevents it compiling 2 programs (vsysasm and ytasm) that are only of use on Microsoft Windows.

## Contents

<b>Installed Program:</b>	yasm
<b>Installed Library:</b>	libyasm.a
<b>Installed Directory:</b>	/usr/include/libyasm

## Short Descriptions

**yasm** is a portable, retargetable assembler that supports the x86 and AMD64 instruction sets, accepts NASM and GAS assembler syntaxes and outputs binaries in ELF32 and ELF64 object formats.

`libyasm.a` provides all of the core functionality of **yasm**, for manipulating machine instructions and object file constructs.

# 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.

## Programming Frameworks, Languages and Compilers

### A+

A+ is a powerful and efficient programming language. It is freely available under the GNU General Public License. It embodies a rich set of functions and operators, a modern graphical user interface with many widgets and automatic synchronization of widgets and variables, asynchronous execution of functions associated with variables and events, dynamic loading of user compiled subroutines, and many other features. Execution is by a rather efficient interpreter. A+ was created at Morgan Stanley. Primarily used in a computationally-intensive business environment, many critical applications written in A+ have withstood the demands of real world developers over many years. Written in an interpreted language, A+ applications tend to be portable.

- Project Home Page: <http://www.aplusdev.org/>
- Download Location: <http://www.aplusdev.org/Download/index.html>

### ABC

ABC is an interactive programming language and environment for personal computing, originally intended as a good replacement for BASIC. It was designed by first doing a task analysis of the programming task. ABC is easy to learn (an hour or so for someone who has already programmed), and yet easy to use. Originally intended as a language for beginners, it has evolved into a powerful tool for beginners and experts alike. Some features of the language include: a powerful collection of only five data types that easily combines strong typing, yet without declarations, no limitations (such as max int), apart from sheer exhaustion of memory refinements to support top-down programming, nesting by indentation and programs typically are one fourth or one fifth the size of the equivalent Pascal or C program.

- Project Home Page: <http://homepages.cwi.nl/~steven/abc/>
- Download Location: <http://homepages.cwi.nl/~steven/abc/implementations.html>

### ALF

ALF is a language which combines functional and logic programming techniques. The foundation of ALF is Horn clause logic with equality which consists of predicates and Horn clauses for logic programming, and functions and equations for functional programming. The ALF system is an efficient implementation of the combination of resolution, narrowing, rewriting and rejection. Similarly to Prolog, ALF uses a backtracking strategy corresponding to a depth-first search in the derivation tree.

- Project Home Page: <http://www.informatik.uni-kiel.de/~mh/systems/ALF.html>
- Download Location: <http://www.informatik.uni-kiel.de/~mh/systems/ALF/>

### ASM

ASM is a Java bytecode manipulation framework. It can be used to dynamically generate stub classes or other proxy classes, directly in binary form, or to dynamically modify classes at load time, i.e., just before they are loaded into the Java Virtual Machine. ASM offers similar functionalities as BCEL or SERP, but is much smaller (33KB instead of

350KB for BCEL and 150KB for SERP) and faster than these tools (the overhead of a load time class transformation is of the order of 60% with ASM, 700% or more with BCEL, and 1100% or more with SERP). Indeed ASM was designed to be used in a dynamic way (though it works statically as well) and was therefore designed and implemented to be as small and as fast as possible.

- Project Home Page: <http://asm.objectweb.org/>
- Download Location: <http://forge.objectweb.org/projects/asm/>

## **BCPL**

BCPL is a simple typeless language that was designed in 1966 by Martin Richards and implemented for the first time at MIT in the Spring of 1967.

- Project Home Page: <http://www.cl.cam.ac.uk/users/mr/BCPL.html>
- Download Location: <http://www.cl.cam.ac.uk/users/mr/BCPL/>

## **BETA**

BETA is developed within the Scandinavian School of object-orientation, where the first object-oriented language, Simula, was developed. BETA is a modern language in the Simula tradition. The resulting language is smaller than Simula in spite of being considerably more expressive. BETA is a strongly typed language like Simula, Eiffel and C++, with most type checking being carried out at compile-time. It is well known that it is not possible to obtain all type checking at compile time without sacrificing the expressiveness of the language. BETA has optimum balance between compile-time type checking and run-time type checking.

- Project Home Page: <http://www.daimi.au.dk/~beta/>
- Download Location: <ftp://ftp.daimi.au.dk/pub/beta/>

## **<bigwig>**

<bigwig> is a high-level programming language for developing interactive Web services. Programs are compiled into a conglomerate of lower-level technologies such as C code, HTTP, HTML, JavaScript, and SSL, all running on top of a runtime system based on an Apache Web server module. It is a descendant of the Mawl project but is a completely new design and implementation with vastly expanded ambitions. The <bigwig> language is really a collection of tiny domain-specific languages focusing on different aspects of interactive Web services. These contributing languages are held together by a C-like skeleton language. Thus, <bigwig> has the look and feel of C-programs but with special data and control structures.

- Project Home Page: <http://www.brics.dk/bigwig/>
- Download Location: <http://www.brics.dk/bigwig/download/>

## **Bigloo**

Bigloo is a Scheme implementation devoted to one goal: enabling Scheme based programming style where C(++) is usually required. Bigloo attempts to make Scheme practical by offering features usually presented by traditional programming languages but not offered by Scheme and functional programming. Bigloo compiles Scheme modules and delivers small and fast stand-alone binary executables. It enables full connections between Scheme and C programs, between Scheme and Java programs, and between Scheme and C# programs.

- Project Home Page: <http://www-sop.inria.fr/mimosa/fp/Bigloo/>
- Download Location: <ftp://ftp-sop.inria.fr/mimosa/fp/Bigloo/>

## C--

C-- is a portable assembly language that can be generated by a front end and implemented by any of several code generators. It serves as an interface between high-level compilers and retargetable, optimizing code generators. Authors of front ends and code generators can cooperate easily.

- Project Home Page: <http://www.cminusminus.org/>
- Download Location: <http://www.cminusminus.org/code.html>

## Caml

Caml is a general-purpose programming language, designed with program safety and reliability in mind. It is very expressive, yet easy to learn and use. Caml supports functional, imperative, and object-oriented programming styles. It has been developed and distributed by INRIA, France's national research institute for computer science, since 1985. The Objective Caml system is the main implementation of the Caml language. It features a powerful module system and a full-fledged object-oriented layer. It comes with a native-code compiler that supports numerous architectures, for high performance; a bytecode compiler, for increased portability; and an interactive loop, for experimentation and rapid development.

- Project Home Page: <http://caml.inria.fr/>
- Download Location: <http://caml.inria.fr/pub/distrib/>

## Cayenne

Cayenne is a simple(?) functional language with a powerful type system. The basic types are functions, products, and sums. Functions and products use dependent types to gain additional power. There are very few building blocks in the language, but a lot of “syntactic sugar” to make it more readable. There is no separate module language in Cayenne since the dependent types allow the normal expression language to be used at the module level as well. The design of Cayenne has been heavily influenced by Haskell and constructive type theory and with some things borrowed from Java. The drawback of such a powerful type system is that the type checking becomes undecidable.

- Project Home Page: <http://www.cs.chalmers.se/~augustss/cayenne/>
- Download Location: <http://www.cs.chalmers.se/~augustss/cayenne/get.html>

## Ch

Ch is an embeddable C/C++ interpreter for cross-platform scripting, shell programming, 2D/3D plotting, numerical computing, and embedded scripting.

- Project Home Page: <http://www.softintegration.com/>
- Download Location: <http://www.softintegration.com/products/chstandard/download/>

## Clean

Clean is a general purpose, state-of-the-art, pure and lazy functional programming language designed for making real-world applications. Clean is the only functional language in the world which offers uniqueness typing. This type system makes it possible in a pure functional language to incorporate destructive updates of arbitrary data structures (including arrays) and to make direct interfaces to the outside imperative world. The type system makes it possible to develop efficient applications.

- Project Home Page: <http://wiki.clean.cs.ru.nl/Clean>
- Download Location: [http://wiki.clean.cs.ru.nl/Download\\_Clean](http://wiki.clean.cs.ru.nl/Download_Clean)

## CORN

CORN is designed for modeling concurrency and advanced computation. It provides lazy evaluation between concurrently worked threads, with object-oriented and functional style of semantic. This language can be also used for parallel computation.

- Project Home Page: <http://cornlanguage.com/>
- Download Location: <http://cornlanguage.com/download/download.html>

## Cyclone

Cyclone is a programming language based on C that is safe, meaning that it rules out programs that have buffer overflows, dangling pointers, format string attacks, and so on. High-level, type-safe languages, such as Java, Scheme, or ML also provide safety, but they don't give the same control over data representations and memory management that C does (witness the fact that the run-time systems for these languages are usually written in C.) Furthermore, porting legacy C code to these languages or interfacing with legacy C libraries is a difficult and error-prone process. The goal of Cyclone is to give programmers the same low-level control and performance of C without sacrificing safety, and to make it easy to port or interface with legacy C code.

- Project Home Page: <http://cyclone.thelanguage.org/>
- Download Location: <http://cyclone.thelanguage.org/wiki/Download/>

## D

D is a general purpose systems and applications programming language. It is a higher level language than C++, but retains the ability to write high performance code and interface directly with the operating system APIs and with hardware. D is well suited to writing medium to large scale million line programs with teams of developers. It is easy to learn, provides many capabilities to aid the programmer, and is well suited to aggressive compiler optimization technology. D is not a scripting language, nor an interpreted language. It doesn't come with a VM, a religion, or an overriding philosophy. It's a practical language for practical programmers who need to get the job done quickly, reliably, and leave behind maintainable, easy to understand code. D is the culmination of decades of experience implementing compilers for many diverse languages, and attempting to construct large projects using those languages. It draws inspiration from those other languages (most especially C++) and tempers it with experience and real world practicality.

- Project Home Page: <http://www.digitalmars.com/d/>
- Download Location: <ftp://ftp.digitalmars.com/>

## DMDScript

DMDScript is Digital Mars' implementation of the ECMA 262 scripting language. Netscape's implementation is called JavaScript, Microsoft's implementation is called JScript. DMDScript is much faster than other implementations, which you can verify with the included benchmark.

- Project Home Page: <http://www.digitalmars.com/dscript/index.html>
- Download Location: <ftp://ftp.digitalmars.com/>

## DotGNU Portable.NET

DotGNU Portable.NET goal is to build a suite of free software tools to build and execute .NET applications, including a C# compiler, assembler, disassembler, and runtime engine. While the initial target platform was GNU/Linux, it is also known to run under Windows, Solaris, NetBSD, FreeBSD, and Mac OS X. The runtime engine has been tested on the x86, PowerPC, ARM, Sparc, PARISC, s390, Alpha, and IA-64 processors. DotGNU Portable.NET is part of the

DotGNU project, built in accordance with the requirements of the GNU Project. DotGNU Portable.NET is focused on compatibility with the ECMA specifications for CLI. There are other projects under the DotGNU meta-project to build other necessary pieces of infrastructure, and to explore non-CLI approaches to virtual machine implementation.

- Project Home Page: <http://www.gnu.org/software/dotgnu/>
- Download Location: <http://www.gnu.org/software/dotgnu/pnet-packages.html>

## Dylan

Dylan is an advanced, object-oriented, dynamic language which supports rapid program development. When needed, programs can be optimized for more efficient execution by supplying more type information to the compiler. Nearly all entities in Dylan (including functions, classes, and basic data types such as integers) are first class objects. Additionally, Dylan supports multiple inheritance, polymorphism, multiple dispatch, keyword arguments, object introspection, macros, and many other advanced features... --Peter Hinely.

- Project Home Page: <http://www.opendylan.org/>
- Download Location: <http://www.opendylan.org/downloading.phtml>

## E

E is a secure distributed Java-based pure-object platform and p2p scripting language. It has two parts: ELib and the E Language. Elib provides the stuff that goes on between objects. As a pure-Java library, ELib provides for inter-process capability-secure distributed programming. Its cryptographic capability protocol enables mutually suspicious Java processes to cooperate safely, and its event-loop concurrency and promise pipelining enable high performance deadlock free distributed pure-object computing. The E Language can be used to express what happens within an object. It provides a convenient and familiar notation for the ELib computational model, so you can program in one model rather than two. Under the covers, this notation expands into Kernel-E, a minimalist lambda-language much like Scheme or Smalltalk. Objects written in the E language are only able to interact with other objects according to ELib's semantics, enabling object granularity intra-process security, including the ability to safely run untrusted mobile code (such as caplets).

- Project Home Page: <http://www.erights.org/>
- Download Location: <http://www.erights.org/download/>

## elastiC

elastiC is a portable high-level object-oriented interpreted language with a C like syntax. Its main characteristics are: open source, interpreted, has portable bytecode compilation, dynamic typing, automatic real very fast garbage collection, object oriented with meta-programming support (a la Smalltalk), functional programming support (Scheme-like closures with lexical scoping, and eval-like functionality), hierarchical namespaces, a rich set of useful built-in types (dynamic arrays, dictionaries, symbols, ...), extensible with C (you can add functions, types, classes, methods, packages, ...), embeddable in C. elastiC has been strongly influenced by C, Smalltalk, Scheme and Python and tries to merge the best characteristics of all these languages, while still coherently maintaining its unique personality.

- Project Home Page: <http://www.elasticworld.org/>
- Download Location: <http://www.elasticworld.org/download.html>

## Erlang/OTP

Erlang/OTP is a development environment based on Erlang. Erlang is a programming language which has many features more commonly associated with an operating system than with a programming language: concurrent processes, scheduling, memory management, distribution, networking, etc. The initial open-source Erlang release

contains the implementation of Erlang, as well as a large part of Ericsson's middleware for building distributed high-availability systems. Erlang is characterized by the following features: robustness, soft real-time, hot code upgrades and incremental code loading.

- Project Home Page: <http://www.erlang.org/>
- Download Location: <http://www.erlang.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>

## Felix

Felix is an advanced Algol like procedural programming language with a strong functional subsystem. It features ML style static typing, first class functions, pattern matching, garbage collection, polymorphism, and has built in support for high performance microthreading, regular expressions and context free parsing. The system provides a scripting harness so the language can be used like other scripting languages such as Python and Perl, but underneath it generates native code to obtain high performance. A key feature of the system is that it uses the C/C++ object model, and provides an advanced binding sublanguage to support integration with C/C++ at both the source and object levels, both for embedding C/C++ data types and functions into Felix, and for embedding Felix into existing C++ architectures. The Felix compiler is written in Objective Caml, and generates ISO C++ which should compile on any platform.

- Project Home Page: <http://felix.sourceforge.net/>
- Download Location: <http://felix-lang.org/web/download.html>

## ferite

ferite is a scripting language and engine all in one manageable chunk. It is designed to be easily extended in terms of API, and to be used within other applications making them more configurable and useful to the end user. It has a syntax similar to a number of other languages but remains clean and its own language.

- Project Home Page: <http://www.ferite.org/>
- Download Location: <http://www.ferite.org/download.html>

## Forth

Forth is a stack-based, extensible language without type-checking. It is probably best known for its "reverse Polish" (postfix) arithmetic notation, familiar to users of Hewlett-Packard calculators. Forth is a real-time programming language originally developed to control telescopes. Forth has many unique features and applications: it can compile itself into a new compiler, reverse-polish coding, edit time error checking and compiling (similar to BASIC), extremely efficient thread based language, can be used to debug itself, extensible; thus can become whatever you need it to be. The links below lead to the website of the Forth Interest Group (FIG), a world-wide, non-profit organization for education in and the promotion of the Forth computer language. Another worthwhile website dedicated to the Forth community is <http://wiki.forthfreak.net/>.

- Project Home Page: <http://www.forth.org/>
- Download Location: <http://www.forth.org/compilers.html>

## GNU Smalltalk

GNU Smalltalk is a free implementation of the Smalltalk-80 language which runs on most versions of Unix and, in general, everywhere you can find a POSIX-compliance library. An uncommon feature of it is that it is well-versed to scripting tasks and headless processing. See [http://www.gnu.org/software/smalltalk/gst-manual/gst\\_1.html#SEC1](http://www.gnu.org/software/smalltalk/gst-manual/gst_1.html#SEC1) for a more detailed explanation of GNU Smalltalk.

- Project Home Page: <http://smalltalk.gnu.org/>
- Download Location: <http://ftp.gnu.org/gnu/smalltalk/>

## Haskell

Haskell is a computer programming language. In particular, it is a polymorphically typed, lazy, purely functional language, quite different from most other programming languages. The language is named for Haskell Brooks Curry, whose work in mathematical logic serves as a foundation for functional languages. Haskell is based on lambda calculus. There are many implementations of Haskell, among them:

- GHC: <http://www.haskell.org/ghc/>
- HBC: <http://www.cs.chalmers.se/~augustss/hbc/hbc.html>
- Helium: <http://www.cs.uu.nl/wiki/bin/view/Helium/WebHome>
- Hugs: <http://www.haskell.org/hugs/>
- nhc98: <http://www.haskell.org/nhc98/>

## HLA (High Level Assembly)

The HLA language was developed as a tool to help teach assembly language programming and machine organization to University students at the University of California, Riverside. The basic idea was to teach students assembly language programming by leveraging their knowledge of high level languages like C/C++ and Pascal/Delphi. At the same time, HLA was designed to allow advanced assembly language programmers write more readable and more powerful assembly language code.

- Project Home Page: <http://www.plantation-productions.com/Webster/HighLevelAsm/index.html>
- Download Location: <http://www.plantation-productions.com/Webster/HighLevelAsm/dnld.html>

## Icon

Icon is a high-level, general-purpose programming language with a large repertoire of features for processing data structures and character strings. It is an imperative, procedural language with a syntax reminiscent of C and Pascal, but with semantics at a much higher level.

- Project Home Page: <http://www.cs.arizona.edu/icon/>
- Download Location: <ftp://ftp.cs.arizona.edu/icon/>

## Io

Io is a small, prototype-based programming language. The ideas in Io are mostly inspired by Smalltalk (all values are objects), Self (prototype-based), NewtonScript (differential inheritance), Act1 (actors and futures for concurrency), LISP (code is a runtime inspectable/modifiable tree) and Lua (small, embeddable).

- Project Home Page: <http://www.iolangue.com/about/>
- Download Location: <http://www.iolangue.com/downloads/>

**J**

J is a modern, high-level, general-purpose, high-performance programming language. It is portable and runs on Windows, Unix, Mac, and PocketPC handhelds, both as a GUI and in a console. True 64-bit J systems are available for XP64 or Linux64, on AMD64 or Intel EM64T platforms. J systems can be installed and distributed for free.

- Project Home Page: <http://www.jsoftware.com/>
- Download Location: <http://www.jsoftware.com/stable.htm>

**Jamaica**

Jamaica, the JVM Macro Assembler, is an easy-to-learn and easy-to-use assembly language for JVM bytecode programming. It uses Java syntax to define a JVM class except for the method body that takes bytecode instructions, including Jamaica's built-in macros. In Jamaica, bytecode instructions use mnemonics and symbolic names for all variables, parameters, data fields, constants and labels.

- Project Home Page: <http://judoscript.org/jamaica.html>
- Download Location: <http://judoscript.org/download.html>

**Joy**

Joy is a purely functional programming language. Whereas all other functional programming languages are based on the application of functions to arguments, Joy is based on the composition of functions. All such functions take a stack as an argument and produce a stack as a value. Consequently much of Joy looks like ordinary postfix notation. However, in Joy a function can consume any number of parameters from the stack and leave any number of results on the stack. The concatenation of appropriate programs denotes the composition of the functions which the programs denote.

- Project Home Page: <http://www.latrobe.edu.au/phimvt/joy.html>

**Judo**

Judo is a practical, functional scripting language. It is designed to cover the use cases of not only algorithmic/object-oriented/multi-threaded programming and Java scripting but also a number of major application domain tasks, such as scripting for JDBC, WSDL, ActiveX, OS, multiple file/data formats, etc. Despite its rich functionality, the base language is extremely simple, and domain support syntax is totally intuitive to domain experts, so that even though you have never programmed in Judo, you would have little trouble figuring out what the code does.

- Project Home Page: <http://judoscript.org/home.html>
- Download Location: <http://judoscript.org/download.html>

**JWIG**

JWIG is a Java-based high-level programming language for development of interactive Web services. It contains an advanced session model, a flexible mechanism for dynamic construction of XML documents, in particular XHTML, and a powerful API for simplifying use of the HTTP protocol and many other aspects of Web service programming. To support program development, JWIG provides a unique suite of highly specialized program analysers that at compile time verify for a given program that no runtime errors can occur while building documents or receiving form input, and that all documents being shown are valid according to the document type definition for XHTML 1.0. The main goal of the JWIG project is to simplify development of complex Web services, compared to alternatives, such as, Servlets, JSP, ASP, and PHP. JWIG is a descendant of the <bigwig> research language.

- Project Home Page: <http://www.brics.dk/JWIG/>

- Download Location: [\*http://www.brics.dk/JWIG/download.html\*](http://www.brics.dk/JWIG/download.html)

## Lava

Lava is a name unfortunately chosen for several unrelated software development languages/projects. So it doesn't appear as though BLFS has a preference for one over another, the project web sites are listed below, without descriptions of the capabilities or features for any of them.

- Project Home Page: [\*http://lavape.sourceforge.net/index.htm\*](http://lavape.sourceforge.net/index.htm)
- Project Home Page: [\*http://javalab.cs.uni-bonn.de/research/darwin/#The%20Lava%20Language\*](http://javalab.cs.uni-bonn.de/research/darwin/#The%20Lava%20Language)
- Project Home Page: [\*http://mathias.tripod.com/LavaHomepage.html\*](http://mathias.tripod.com/LavaHomepage.html)

## Lua

Lua is a powerful light-weight programming language designed for extending applications. It is also frequently used as a general-purpose, stand-alone language. It is free software. Lua combines simple procedural syntax with powerful data description constructs based on associative arrays and extensible semantics. It is dynamically typed, interpreted from bytecodes, and has automatic memory management with garbage collection, making it ideal for configuration, scripting, and rapid prototyping. A fundamental concept in the design of Lua is to provide meta-mechanisms for implementing features, instead of providing a host of features directly in the language. For example, although Lua is not a pure object-oriented language, it does provide meta-mechanisms for implementing classes and inheritance. Lua's meta-mechanisms bring an economy of concepts and keep the language small, while allowing the semantics to be extended in unconventional ways. Extensible semantics is a distinguishing feature of Lua. Lua is a language engine that you can embed into your application. This means that, besides syntax and semantics, it has an API that allows the application to exchange data with Lua programs and also to extend Lua with C functions. In this sense, it can be regarded as a language framework for building domain-specific languages. Lua is implemented as a small library of C functions, written in ANSI C, and compiles unmodified in all known platforms. The implementation goals are simplicity, efficiency, portability, and low embedding cost. The result is a fast language engine with small footprint, making it ideal in embedded systems too.

- Project Home Page: [\*http://www.lua.org/\*](http://www.lua.org/)
- Download Location: [\*http://www.lua.org/download.html\*](http://www.lua.org/download.html)

## Mercury

Mercury is a new logic/functional programming language, which combines the clarity and expressiveness of declarative programming with advanced static analysis and error detection features. Its highly optimized execution algorithm delivers efficiency far in excess of existing logic programming systems, and close to conventional programming systems. Mercury addresses the problems of large-scale program development, allowing modularity, separate compilation, and numerous optimization/time trade-offs.

- Project Home Page: [\*http://www.mercury.csse.unimelb.edu.au/\*](http://www.mercury.csse.unimelb.edu.au/)
- Download Location: [\*http://www.mercury.csse.unimelb.edu.au/download.html\*](http://www.mercury.csse.unimelb.edu.au/download.html)

## Mono

Mono provides the necessary software to develop and run .NET client and server applications on Linux, Solaris, Mac OS X, Windows, and Unix. Sponsored by Novell, the Mono open source project has an active and enthusiastic contributing community and is positioned to become the leading choice for development of Linux applications.

- Project Home Page: [\*http://www.mono-project.com/Main\\_Page\*](http://www.mono-project.com/Main_Page)
- Download Location: [\*http://ftp.novell.com/pub/mono/archive/\*](http://ftp.novell.com/pub/mono/archive/)

## MPD

MPD is a variant of the SR programming language. SR has a Pascal-like syntax and uses guarded commands for control statements. MPD has a C-like syntax and C-like control statements. However, the main components of the two languages are the same: resources, globals, operations, procs, procedures, processes, and virtual machines. Moreover, MPD supports the same variety of concurrent programming mechanisms as SR: co statements, semaphores, call/send/forward invocations, and receive and input statements.

- Project Home Page: <http://www.cs.arizona.edu/mpd/>
- Download Location: <http://www.cs.arizona.edu/mpd/download/>

## Nemerle

Nemerle is a high-level statically-typed programming language for the .NET platform. It offers functional, object-oriented and imperative features. It has a simple C#-like syntax and a powerful meta-programming system. Features that come from the functional land are variants, pattern matching, type inference and parameter polymorphism (aka generics). The meta-programming system allows great compiler extensibility, embedding domain specific languages, partial evaluation and aspect-oriented programming.

- Project Home Page: [http://nemerle.org/Main\\_Page](http://nemerle.org/Main_Page)
- Download Location: <http://nemerle.org/Download>

## Octave

GNU Octave is a high-level language, primarily intended for numerical computations. It provides a convenient command line interface for solving linear and nonlinear problems numerically, and for performing other numerical experiments using a language that is mostly compatible with Matlab. It may also be used as a batch-oriented language. Octave has extensive tools for solving common numerical linear algebra problems, finding the roots of nonlinear equations, integrating ordinary functions, manipulating polynomials, and integrating ordinary differential and differential-algebraic equations. It is easily extensible and customizable via user-defined functions written in Octave's own language, or using dynamically loaded modules written in C++, C, Fortran, or other languages.

- Project Home Page: <http://www.gnu.org/software/octave/>
- Download Location: <http://www.gnu.org/software/octave/download.html>

## OO2C (Optimizing Oberon-2 Compiler)

OO2C is an Oberon-2 development platform. It consists of an optimizing compiler, a number of related tools, a set of standard library modules and a reference manual. Oberon-2 is a general-purpose programming language in the tradition of Pascal and Modula-2. Its most important features are block structure, modularity, separate compilation, static typing with strong type checking (also across module boundaries) and type extension with type-bound procedures. Type extension makes Oberon-2 an object-oriented language.

- Project Home Page: <http://sourceforge.net/projects/ooc/>
- Download Location: <http://downloads.sourceforge.net/ooc/>

## Ordered Graph Data Language (OGDL)

OGDL is a structured textual format that represents information in the form of graphs, where the nodes are strings and the arcs or edges are spaces or indentation.

- Project Home Page: <http://ogdl.sourceforge.net/>
- Download Location: <http://downloads.sourceforge.net/ogdl/>

## Pike

Pike is a dynamic programming language with a syntax similar to Java and C. It is simple to learn, does not require long compilation passes and has powerful built-in data types allowing simple and really fast data manipulation. Pike is released under the GNU GPL, GNU LGPL and MPL.

- Project Home Page: <http://pike.ida.liu.se/>
- Download Location: <http://pike.ida.liu.se/download/pub/pike>

## Pyrex

Pyrex is a language specially designed for writing Python extension modules. It's designed to bridge the gap between the nice, high-level, easy-to-use world of Python and the messy, low-level world of C. Pyrex lets you write code that mixes Python and C data types any way you want, and compiles it into a C extension for Python.

- Project Home Page: <http://www.cosc.canterbury.ac.nz/greg.ewing/python/Pyrex/>

## Q

Q is a functional programming language based on term rewriting. Thus, a Q program or “script” is simply a collection of equations which are used to evaluate expressions in a symbolic fashion. The equations establish algebraic identities and are interpreted as rewriting rules in order to reduce expressions to “normal forms”.

- Project Home Page: <http://q-lang.sourceforge.net/>
- Download Location: <http://downloads.sourceforge.net/q-lang/>

## R

R is a language and environment for statistical computing and graphics. It is a GNU project similar to the S language and environment which was developed at Bell Laboratories (formerly AT&T, now Lucent Technologies) by John Chambers and colleagues. R can be considered as a different implementation of S. There are some important differences, but much code written for S runs unaltered under R. R provides a wide variety of statistical (linear and nonlinear modelling, classical statistical tests, time-series analysis, classification, clustering, ...) and graphical techniques, and is highly extensible. The S language is often the vehicle of choice for research in statistical methodology, and R provides an Open Source route to participation in that activity.

- Project Home Page: <http://www.r-project.org/>
- Download Location: <http://cran.r-project.org/mirrors.html>

## Regina Rexx

Regina is a Rexx interpreter that has been ported to most Unix platforms (Linux, FreeBSD, Solaris, AIX, HP-UX, etc.) and also to OS/2, eCS, DOS, Win9x/Me/NT/2k/XP, Amiga, AROS, QNX4.x, QNX6.x BeOS, MacOS X, EPOC32, AtheOS, OpenVMS, SkyOS and OpenEdition. Rexx is a programming language that was designed to be easy to use for inexperienced programmers yet powerful enough for experienced users. It is also a language ideally suited as a macro language for other applications.

- Project Home Page: <http://regina-rexx.sourceforge.net/>
- Download Location: <http://downloads.sourceforge.net/regina-rexx>

## Serp

Serp is an open source framework for manipulating Java bytecode. The goal of the Serp bytecode framework is to tap the full power of bytecode modification while lowering its associated costs. The framework provides a set of high-level APIs for manipulating all aspects of bytecode, from large-scale structures like class member fields to the

individual instructions that comprise the code of methods. While in order to perform any advanced manipulation, some understanding of the class file format and especially of the JVM instruction set is necessary, the framework makes it as easy as possible to enter the world of bytecode development.

- Project Home Page: <http://serp.sourceforge.net/>
- Download Location: <http://serp.sourceforge.net/files/>

## **Small Device C Compiler (SDCC)**

SDCC is a Freeware, retargetable, optimizing ANSI-C compiler that targets the Intel 8051, Maxim 80DS390 and the Zilog Z80 based MCUs. Work is in progress on supporting the Motorola 68HC08 as well as Microchip PIC16 and PIC18 series. The entire source code for the compiler is distributed under GPL.

- Project Home Page: <http://sdcc.sourceforge.net/>
- Download Location: <http://sdcc.sourceforge.net/snap.php#Source>

## **SmartEiffel (The GNU Eiffel Compiler)**

SmartEiffel claims to be “the fastest and the slimmest multi-platform Eiffel compiler on Earth”. Eiffel is an object-oriented programming language which emphasizes the production of robust software. Its syntax is keyword-oriented in the ALGOL and Pascal tradition. Eiffel is strongly statically typed, with automatic memory management (typically implemented by garbage collection). Distinguishing characteristics of Eiffel include Design by contract (DbC), liberal use of inheritance including multiple inheritance, a type system handling both value and reference semantics, and generic classes. Eiffel has a unified type system—all types in Eiffel are classes, so it is possible to create subclasses of the basic classes such as INTEGER. Eiffel has operator overloading, including the ability to define new operators, but does not have method overloading.

- Project Home Page: <http://smarteiffel.loria.fr/>
- Download Location: <ftp://ftp.cs.rit.edu/pub/mirrors/SmartEiffel/>

## **Squeak**

Squeak is an open, highly-portable Smalltalk implementation whose virtual machine is written entirely in Smalltalk, making it easy to debug, analyze, and change. To achieve practical performance, a translator produces an equivalent C program whose performance is comparable to commercial Smalltalks. Other noteworthy aspects of Squeak include: real-time sound and music synthesis written entirely in Smalltalk, extensions of BitBlt to handle color of any depth and anti-aliased image rotation and scaling, network access support that allows simple construction of servers and other useful facilities, it runs bit-identical on many platforms (Windows, Mac, Unix, and others), a compact object format that typically requires only a single word of overhead per object and a simple yet efficient incremental garbage collector for 32-bit direct pointers efficient bulk-mutation of objects.

- Project Home Page: <http://www.squeak.org/>
- Download Location: <http://www.squeak.org/Download/>

## **SR (Synchronizing Resources)**

SR is a language for writing concurrent programs. The main language constructs are resources and operations. Resources encapsulate processes and variables they share; operations provide the primary mechanism for process interaction. SR provides a novel integration of the mechanisms for invoking and servicing operations. Consequently, all of local and remote procedure call, rendezvous, message passing, dynamic process creation, multicast, and semaphores are supported. SR also supports shared global variables and operations.

- Project Home Page: <http://www.cs.arizona.edu/sr/index.html>

- Download Location: <ftp://ftp.cs.arizona.edu/sr/>

## Standard ML

Standard ML is a safe, modular, strict, functional, polymorphic programming language with compile-time type checking and type inference, garbage collection, exception handling, immutable data types and updatable references, abstract data types, and parametric modules. It has efficient implementations and a formal definition with a proof of soundness. There are many implementations of Standard ML, among them:

- ML Kit: <http://www.it-c.dk/research/mlkit/>
- MLton: <http://mlton.org/>
- Moscow ML: <http://www.dina.kvl.dk/~sestoft/mosml.html>
- Poly/ML: <http://www.polyml.org/>
- Standard ML of New Jersey: <http://www.smlnj.org/>

## Steel Bank Common Lisp (SBCL)

SBCL is an open source (free software) compiler and runtime system for ANSI Common Lisp. It provides an interactive environment including an integrated native compiler, a debugger, and many extensions. SBCL runs on a number of platforms.

- Project Home Page: <http://www.sbcl.org/>
- Download Location: <http://downloads.sourceforge.net/sbcl/>

## Tiny C Compiler (TCC)

Tiny C Compiler is a small C compiler that can be used to compile and execute C code everywhere, for example on rescue disks (about 100KB for x86 TCC executable, including C preprocessor, C compiler, assembler and linker). TCC is fast. It generates optimized x86 code, has no byte code overhead and compiles, assembles and links several times faster than GCC. TCC is versatile, any C dynamic library can be used directly. It is heading toward full ISO99 compliance and can compile itself. The compiler is safe as it includes an optional memory and bound checker. Bound checked code can be mixed freely with standard code. TCC compiles and executes C source directly. No linking or assembly necessary. A full C preprocessor and GNU-like assembler is included. It is C script supported; just add “#!/usr/local/bin/tcc -run” on the first line of your C source, and execute it directly from the command line. With libtcc, you can use TCC as a backend for dynamic code generation.

- Project Home Page: <http://bellard.org/tcc/>
- Download Location: <http://download.savannah.gnu.org/releases-noredirect/tinycc/>

## TinyCOBOL

TinyCOBOL is a COBOL compiler being developed by members of the free software community. The mission is to produce a COBOL compiler based on the COBOL 85 standards. TinyCOBOL is available for the Intel architecture (IA32) and compatible processors on the following platforms: BeOS, FreeBSD, Linux and MinGW on Windows.

- Project Home Page: <http://sourceforge.net/projects/tiny-cobol/>
- Download Location: <http://downloads.sourceforge.net/tiny-cobol/>

## Yorick

Yorick is an interpreted programming language, designed for postprocessing or steering large scientific simulation codes. Smaller scientific simulations or calculations, such as the flow past an airfoil or the motion of a drumhead, can be written as standalone yorick programs. The language features a compact syntax for many common array operations,

so it processes large arrays of numbers very efficiently. Unlike most interpreters, which are several hundred times slower than compiled code for number crunching, Yorick can approach to within a factor of four or five of compiled speed for many common tasks. Superficially, Yorick code resembles C code, but Yorick variables are never explicitly declared and have a dynamic scoping similar to many Lisp dialects. The “unofficial” home page for Yorick can be found at <http://www.maumae.net/yorick>.

- Project Home Page: <http://yorick.sourceforge.net/index.php>
- Download Location: <http://sourceforge.net/projects/yorick/files/>

## ZPL

ZPL is an array programming language designed from first principles for fast execution on both sequential and parallel computers. It provides a convenient high-level programming medium for supercomputers and large-scale clusters with efficiency comparable to hand-coded message passing. It is the perfect alternative to using a sequential language like C or Fortran and a message passing library like MPI.

- Project Home Page: <http://www.cs.washington.edu/research/zpl/home/index.html>
- Download Location: <http://www.cs.washington.edu/research/zpl/download/download.html>

## Programming Libraries and Bindings

### Byte Code Engineering Library (BCEL)

BCEL is intended to give users a convenient possibility to analyze, create, and manipulate (binary) Java class files (those ending with .class). Classes are represented by objects which contain all the symbolic information of the given class: methods, fields and byte code instructions, in particular. Such objects can be read from an existing file, be transformed by a program (e.g., a class loader at run-time) and dumped to a file again. An even more interesting application is the creation of classes from scratch at run-time. The Byte Code Engineering Library may be also useful if you want to learn about the Java Virtual Machine (JVM) and the format of Java .class files. BCEL is already being used successfully in several projects such as compilers, optimizers, obfuscators, code generators and analysis tools.

- Project Home Page: <http://jakarta.apache.org/bcel/index.html>
- Download Location: <http://archive.apache.org/dist/jakarta/bcel/>

## Choco

Choco is a Java library for constraint satisfaction problems (CSP), constraint programming (CP) and explanation-based constraint solving (e-CP). It is built on a event-based propagation mechanism with backtrackable structures.

- Project Home Page: <http://sourceforge.net/projects/choco/>
- Download Location: <http://choco.sourceforge.net/download.html>

### 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>

## 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\*](http://www.5z.com/jirka/gob.html)
- Download Location: [\*http://ftp.5z.com/pub/gob/\*](http://ftp.5z.com/pub/gob/)

## 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/language-bindings.html\*](http://www.gtk.org/language-bindings.html)

### **gtkmm**

gtkmm is the official C++ interface for the popular GUI library GTK+. Highlights include typesafe callbacks, widgets extensible via inheritance 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/\*](http://www.gtkmm.org/)
- Download Location: [\*http://www.gtkmm.org/download.shtml\*](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/4.0/\*](http://java-gnome.sourceforge.net/4.0/)
- Download Location: [\*http://java-gnome.sourceforge.net/4.0/get/\*](http://java-gnome.sourceforge.net/4.0/get/)

### **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/\*](http://gtk2-perl.sourceforge.net/)
- Download Location: [\*http://downloads.sourceforge.net/gtk2-perl\*](http://downloads.sourceforge.net/gtk2-perl)

## 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/\*](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://downloads.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/>

## 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://downloads.sourceforge.net/swig/>

## Integrated Development Environments

### A-A-P

A-A-P makes it easy to locate, download, build and install software. It also supports browsing source code, developing programs, managing different versions and distribution of software and documentation. This means that A-A-P is useful both for users and for developers.

- Project Home Page: <http://www.a-a-p.org/index.html>
- Download Location: <http://www.a-a-p.org/download.html>

### Anjuta

Anjuta is a versatile Integrated Development Environment (IDE) for C and C++ on GNU/Linux. It has been written for GTK/GNOME and features a number of advanced programming facilities. These include project management, application wizards, an on-board interactive debugger, and a powerful source editor with source browsing and syntax highlighting.

- Project Home Page: <http://projects.gnome.org/anjuta/index.shtml>
- Download Location: <http://projects.gnome.org/anjuta/downloads.shtml>

### Eclipse

Eclipse is an open source community whose projects are focused on providing an extensible development platform and application frameworks for building software. Eclipse contains many projects, including an Integrated Development Environment (IDE) for Java.

- Project Home Page: <http://www.eclipse.org/>
- Download Location: <http://www.eclipse.org/downloads/>

## Mozart

The Mozart Programming System is an advanced development platform for intelligent, distributed applications. Mozart is based on the Oz language, which supports declarative programming, object-oriented programming, constraint programming, and concurrency as part of a coherent whole. For distribution, Mozart provides a true network transparent implementation with support for network awareness, openness, and fault tolerance. Security is upcoming. It is an ideal platform for both general-purpose distributed applications as well as for hard problems requiring sophisticated optimization and inferencing abilities.

- Project Home Page: <http://www.mozart-oz.org/>
- Download Location: <http://www.mozart-oz.org/download/view.cgi>

## Other Development Tools

### **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://downloads.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://samba.org/ftp/ccache/>

### **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/>

### **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>

## Exuberant Ctags

Exuberant Ctags generates an index (or tag) file of language objects found in source files that allows these items to be quickly and easily located by a text editor or other utility. A tag signifies a language object for which an index entry is available (or, alternatively, the index entry created for that object). Tag generation is supported for the following languages: Assembler, AWK, ASP, BETA, Bourne/Korn/Zsh Shell, C, C++, COBOL, Eiffel, Fortran, Java, Lisp, Lua, Make, Pascal, Perl, PHP, Python, REXX, Ruby, S-Lang, Scheme, Tcl, Vim, and YACC. A list of editors and tools utilizing tag files may be found at <http://ctags.sourceforge.net/tools.html>.

- Project Home Page: <http://ctags.sourceforge.net/>
- Download Location: <http://downloads.sourceforge.net/ctags/>

## 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/>

## gocache (GNU Object Cache)

ccache is a clone of ccache, with the goal of supporting compilers other than GCC and adding additional features. Embedded compilers will especially be in focus.

- Project Home Page: <http://sourceforge.net/projects/gocache/>
- Download Location: <http://downloads.sourceforge.net/gocache/>

## OProfile

OProfile is a system-wide profiler for Linux systems, capable of profiling all running code at low overhead. OProfile is released under the GNU GPL. It consists of a kernel driver and a daemon for collecting sample data, and several post-profiling tools for turning data into information. OProfile leverages the hardware performance counters of the CPU to enable profiling of a wide variety of interesting statistics, which can also be used for basic time-spent profiling. All code is profiled: hardware and software interrupt handlers, kernel modules, the kernel, shared libraries, and applications. OProfile is currently in alpha status; however it has proven stable over a large number of differing configurations. It is being used on machines ranging from laptops to 16-way NUMA-Q boxes.

- Project Home Page: <http://oprofile.sourceforge.net/news/>
- Download Location: <http://oprofile.sourceforge.net/download/>

## 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://downloads.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://sourceforge.net/projects/strace/>
- Download Location: <http://downloads.sourceforge.net/strace/>

## 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](http://valgrind.org/downloads/source_code.html)

## **Part IV. Networking**

# Chapter 14. 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 obtain an IP address and connect to a LAN and other networks (such as the Internet). The most popular methods (DHCP and PPP) are covered in this chapter.

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.

PPP stands for Point-to-Point Protocol. It is a data link protocol commonly used for establishing authenticated IP connections over a phone line with a modem, or over radio waves with a cellular phone. There is also a variant (PPPoE) that works over Ethernet and is used by cable providers to authenticate the Internet connections.

# dhcpcd-5.6.7

## Introduction to dhcpcd

dhcpcd is an implementation of the DHCP client specified in RFC2131. A DHCP client is useful for connecting your computer to a network which uses DHCP to assign network addresses. dhcpcd strives to be a fully featured, yet very lightweight DHCP client.

This package is known to build and work properly using an LFS-7.3 platform.

## Package Information

- Download (HTTP): <http://roy.marples.name/downloads/dhcpcd/dhcpcd-5.6.7.tar.bz2>
- Download (FTP): <ftp://ftp.osuosl.org/pub/gentoo/distfiles/dhcpcd-5.6.7.tar.bz2>
- Download MD5 sum: 998bcc3a47fbb2b0f91f8986d4b68345
- Download size: 86 KB
- Estimated disk space required: 1.0 MB
- Estimated build time: less than 0.1 SBU

## Installation of dhcpcd

Install dhcpcd by running the following commands:

```
./configure --libexecdir=/lib/dhcpcd \
            --dbdir=/run \
            --sysconfdir=/etc &&
make
```

This package does not come with a test suite.

Now, as the `root` user:

```
make install
```

By default, a plain text lease info file isn't created but the dhcpcd provides a hook which can be used for creating such a file. Install the hook by running the following commands as the `root` user:

```
sed -i "s;/var/lib;/run;g" dhcpcd-hooks/50-dhcpcd-compat &&
install -v -m 644 dhcpcd-hooks/50-dhcpcd-compat /lib/dhcpcd/dhcpcd-hooks/
```

## Configuring dhcpcd

### Config Files

`/etc/dhcpcd.conf`

### Configuration Information

To configure **dhcpcd**, you need to first install the network service script, `/lib/services/dhcpcd` included in the `blfs-bootscripts-20130512` package (as user `root`):

```
make install-service-dhcpcd
```

Whenever **dhcpcd** configures or shuts down a network interface, it executes hook scripts. For more details about those scripts, see the **dhcpcd-run-hooks** and **dhcpcd** man pages.

Finally, as the **root** user create the **/etc/sysconfig/ifconfig.eth0** configuration file using the following commands. Adjust appropriately for additional interfaces:

```
cat > /etc/sysconfig/ifconfig.eth0 << "EOF"
ONBOOT="yes"
IFACE="eth0"
SERVICE="dhcpcd"
DHCP_START="-b -q <insert appropriate start options here>"
DHCP_STOP="-k <insert additional stop options here>"
EOF
```

For more information on the appropriate DHCP\_START and DHCP\_STOP values, examine the man page for **dhcpcd**.



### Note

The default behavior of **dhcpcd** sets the hostname and mtu settings. It also overwrites **/etc/resolv.conf** and **/etc/ntp.conf**. These modifications to system files and settings on system configuration files are done by hooks which are stored in **/lib/dhcpcd/dhcpcd-hooks**. Setup **dhcpcd** by removing or adding hooks from/to that directory. The execution of hooks can be disabled by using the **--nohook** (**-C**) command line option or by the **nohook** option in the **/etc/dhcpcd.conf** file.

Review the **dhcpcd** man page for switches to add to the DHCP\_START value.

## Contents

<b>Installed Program:</b>	<b>dhcpcd</b>
<b>Installed Libraries:</b>	none
<b>Installed Directory:</b>	<b>/lib/dhcpcd</b>

## Short Descriptions

**dhcpcd** is an implementation of the DHCP client specified in RFC2131.

# DHCP-4.2.5-P1

## Introduction to ISC DHCP

The ISC DHCP package contains both the client and server programs for DHCP. **dhclient** (the client) is used for connecting to a network which uses DHCP to assign network addresses. **dhcpd** (the server) is used for assigning network addresses on private networks.

This package is known to build and work properly using an LFS-7.2 platform.

## Package Information

- 
- Download (FTP): <ftp://ftp.isc.org/isc/dhcp/4.2.5-P1/dhcp-4.2.5-P1.tar.gz>
- Download MD5 sum: f68e3c1f00a9af5742bc5e71d567cf93
- Download size: 7.9 MB
- Estimated disk space required: 185 MB
- Estimated build time: 0.5 SBU

## Additional Downloads

- Required Patch: [http://www.linuxfromscratch.org/patches/blfs/svn/dhcp-4.2.5-P1-client\\_script-1.patch](http://www.linuxfromscratch.org/patches/blfs/svn/dhcp-4.2.5-P1-client_script-1.patch)
- Optional Patch: [http://www.linuxfromscratch.org/patches/blfs/svn/dhcp-4.2.5-P1-missing\\_ipv6-1.patch](http://www.linuxfromscratch.org/patches/blfs/svn/dhcp-4.2.5-P1-missing_ipv6-1.patch)

## Kernel Configuration

You must have Packet Socket support (Networking Support  $\Rightarrow$  Networking Options  $\Rightarrow$  Packet Socket) compiled into the kernel. If you do not have IPv6 support (Networking Support  $\Rightarrow$  Networking Options  $\Rightarrow$  The IPv6 Protocol) compiled in, then you must use the missing\_ipv6 patch.

## Installation of ISC DHCP

If you have not compiled IPv6 support into the kernel, apply the missing\_ipv6 patch:

```
patch -Np1 -i ../dhcp-4.2.5-P1-missing_ipv6-1.patch
```



### Note

Be careful with the instructions below. The single and double quotes are important because the defined variables are used verbatim in the code.

Install ISC DHCP by running the following commands:

```
patch -Np1 -i ../dhcp-4.2.5-P1-client_script-1.patch &&
CFLAGS="-D_PATH_DHCLIENT_SCRIPT='\"/sbin/dhclient-script\"'
        -D_PATH_DHCLOUD_CONF='\"/etc/dhcp/dhcpd.conf\"'
        -D_PATH_DHCLIENT_CONF='\"/etc/dhcp/dhclient.conf\"'"
./configure --prefix=/usr
        --sysconfdir=/etc/dhcp
        --localstatedir=/var
        --with-srv-lease-file=/var/lib/dhcpd/dhcpd.leases
        --with-srv6-lease-file=/var/lib/dhcpd/dhcpd6.leases
        --with-cli-lease-file=/var/lib/dhclient/dhclient.leases \
        --with-cl6-lease-file=/var/lib/dhclient/dhclient6.leases &&
make
```

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

If you only want to install the ISC DHCP client, issue the following commands as the **root** user:

```
make -C client install      &&
mv -v /usr/sbin/dhclient /sbin &&
install -v -m755 client/scripts/linux /sbin/dhclient-script
```

Skip to the section called “Client Configuration” in order to configure the client

If you only want to install the ISC DHCP server, issue the following command as the **root** user:

```
make -C server install
```

Skip to the section called “Server Configuration” in order to configure the server.

Alternatively, you can install whole package which includes the client, server, relay, static libraries and development headers by running the following commands as the **root** user:

```
make install      &&
mv -v /usr/sbin/dhclient /sbin &&
install -v -m755 client/scripts/linux /sbin/dhclient-script
```

## Configuring ISC DHCP

### Config Files

`/etc/dhcp/dhclient.conf` and `/etc/dhcp/dhcpd.conf`

## Client Configuration

Create basic `/etc/dhcp/dhclient.conf` by running the following command as the `root` user:

```
cat > /etc/dhcp/dhclient.conf << "EOF"
# Begin /etc/dhcp/dhclient.conf
#
# Basic dhclient.conf(5)

#prepend domain-name-servers 127.0.0.1;
request subnet-mask, broadcast-address, time-offset, routers,
        domain-name, domain-name-servers, domain-search, host-name,
        netbios-name-servers, netbios-scope, interface-mtu,
        ntp-servers;
require subnet-mask, domain-name-servers;
#timeout 60;
#retry 60;
#reboot 10;
#select-timeout 5;
#initial-interval 2;

# End /etc/dhcp/dhclient.conf
EOF
```

See **man 5 dhclient.conf** for additional options.

Now create the `/var/lib/dhclient` directory which will contain DHCP Client leases by running the following command as the `root` user:

```
install -v -dm 755 /var/lib/dhclient
```

At this point you can test if **dhclient** is behaving as expected by running the following command as the `root` user:

```
dhclient <eth0>
```

Replace `<eth0>` with your desired interface. If you want more verbose output, add the `-v` parameter to the command above.

If you want to configure network interfaces at boot using **dhclient**, you need to install the `/lib/services/dhclient` script included in `blfs-bootscripts-20130512` package:

```
make install-service-dhclient
```

Next, create the /etc/sysconfig/ifconfig.eth0 configuration file with the following commands as the root user:

```
cat > /etc/sysconfig/ifconfig.eth0 << "EOF"
ONBOOT="yes"
IFACE="eth0"
SERVICE="dhclient"
DHCP_START=""
DHCP_STOP=""

# 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
```

Adjust the file to suit your needs.

For more information on the appropriate DHCP\_START and DHCP\_STOP values see **man 8 dhclient**.

## Server Configuration

Note that you only need the DHCP server if you want to issue LAN addresses over your network. The DHCP client doesn't need the server in order to function properly.

Start with creating `/etc/dhcp/dhcpd.conf` by running the following command as the root user:

```
cat > /etc/dhcp/dhcpd.conf << "EOF"
# Begin /etc/dhcp/dhcpd.conf
#
# Example dhcpcd.conf(5)

# Use this to enable / disable dynamic dns updates globally.
ddns-update-style none;

# option definitions common to all supported networks...
option domain-name "example.org";
option domain-name-servers ns1.example.org, ns2.example.org;

default-lease-time 600;
max-lease-time 7200;

# This is a very basic subnet declaration.
subnet 10.254.239.0 netmask 255.255.255.224 {
    range 10.254.239.10 10.254.239.20;
    option routers rtr-239-0-1.example.org, rtr-239-0-2.example.org;
}

# End /etc/dhcp/dhcpd.conf
EOF
```

Adjust the file to suit your needs. See **man 5 dhcpcd.conf** for additional options.

Now create the `/var/lib/dhcpd` directory which will contain DHCP Server leases by running the following command as the root user:

```
install -v -dm 755 /var/lib/dhcpd
```

If you want to start the DHCP Server at boot, install the `/etc/rc.d/init.d/dhcpcd` init script included in the `blfs-bootscripts-20130512` package:

```
make install-dhcpcd
```

You will need to edit the `/etc/sysconfig/dhcpcd` in order to set the interface on which **dhcpcd** will serve the DHCP requests.

## Contents

<b>Installed Programs:</b>	dhclient, dhclient-script, dhcpcd, dhcrelay and omshell
<b>Installed Libraries:</b>	libdhcpctl.a, libdst.a and libomapi.a
<b>Installed Directories:</b>	/usr/include/dhcpctl, /usr/include/isc-dhcp, /usr/include/omapip, /var/lib/dhclient and /var/lib/dhcpcd

## Short Descriptions

**dhclient** is the implementation of the DHCP client.

<b>dhclient-script</b>	is used by dhclient to (re)configure interfaces. It can make extra changes by invoking custom dhclient-{entry,exit}-hooks.
<b>dhcpd</b>	implements Dynamic Host Configuration Protocol (DHCP) and Internet Bootstrap Protocol (BOOTP) requests for network addresses.
<b>dhcrelay</b>	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.
<b>omshell</b>	provides an interactive way to connect to, query and possibly change the ISC DHCP Server's state via OMAPI, the Object Management API.

# Chapter 15. Networking Programs

These applications are generally client applications used to access the appropriate server across the building or across the world. Tcpwrappers and portmap are support programs for daemons that you may have running on your machine.

# bridge-utils-1.5

## Introduction to bridge-utils

The bridge-utils package contains a utility needed to create and manage bridge devices. This is useful in setting up networks for a hosted virtual machine (VM).

This package is known to build and work properly using an LFS-7.3 platform.

## Package Information

- Download (HTTP): <http://sourceforge.net/projects/bridge/files/bridge/bridge-utils-1.5.tar.gz>
- 
- Download MD5 sum: ec7b381160b340648dede58c31bb2238
- Download size: 36 KB
- Estimated disk space required: 1 MB
- Estimated build time: less than 0.1 SBU

## Additional Downloads

- Required patch: [http://www.linuxfromscratch.org/patches/blfs/svn/bridge-utils-1.5-linux\\_3.8\\_fix-1.patch](http://www.linuxfromscratch.org/patches/blfs/svn/bridge-utils-1.5-linux_3.8_fix-1.patch)

## bridge-utils Dependencies

### Optional (to run tests)

Net-tools-CVS\_20101030

## Kernel Configuration

Enable the following options in the kernel configuration and recompile the kernel if necessary:

```
Networking support: Y
  Networking options:
    802.1d Ethernet Bridging: M or Y
```

## Installation of bridge-utils

Install bridge-utils by running the following commands:

```
patch -Np1 -i ../bridge-utils-1.5-linux_3.8_fix-1.patch &&
autoconf -o configure configure.in &&
./configure --prefix=/usr &&
make
```

Testing the results requires running the six shell scripts in the `tools/` directory. Two of the tests require two ethernet ports. Some tests will not preserve the current network configuration. See `tests/README` for details.

Now, as the root user:

```
make install
```

# Configuring bridge-utils

## Configuration Information

To automate bridge creation and configuration, install the `/lib/services/etc/bridge` service script included in the `blfs-bootscripts-20130512` package.

```
make install-service-bridge
```

### Note

The bridge script depends on the commands `/sbin/ifup` and `/sbin/ifdown` and the service script `ipv4-static` from the *LFS* bootscripts dated January 27, 2012 or later.

The following configuration file will create a bridge device at boot time and attach the `eth0` device to it. If more than one device is desired, use a space separated list of `INTERFACE_COMPONENTS`. This configuration is useful when planning to run a virtual machine such as `kvm/qemu`.

Other `SERVICE` combinations are possible, for example, `SERVICES="bridge dhcp"`. In that case, the address parameters are not needed, but do not interfere if present. The bridge service may also be used alone, but will require additional subsequent configuration.

### Caution

Do not run a parallel configuration for a device in the `INTERFACE_COMPONENTS` list. For instance, in the example below, do not configure `/etc/sysconfig/ifconfig.eth0` to run at boot time. The command `ifdown br0` followed by command `ifup eth0` will work, but don't try to have both up at the same time.

```
cat > /etc/sysconfig/ifconfig.br0 << "EOF"
ONBOOT=yes
IFACE=br0
SERVICE="bridge ipv4-static"  # Space separated
IP=192.168.1.32
GATEWAY=192.168.1.1
PREFIX=24
BROADCAST=192.168.1.255
CHECK_LINK=no                # Don't check before bridge is created
STP=no                        # Spanning tree protocol, default no
INTERFACE_COMPONENTS="eth0"    # Add to IFACE, space separated devices
IP_FORWARD=true
EOF
```

All addresses should be changed to meet your circumstance.

## Contents

<b>Installed Program:</b>	brctl
<b>Installed Libraries:</b>	None
<b>Installed Directories:</b>	None

## Short Descriptions

**brctl** is a program used to set up, maintain, and inspect the ethernet bridge configuration in the linux kernel.

# cifs-utils-5.7

## Introduction to cifs-utils

The cifs-utils provides a means for mounting SMB/CIFS shares on a Linux system.

This package is known to build and work properly using an LFS-7.2 platform.

## Package Information

- 
- Download (FTP): <ftp://ftp.samba.org/pub/linux-cifs/cifs-utils/cifs-utils-5.7.tar.bz2>
- Download MD5 sum: 4215f12be8663f65d2c21dbbbafbc7f8
- Download size: 380 KB
- Estimated disk space required: 3.8 MB
- Estimated build time: less than 0.1 SBU

## cifs-utils Dependencies

### Recommended

Samba-3.6.12

### Optional

keyutils-1.5.5, libcap2-2.22, and MIT Kerberos V5-1.11.2 and

## Installation of cifs-utils

Install cifs-utils 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

<b>Installed Programs:</b>	cifs.idmap, cifs.upcall, cifscreds, getcifsacl, mount.cifs, and setcifsacl
<b>Installed Libraries:</b>	None
<b>Installed Directories:</b>	None

## Short Descriptions

<b>cifs.idmap</b>	is a userspace helper program for the linux CIFS client filesystem. There are a number of activities that the kernel cannot easily do itself. This program is a callout program that does these things for the kernel and then returns the result. It is not intended to be run from the command-line.
-------------------	--

<b>cifs.upcall</b>	is a userspace helper program for the linux CIFS client filesystem. It is intended to be run when the kernel calls request-key for a particular key type. It is not intended to be run from the command-line.
<b>cifscreds</b>	is a tool for managing credentials (username and password) for the purpose of establishing sessions in multiuser mounts.
<b>getcifsacl</b>	is a userspace helper to display an ACL in a security descriptor for Common Internet File System (CIFS).
<b>mount.cifs</b>	mounts a Linux CIFS filesystem. It is usually invoked indirectly by the mount(8) command when using the "-t cifs" option.
<b>setcifsacl</b>	is intended to alter an ACL of a security descriptor for a file system object.

# NcFTP-3.2.5

## 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.

This package is known to build and work properly using an LFS-7.3 platform.

## Package Information

- 
- Download (FTP): <ftp://ftp.ncftp.com/ncftp/ncftp-3.2.5-src.tar.bz2>
- Download MD5 sum: b05c7a6d5269c04891f02f43d4312b30
- Download size: 452 KB
- Estimated disk space required: 6.4 MB
- Estimated build time: 0.2 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 --sysconfdir=/etc &&
make -C libncftp shared &&
make
```

This package does not come with a test suite.

Now, as the `root` user:

```
make -C libncftp soinstall &&
make install
```

To install NcFTP using the second method (with the `libncftp` functionality linked in statically) run 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

**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

`/etc/ncftp.*` and `~/.ncftp/*`; especially `/etc/ncftp.prefs_v3` and `~/.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. Global defaults can be set in `/etc/ncftp.prefs_v3`.

## Contents

<b>Installed Programs:</b>	ncftp, ncftpbatch, ncftpbookmarks, ncftpget, ncftpls, ncftpput, and ncftpspooler
<b>Installed Library:</b>	<code>libncftp.so</code>
<b>Installed Directories:</b>	None

### Short Descriptions

<b>ncftp</b>	is a browser program for File Transfer Protocol.
<b>ncftpbatch</b>	is an individual batch FTP job processor.
<b>ncftpbookmarks</b>	is the NcFTP Bookmark Editor (NCurses-based).
<b>ncftpget</b>	is an internet file transfer program for scripts used to retrieve files.
<b>ncftpls</b>	is an internet file transfer program for scripts used to list files.
<b>ncftpput</b>	is an internet file transfer program for scripts used to transfer files.
<b>ncftpspooler</b>	is a global batch FTP job processor daemon.

# Net-tools-CVS\_20101030

## Introduction to Net-tools

The Net-tools package is a collection of programs for controlling the network subsystem of the Linux kernel. This package is known to build and work properly using an LFS-7.3 platform.

### Package Information

- Download (HTTP): [http://anduin.linuxfromscratch.org/sources/BLFS/svn/n/net-tools-CVS\\_20101030.tar.gz](http://anduin.linuxfromscratch.org/sources/BLFS/svn/n/net-tools-CVS_20101030.tar.gz)
- Download (FTP): [ftp://anduin.linuxfromscratch.org/BLFS/svn/n/net-tools-CVS\\_20101030.tar.gz](ftp://anduin.linuxfromscratch.org/BLFS/svn/n/net-tools-CVS_20101030.tar.gz)
- Download MD5 sum: 6be14ed473cacdd68ebedaa9605adc469
- Download size: 222 KB
- Estimated disk space required: 7.0 MB
- Estimated build time: less than 0.1 SBU

## Installation of Net-tools



### Note

The Net-tools package installs a **hostname** program which will overwrite the existing program installed by Inetutils during a base LFS installation. If, for whatever reason, you need to reinstall the Inetutils package after installing Net-tools, you should add **--disable-hostname** to the Inetutils **configure** command in LFS 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.



### Note

This package has several unneeded protocols and hardware device specific functions that are obsolete. To only build the minimum needed for your system, skip the **yes** command and answer each question interactively. The minimum needed options are 'UNIX protocol family' and 'INET (TCP/IP) protocol family'.

Install Net-tools by running the following commands:

```
sed -i -e '/Token/s/y$/n/' config.in &&
sed -i -e '/HAVE_HWSTRIP/s/y$/n/' config.in &&
yes "" | make config &&
make
```

This package does not come with a test suite.

Now, as the root user:

```
make update
```

## Command Explanations

**sed -i -e '/Token/s/y\$/n/' config.in:** Change the default for building obsolete token ring support to no. This is a simpler change than changing the location for the token ring headers.

**sed -i -e '/HAVE\_HWSTRIP/s/y\$/n/' config.in:** Removes obsolete Metricom radio support that requires a header no longer included in the kernel.

**yes "" | make config:** Piping yes to **make config** skips the interactive configuration and accepts the defaults.

## Contents

<b>Installed Programs:</b>	arp, dnsdomainname, domainname, hostname, ifconfig, ipmaddr, iptunnel, mii-tool, nameif, netstat, nisdomainname, plipconfig, rarp, route, slattach, and ypdomainname
<b>Installed Libraries:</b>	None
<b>Installed Directories:</b>	None

## Short Descriptions

<b>arp</b>	is used to manipulate the kernel's ARP cache, usually to add or delete an entry, or to dump the entire cache.
<b>dnsdomainname</b>	reports the system's DNS domain name.
<b>domainname</b>	reports or sets the system's NIS/YP domain name.
<b>hostname</b>	reports or sets the name of the current host system.
<b>ifconfig</b>	is the main utility for configuring network interfaces.
<b>ipmaddr</b>	adds, deletes and shows an interface's multicast addresses.
<b>iptunnel</b>	adds, changes, deletes and shows an interface's tunnels.
<b>mii-tool</b>	checks or sets the status of a network interface's Media Independent Interface (MII) unit.
<b>nameif</b>	names network interfaces based on MAC addresses.
<b>netstat</b>	is used to report network connections, routing tables, and interface statistics.
<b>nisdomainname</b>	does the same as <b>domainname</b> .
<b>plipconfig</b>	is used to fine tune the PLIP device parameters, to improve its performance.
<b>rarp</b>	is used to manipulate the kernel's RARP table.
<b>route</b>	is used to manipulate the IP routing table.
<b>slattach</b>	attaches a network interface to a serial line. This allows you to use normal terminal lines for point-to-point links to other computers.
<b>ypdomainname</b>	does the same as <b>domainname</b> .

# NFS Utilities-1.2.7

## 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.

This package is known to build and work properly using an LFS-7.3 platform.

### Package information

- Download (HTTP): <http://downloads.sourceforge.net/nfs/nfs-utils-1.2.7.tar.bz2>
- 
- Download MD5 sum: 3b5ca797197765dc0c3a4122720c7716
- Download size: 2.8 MB
- Estimated disk space required: 15 MB
- Estimated build time: 0.2 SBU

## NFS Utilities Dependencies

### Required

`libtirpc-0.2.3` and `pkg-config-0.28`  
`rpcbind-0.2.0` (Runtime dependency)

### Optional for NFSv4 Support

`libevent-2.0.21`, `sqlite3`, and `libnfsidmap`

### Optional for GSS (RPC Security) Support

`MIT Kerberos V5-1.11.2` or `libgssapi`, and `librpcsecgss`

### Optional for SPKM-3 Support

`SPKM-3`

## 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, ensure that the `nobody` user and `nogroup` group have been created. You can add them 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, an `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    \
            --without-tcp-wrappers \
            --disable-nfsv4       \
            --disable-nfsv41      \
            --disable-gss &&
make
```

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.

This package does not come with a working test suite.

Now, as the `root` user:

```
make install
```

## Command Explanations

`--disable-nfsv4` and `--disable-nfsv41`: Disables support for NFS version 4 and version 4.1.

`--disable-gss`: Disables support for RPCSEC GSS (RPC Security).

`--without-tcp-wrappers`: This option is needed because TCP Wrappers is not in BLFS.

## Configuring NFS Utilities

### Server Configuration

`/etc(exports)` contains the exported directories on NFS servers. Refer to the `exports.5` manual page for the syntax of this file. Also refer to the "NFS HowTo" available at <http://nfs.sourceforge.net/nfs-howto/> for information 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 <192.168.0.0/24>(rw,subtree_check,anonuid=99,anongid=99)
```

### Boot Script

Install the `/etc/rc.d/init.d/nfs-server` init script included in the `blfs-bootscripts-20130512` 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
```



### Note

The above parameters may be optionally placed in /etc/sysconfig/rc.site.

## 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,wsize=8192  0  0
<server-name>:/usr   /usr   nfs    ro,_netdev,rsize=8192               0  0
```

In some circumstances an /etc/netconfig file is required by an nfs client. It does no harm to create one even if it is not in fact needed. As the root user:

```
cat > /etc/netconfig << "EOF"
udp6 tpi_clts v inet6 udp  -
tcp6 tpi_cots_ord v inet6 tcp  -
udp tpi_clts v inet udp  -
tcp tpi_cots_ord v inet tcp  -
rawip tpi_raw - inet  - - -
local tpi_cots_ord - loopback - - -
EOF
```

## Boot Script



### Note

The following boot script is not required if the nfs-server script is installed.

Install the /etc/rc.d/init.d/nfs-client init script included in the blfs-bootscripts-20130512 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

<b>Installed Programs:</b>	exportfs, mountstats, mount.nfs, mount.nfs4 (link to mount.nfs), nfsiostat, nfsstat, rpc.mountd, rpc.nfsd, rpc.statd, rpcdebug, showmount, sm-notify, start-statd, umount.nfs (link to mount.nfs), and umount.nfs4 (link to mount.nfs)
<b>Installed Libraries:</b>	None
<b>Installed Directories:</b>	/var/lib/nfs

## Short Descriptions

<b>exportfs</b>	maintains a list of NFS exported file systems.
<b>mountstats</b>	displays NFS client per-mount statistics.
<b>mount.nfs</b>	Used to mount a network share using NFS
<b>mount.nfs4</b>	Used to mount a network share using NFSv4
<b>nfsiostat</b>	Report input/output statistics for network filesystems.
<b>nfsstat</b>	displays statistics kept about NFS client and server activity.
<b>rpc.mountd</b>	implements the NFS mount protocol on an NFS server.
<b>rpc.nfsd</b>	implements the user level part of the NFS service on the server.
<b>rpc.statd</b>	is used by the NFS file locking service. Run on both sides, client as well as server, when you want file locking enabled.
<b>rpcdebug</b>	sets or clears the kernel's NFS client and server debug flags.
<b>showmount</b>	displays mount information for an NFS server.
<b>sm-notify</b>	is used to send Network Status Monitor reboot messages.
<b>start-statd</b>	is a script called by nfsmount when mounting a filesystem with locking enabled, if statd does not appear to be running. It can be customised with whatever flags are appropriate for the site.
<b>umount.nfs</b>	Used to unmount a network share using NFS
<b>umount.nfs4</b>	Used to unmount a network share using NFSv4

## 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` bootscript 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` bootscript included with the `blfs-bootscripts-20130512` package.

```
make install-netfs
```

# ntp-4.2.6p5

## 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.

This package is known to build and work properly using an LFS-7.3 platform.

## Package Information

- Download (HTTP): [http://www.eecis.udel.edu/~ntp/ntp\\_spool/ntp4/ntp-4.2/ntp-4.2.6p5.tar.gz](http://www.eecis.udel.edu/~ntp/ntp_spool/ntp4/ntp-4.2/ntp-4.2.6p5.tar.gz)
- Download (FTP): <ftp://mirror.ovh.net/gentoo-distfiles/distfiles/ntp-4.2.6p5.tar.gz>
- Download MD5 sum: 00df80a84ec9528fcfb09498075525bc
- Download size: 4.1 MB
- Estimated disk space required: 48 MB
- Estimated build time: 0.5 SBU

## ntp Dependencies

### Required

`libcap2-2.22`

### Optional

`OpenSSL-1.0.1e` and `libedit`

## Installation of ntp

There should be a dedicated user and group to take control of the **ntpd** daemon after it is started. Issue the following commands as the `root` user:

```
groupadd -g 87 ntp &&
useradd -c "Network Time Protocol" -d /var/lib/ntp -u 87 \
-g ntp -s /bin/false ntp
```

Install ntp by running the following commands:

```
./configure --prefix=/usr --sysconfdir=/etc \
--with-binsubdir=sbin &&
make
```

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

Now, as the `root` user:

```
make install &&
install -v -m755 -d /usr/share/doc/ntp-4.2.6p5 &&
cp -v -R html/* /usr/share/doc/ntp-4.2.6p5/
```

## Command Explanations

`--with-binsubdir=sbin`: This parameter places the administrative programs in `/usr/sbin`.

## Configuring ntp

### Config Files

```
/etc/ntp.conf
```

### Configuration Information

The following configuration file defines various ntp servers with open access from different continents. It also creates a drift file where **ntpd** stores the frequency offset and a pid file to store the **ntpd** process ID. Since the documentation included with the package is sparse, visit the ntp website at <http://www.ntp.org/> and <http://www.pool.ntp.org/> for more information.

```
cat > /etc/ntp.conf << "EOF"
# Asia
server 0.asia.pool.ntp.org

# Australia
server 0.oceania.pool.ntp.org

# Europe
server 0.europe.pool.ntp.org

# North America
server 0.north-america.pool.ntp.org

# South America
server 2.south-america.pool.ntp.org

driftfile /var/cache/ntp.drift
pidfile   /var/run/ntp.pid
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-20130512 package.

```
make install-ntp
```

If you prefer to run **ntpd** periodically, add the following command to root's crontab:

```
ntpdate -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

<b>Installed Programs:</b>	ntp-keygen, ntp-wait, ntpd, ntpdate, ntpdc, ntpq, ntptime, ntptrace, sntp and tickadj
<b>Installed Libraries:</b>	None
<b>Installed Directory:</b>	/usr/share/doc/ntp-4.2.6p5

## Short Descriptions

<b>ntp-keygen</b>	generates cryptographic data files used by the NTPv4 authentication and identification schemes.
<b>ntp-wait</b>	is useful at boot time, to delay the boot sequence until <b>ntpd</b> has set the time.
<b>ntpd</b>	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.
<b>ntpdate</b>	is a client program that sets the date and time based on the response from an ntp server. This command is deprecated.
<b>ntpdc</b>	is used to query the ntp daemon about its current state and to request changes in that state.
<b>ntpq</b>	is an utility program used to monitor <b>ntpd</b> operations and determine performance.
<b>ntptime</b>	reads and displays time-related kernel variables.
<b>ntptrace</b>	traces a chain of ntp servers back to the primary source.
<b>sntp</b>	is a Simple Network Time Protocol (SNTP) client.
<b>tickadj</b>	reads, and optionally modifies, several timekeeping-related variables in older kernels that do not have support for precision timekeeping.

# rpcbind-0.2.0

## Introduction to rpcbind

The rpcbind program is a replacement for portmap. It is required for import or export of Network File System (NFS) shared directories.

This package is known to build and work properly using an LFS-7.3 platform.

## Package Information

- Download (HTTP): <http://downloads.sourceforge.net/rpcbind/rpcbind-0.2.0.tar.bz2>
- 
- Download MD5 sum: 1a77ddb1aaea8099ab19c351eeb26316
- Download size: 272 KB
- Estimated disk space required: 3.8 MB
- Estimated build time: less than 0.1 SBU

## rpcbind Dependencies

### Required

libtirpc-0.2.3

## Installation of rpcbind

In order to get rpcbind to work properly, first fix /etc/services. As the root user:

```
sed -i 's/^sunrpc/rpcbind/' /etc/services
```

Install rpcbind by running the following commands:

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

This package does not come with a test suite.

Now, as the root user:

```
make install
```

## Configuring rpcbind

### Boot Script

Install the /etc/rc.d/init.d/rpcbind init script included in the blfs-bootscripts-20130512 package.

```
make install-rpcbind
```

## Contents

<b>Installed Program:</b>	rpcbind and rpcinfo
<b>Installed Libraries:</b>	None
<b>Installed Directories:</b>	None

## Short Descriptions

- rpcbind** is a server that converts RPC program numbers into universal addresses. It must be running on the host to be able to make RPC calls on a server on that machine.
- rpcinfo** makes an RPC call to an RPC server and reports data according to the requested options.

# rsync-3.0.9

## Introduction to rsync

The rsync package contains the **rsync** utility. This is useful for synchronizing large file archives over a network. This package is known to build and work properly using an LFS-7.3 platform.

## Package Information

- Download (HTTP): <http://samba.org/ftp/rsync/src/rsync-3.0.9.tar.gz>
- Download (FTP): <ftp://ftp.samba.org/pub/rsync/src/rsync-3.0.9.tar.gz>
- Download MD5 sum: 5ee72266fe2c1822333c407e1761b92b
- Download size: 780 KB
- Estimated disk space required: 35 MB (includes installing all documentation)
- Estimated build time: 0.4 SBU

## rsync Dependencies

### Optional

popt-1.16, attr-2.4.46, acl-2.2.51

## 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 Doxygen-1.8.4 installed and wish to build HTML API documentation, issue **doxygen**.

If you have DocBook-utils-0.6.14 installed and wish to build the user documentation, issue any or all of the following commands:

```
pushd doc &&
docbook2pdf           rsync.sgml &&
docbook2ps            rsync.sgml &&
docbook2dvi           rsync.sgml &&
docbook2txt            rsync.sgml &&
docbook2html --nochunks rsync.sgml &&
popd
```

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

Now, as the `root` user:

```
make install
```

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

```
install -v -m755 -d      /usr/share/doc/rsync-3.0.9/api &&
install -v -m644 dox/html/* /usr/share/doc/rsync-3.0.9/api &&
install -v -m644 doc/rsync.* /usr/share/doc/rsync-3.0.9
```

## Configuring rsync

### Config Files

`/etc/rsyncd.conf`

### Configuration Information

For client access to remote files, you may need to install the OpenSSH-6.2p1 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-20130512` package.

```
make install-rsyncd
```

## Contents

<b>Installed Program:</b>	rsync
<b>Installed Libraries:</b>	None
<b>Installed Directories:</b>	Optionally, /usr/share/doc/rsync-3.0.9

## 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.

# Samba-3.6.12

## 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).

This package is known to build and work properly using an LFS-7.2 platform.

## Package Information

- Download (HTTP): <http://ftp.samba.org/pub/samba/stable/samba-3.6.12.tar.gz>
- Download (FTP): <ftp://ftp.samba.org/pub/samba/stable/samba-3.6.12.tar.gz>
- Download MD5 sum: 430fd21a1acd26964d3ccf366df8709a
- Download size: 34 MB
- Estimated disk space required: 535 MB (includes running the test suite)
- Estimated build time: 2.7 SBU (additionall 1.4 SBU to run the test suite)

## Samba Dependencies

### Required

`libtirpc-0.2.3`

### Optional

`popt-1.16`, `Linux-PAM-1.1.6`, `Cups-1.6.2`, `OpenLDAP-2.4.35`, `Gamin-0.1.10`, `acl-2.2.51`, `xfsprogs-3.1.10`, `MIT Kerberos V5-1.11.2`, `Python-2.7.5` (used only in parts of the test suite), `tdb`, `ctdb`, `libcap2-2.22`, `libunwind`, `Avahi-0.6.31`, `OpenAFS`, and `Valgrind` (optionally used by the test suite)

You will need to install one of the kerberos packages if you plan on using your system to join a Windows NT domain.

## Installation of Samba



### Note

If you wish to run the test suite after the binaries are built, you must add the `--enable-socket-wrapper` parameter to the `configure` script below. You may want to run `configure` with the `--help` parameter first. There may be other parameters needed to take advantage of optional dependencies.

Install Samba by running the following commands:

```
cd source3 &&

sed -i -e "s/python2.6 python2.5/python2.7 &/" \
-e "s/python2.6-config python2.5-config/python2.7-config &/" \
configure &&

./configure \
--prefix=/usr \
--sysconfdir=/etc \
--localstatedir=/var \
--with-piddir=/run/samba \
--with-pammodulesdir=/lib/security \
--with-fhs \
--enable-nss-wrapper \
--enable-socket-wrapper &&
sed -i "s/-ldl/& -ltirpc -lpthread/" Makefile &&
make
```

To test the results, issue: **make test**. If you have Linux-PAM installed and built the PAM library modules, you can perform a dlopen test by issuing: **make test\_pam\_modules**.

Now, as the root user:

```
make install &&

install -v -m644 pkgconfig/*.pc /usr/lib/pkgconfig      &&
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         &&

install -v -m644 ../examples/smb.conf.default /etc/samba &&

if [ -d /etc/openldap/schema ] ; then
    install -v -m644     ../examples/LDAP/README           \
                        /etc/openldap/schema/README.LDAP      &&
    install -v -m644     ../examples/LDAP/samba*          \
                        /etc/openldap/schema                  &&
    install -v -m755     ../examples/LDAP/{convert*,get*,ol*} \
                        /etc/openldap/schema                &&
fi &&

install -v -m755 -d /usr/share/doc/samba-3.6.12 &&
install -v -m644     ../docs/*.pdf \
                    /usr/share/doc/samba-3.6.12 &&
ln -v -s ../../samba/swat /usr/share/doc/samba-3.6.12
```

## Command Explanations

**sed -i -e "s/python2.6 ...":** Make Samba checking for newer Python versions too

**--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).

**--enable-nss-wrapper:** Builds the nss-wrapper library.

**--enable-socket-wrapper:** This option is required to run the test suite.

**sed -i "s/-ldl/& -ltirpc -lpthread/" Makefile:** This command enables the build to complete when using libtirpc instead of the deprecated GLibC rpc functions.

**cp pkgconfig/wbclient.pc /usr/lib/pkgconfig:** Install a file omitted by the install procedure.

**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 Windows NT domain authentication, 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.

**if [ -d /etc/openldap/schema ]; then ...; fi:** These commands are used to see if you have an OpenLDAP installation, and if so, they copy sample Samba schemas to the OpenLDAP schema directory.

**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

### 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/smbspool /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 writeable 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** bootscript. 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 bootscript 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](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>

## Boot Script

For your convenience, boot scripts have been provided for Samba. There are two included in the `blfs-bootscripts-20130512` 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 winbindd script to resolve names from Windows clients, run:

```
make install-winbindd
```

## Configuring SWAT

The SWAT (Samba Web Administration Tool) utility can be used for configuration of the Samba installation.

### Setting up SWAT using xinetd

If not already done, add an entry to `/etc/services` file as the `root` user:

```
echo "swat      905/tcp" >> /etc/services
```

Create the Samba xinetd-2.3.15 file as `/etc/xinetd.d/swat`.



### Warning

You may modify or remove the “only\_from” line below to include other host(s). BLFS does not recommend doing this because of the security risk involved. However, in a home network environment, disclosure of the `root` password may be an acceptable risk.

```
cat >> /etc/xinetd.d/swat << "EOF"
# Begin /etc/xinetd.d/swat

service swat
{
    port          = 905
    socket_type   = stream
    wait          = no
    instances     = 5
    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.



### Note

If you linked Linux-PAM into the Samba build, you'll need to create an `/etc/pam.d/samba` file.

SWAT can now be launched by pointing your web browser to `http://localhost:905`.

## Setting up SWAT using stunnel

A better way to set up SWAT for network access is through stunnel-4.54. For convenience, a boot scripts has been provided for SWAT via stunnel. First, create the stunnel configuration file:

```
cat >> /etc/stunnel/swat.conf << "EOF"
; File: /etc/stunnel/swat.conf

pid      = /run/stunnel-swat.pid
setuid   = root
setgid   = root
cert     = /etc/stunnel/stunnel.pem

[swat]
accept   = swat
exec    = /usr/sbin/swat

EOF
```

Next, install the swat bootscript:

```
make install-swat
```

After starting the SWAT boot script the tool can be accessed by pointing your web browser to <https://localhost:905>. Note: *https*. If access to the tool needs to be further restricted, then Iptables-1.4.18 can be used.

## Contents

<b>Installed Programs:</b>	eventlogadm, findsmb, ldbadd, ldbdel, ldbedit, ldbmodify, ldbrename, ldbsearch, net, nmbd, nblookup, ntlm_auth, pdredit, profiles, rpcclient, sharesec, smbcacls, smbclient, smbcontrol, smbcquotas, smbd, smbget, smbpasswd, smbspool, smbstatus, smbtar, smbtree, swat, testparm, wbinfo, winbindd, and (if not using system TDB) tdbbackup, tdbdump, and tdbtool
<b>Installed Libraries:</b>	libnss_winbind.so, libnss_wins.so, libnetapi.so, libsmbcclient.so, libsmbsharemodes.so, libtalloc.so, libwbclient.so, the pam_winbind.so and pam_smbpass.so PAM libraries, and assorted character set, filesystem and support modules.
<b>Installed Directories:</b>	/etc/samba, /usr/lib/samba, /usr/share/doc/samba-3.6.12, /usr/share/samba, /var/lib/samba, /var/log/samba (if configured), and /var/nmbd

## Short Descriptions

<b>eventlogadm</b>	is used to write records to eventlogs from STDIN, add the specified source and DLL eventlog registry entries and display the active eventlog names (from <code>smb.conf</code> ).
<b>findsmb</b>	lists information about machines that respond to SMB name queries on a subnet.
<b>ldbadd</b>	is a command-line utility for adding records to an LDB database.
<b>ldbdel</b>	is a command-line program for deleting LDB database records.
<b>ldbedit</b>	allows you to edit LDB databases using your preferred editor.
<b>ldbmodify</b>	allows you to modify records in an LDB database.

<b>ldbrename</b>	allows you to edit LDB databases using your preferred editor.
<b>ldbsearch</b>	searches an LDB database for records matching a specified expression.
<b>net</b>	is a tool for administration of Samba and remote CIFS servers, similar to the <b>net</b> utility for DOS/Windows.
<b>nmbd</b>	is the Samba NetBIOS name server.
<b>nmblookup</b>	is used to query NetBIOS names and map them to IP addresses.
<b>ntlm_auth</b>	is a tool to allow external access to Winbind's NTLM authentication function.
<b>pdbedit</b>	is a tool used to manage the SAM database.
<b>profiles</b>	is a utility that reports and changes SIDs in Windows registry files. It currently only supports Windows NT.
<b>rpcclient</b>	is used to execute MS-RPC client side functions.
<b>sharesec</b>	manipulates share ACL permissions on SMB file shares.
<b>smbcacls</b>	is used to manipulate Windows NT access control lists.
<b>smbclient</b>	is a SMB/CIFS access utility, similar to FTP.
<b>smbcontrol</b>	is used to control running <b>smbd</b> , <b>nmbd</b> and <b>winbinddd</b> daemons.
<b>smbcquotas</b>	is used to manipulate Windows NT quotas on SMB file shares.
<b>smbd</b>	is the main Samba daemon which provides SMB/CIFS services to clients.
<b>smbget</b>	is a simple utility with <b>wget</b> -like semantics, that can download files from SMB servers. You can specify the files you would like to download on the command-line.
<b>smbpasswd</b>	changes a user's Samba password.
<b>smbspool</b>	sends a print job to an SMB printer.
<b>smbstatus</b>	reports current Samba connections.
<b>smbtar</b>	is a shell script used for backing up SMB/CIFS shares directly to Linux tape drives or a file.
<b>smbtree</b>	is a text-based SMB network browser.
<b>swat</b>	is the Samba Web Administration Tool.
<b>tdbbackup</b>	is a tool for backing up or validating the integrity of Samba .tdb files.
<b>tdbdump</b>	is a tool used to print the contents of a Samba .tdb file.
<b>tdbtool</b>	is a tool which allows simple database manipulation from the command line.
<b>testparm</b>	checks an <b>smb.conf</b> file for proper syntax.
<b>wbinfo</b>	queries a running <b>winbinddd</b> daemon.
<b>winbinddd</b>	resolves names from Windows NT servers.
<b>libnss_winbind.so</b>	provides Name Service Switch API functions for resolving names from NT servers.
<b>libnss_wins.so</b>	provides API functions for Samba's implementation of the Windows Internet Naming Service.
<b>libnetapi.so</b>	provides the API functions for the administration tools used for Samba and remote CIFS servers.

<code>libsmbclient.so</code>	provides the API functions for the Samba SMB client tools.
<code>libsmbsharemodes.so</code>	provides API functions for accessing SMB share modes (locks etc.)
<code>libwbclient.so</code>	provides API functions for Windows domain client services.

# Wget-1.14

## Introduction to Wget

The Wget package contains a utility useful for non-interactive downloading of files from the Web. This package is known to build and work properly using an LFS-7.3 platform.

### Package Information

- Download (HTTP): <http://ftp.gnu.org/gnu/wget/wget-1.14.tar.xz>
- Download (FTP): <ftp://ftp.gnu.org/gnu/wget/wget-1.14.tar.xz>
- Download MD5 sum: 316f6f59292c9098ad81fd54f658c579
- Download size: 1.6 MB
- Estimated disk space required: 21 MB
- Estimated build time: 0.4 SBU

## Wget Dependencies

### Recommended

OpenSSL-1.0.1e or GnuTLS-3.2.0

### Optional

libidn-1.26, PCRE-8.32, libwww-perl-6.04 (required for the majority of the test suite), and *Dante*

## Installation of Wget

Install Wget by running the following commands:

```
./configure --prefix=/usr      \
            --sysconfdir=/etc \
            --with-ssl=openssl &&
make
```

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

Now, as the root user:

```
make install
```

## Command Explanations

**--sysconfdir=/etc**: This relocates the configuration file from `/usr/etc` to `/etc`.

**--with-ssl=openssl**: This allows the program to work with OpenSSL-1.0.1e. It can be omitted if GnuTLS-3.2.0 is found or the HTTPS protocol is not needed.

## Configuring Wget

### Config Files

`/etc/wgetrc` and `~/.wgetrc`

If you have installed the Certificate Authority Certificates and you want Wget to use them, as the `root` user:

```
echo ca-directory=/etc/ssl/certs >> /etc/wgetrc
```

## Contents

<b>Installed Program:</b>	wget
<b>Installed Libraries:</b>	None
<b>Installed Directories:</b>	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.

# Wireless Tools-29

## Introduction to Wireless Tools

The Wireless Extension (WE) is a generic API in the Linux kernel allowing a driver to expose configuration and statistics specific to common Wireless LANs to user space. A single set of tools can support all the variations of Wireless LANs, regardless of their type as long as the driver supports Wireless Extensions. WE parameters may also be changed on the fly without restarting the driver (or Linux).

The Wireless Tools (WT) package is a set of tools allowing manipulation of the Wireless Extensions. They use a textual interface to support the full Wireless Extension.

This package is known to build and work properly using an LFS-7.3 platform.

### Package Information

- Download (HTTP): [http://www.hpl.hp.com/personal/Jean\\_Tourrilhes/Linux/wireless\\_tools.29.tar.gz](http://www.hpl.hp.com/personal/Jean_Tourrilhes/Linux/wireless_tools.29.tar.gz)
- 
- Download MD5 sum: e06c222e186f7cc013fd272d023710cb
- Download size: 288 KB
- Estimated disk space required: 2.0 MB
- Estimated build time: less than 0.1 SBU

## Kernel Configuration

To use Wireless Tools, the kernel must have the appropriate drivers and other support available. The appropriate bus must also be available. For many laptops, the PCMCIA bus (CONFIG\_PCCARD) needs to be built. In some cases, this bus support will also need to be built for embedded wireless cards. The appropriate bridge support also needs to be built. For many modern laptops, the CardBus host bridge (CONFIG\_YENTA) will be needed.

In addition to the bus, the actual driver for the specific wireless card must also be available. There are many wireless cards and they don't all work with Linux. The first place to look for card support is the kernel. The drivers are located in Device Drivers → Network Device Support → Wireless LAN (non-hamradio). There are also external drivers available for some very common cards. For more information, look at the user notes.

After the correct drivers are loaded, the interface will appear in /proc/net/wireless.

## Installation of Wireless Tools

To install Wireless Tools, use the following commands:

```
make
```

This package does not come with a test suite.

Now, as the root user:

```
make PREFIX=/usr INSTALL_MAN=/usr/share/man install
```

## Command Explanations

**INSTALL\_MAN=/usr/share/man:** Install manual pages in /usr/share/man instead of /usr/man

## Contents

<b>Installed Programs:</b>	ifrename, iwconfig, iwevent, iwgetid, iwlist, iwpriv, and iwspy
<b>Installed Library:</b>	libiw.so
<b>Installed Directories:</b>	None

## Short Descriptions

<b>ifrename</b>	renames network interfaces based on various static criteria.
<b>iwconfig</b>	configures a wireless network interface.
<b>iwevent</b>	displays wireless events generated by drivers and setting changes.
<b>iwgetid</b>	reports ESSID, NWID or AP/Cell Address of wireless networks.
<b>iwlist</b>	gets detailed wireless information from a wireless interface.
<b>iwpriv</b>	configures optional (private) parameters of a wireless network interface.
<b>iwspy</b>	gets wireless statistics from specific node.
<b>libiw.so</b>	contains functions required by the wireless programs and provides an API for other programs.

# wpa\_supplicant-2.0

## Introduction to WPA Supplicant

WPA Supplicant is a Wi-Fi Protected Access (WPA) client and IEEE 802.1X supplicant. It implements WPA key negotiation with a WPA Authenticator and Extensible Authentication Protocol (EAP) authentication with an Authentication Server. In addition, it controls the roaming and IEEE 802.11 authentication/association of the wireless LAN driver. This is useful for connecting to a password protected wireless access point.

This package is known to build and work properly using an LFS-7.3 platform.

## Package Information

- Download (HTTP): [http://hostap.epitest.fi/releases/wpa\\_supplicant-2.0.tar.gz](http://hostap.epitest.fi/releases/wpa_supplicant-2.0.tar.gz)
- 
- Download MD5 sum: 3be2ebfdcced52e00eda0afe2889839d
- Download size: 2.0 MB
- Estimated disk space required: 32 MB
- Estimated build time: 0.2 SBU

## WPA Supplicant Dependencies

### Recommended

libnl-3.2.22 and OpenSSL-1.0.1e

### Optional

D-Bus-1.6.10, libxml2-2.9.1 and Qt-4.8.4

## Kernel Configuration

Enable the following options in the kernel configuration and recompile the kernel if necessary:

```
[*] Networking support    --->
    [*]   Wireless    --->
        [*]     cfg80211 - wireless configuration API
        [*]     cfg80211 wireless extensions compatibility
        [*]     Generic IEEE 802.11 Networking Stack (mac80211)

Device Drivers    --->
    [*] Network device support    --->
        [*]   Wireless LAN    --->
```

Select the options that support your hardware: **lspci** from pciutils-3.2.0 can be used to view your hardware configuration.

## Installation of WPA Suplicant

First you will need to create an initial configuration file for the build process. You can read `wpa_supplicant/README` and `wpa_supplicant/defconfig` for the explanation of the following options as well as other options that can be used. Create a build configuration file that should work for standard WiFi setups by running the following command:

```
cat > wpa_supplicant/.config << "EOF"
CONFIG_BACKEND=file
CONFIG_CTRL_IFACE=y
CONFIG_DEBUG_FILE=y
CONFIG_DEBUG_SYSLOG=y
CONFIG_DEBUG_SYSLOG_FACILITY=LOG_DAEMON
CONFIG_DRIVER_NL80211=y
CONFIG_DRIVER_WEXT=y
CONFIG_DRIVER_WIRED=y
CONFIG_EAP_GTC=y
CONFIG_EAP_LEAP=y
CONFIG_EAP_MD5=y
CONFIG_EAP_MSCHAPV2=y
CONFIG_EAP OTP=y
CONFIG_EAP PEAP=y
CONFIG_EAP TLS=y
CONFIG_EAP TTLS=y
CONFIG_IEEE8021X_EAPOL=y
CONFIG_IPV6=y
CONFIG_LIBNL32=y
CONFIG_PEERKEY=y
CONFIG_PKCS12=y
CONFIG_READLINE=y
CONFIG_SMARTCARD=y
CONFIG_WPS=y
CFLAGS += -I/usr/include/libnl3
EOF
```

If you wish to use WPA Suplicant with NetworkManager-0.9.8.0, make sure that you have installed D-Bus-1.6.10 and libxml2-2.9.1, then add the following options to the WPA Suplicant build configuration file by running the following command:

```
cat >> wpa_supplicant/.config << "EOF"
CONFIG_CTRL_IFACE_DBUS=y
CONFIG_CTRL_IFACE_DBUS_NEW=y
CONFIG_CTRL_IFACE_DBUS_INTRO=y
EOF
```

Install WPA Suplicant by running the following commands:

```
cd wpa_supplicant &&
make BINDIR=/sbin LIBDIR=/lib
```

If you have installed Qt-4.8.4 and wish to build the WPA Suplicant GUI program, run the following commands:

```
pushd wpa_gui-qt4 &&
qmake wpa_gui.pro &&
make &&
popd
```

This package does not come with a test suite.

Now, as the root user:

```
install -v -m755 wpa_{cli,passphrase,supplicant} /sbin/ &&
install -v -m644 doc/docbook/wpa_supplicant.conf.5 /usr/share/man/man5/ &&
install -v -m644 doc/docbook/wpa_{cli,passphrase,supplicant}.8 /usr/share/man/man8/
```

If you have built WPA Suplicant with D-Bus support, you will need to install D-Bus configuration files. Install them by running the following commands as the root user:

```
install -v -m644 dbus/.{epitest.hostap.WPASupplicant,wl.wpa_supplicant1}.service \
/usr/share/dbus-1/system-services/ &&
install -v -m644 dbus/dbus-wpa_supplicant.conf \
/etc/dbus-1/system.d/wpa_supplicant.conf
```

If you have built the WPA Suplicant GUI program, install it by running the following commands as the root user:

```
install -v -m755 wpa_gui-qt4/wpa_gui /usr/bin/ &&
install -v -m644 doc/docbook/wpa_gui.8 /usr/share/man/man8/ &&
install -v -m644 wpa_gui-qt4/wpa_gui.desktop /usr/share/applications/ &&
install -v -m644 wpa_gui-qt4/icons/wpa_gui.svg /usr/share/pixmaps/
```



### Note

You will need to restart the system D-Bus daemon before you can use the WPA Suplicant D-Bus interface.



### Note

This package installs desktop files into the /usr/share/applications hierarchy and you can improve system performance and memory usage by updating /usr/share/applications/mimeinfo.cache. To perform the update you must have desktop-file-utils-0.21 installed and issue the following command as the root user:

```
update-desktop-database
```

## Configuring wpa\_supplicant

### Config File

/etc/sysconfig/wpa\_supplicant-\*.conf

## Configuration Information

To connect to an access point that uses a password, you need to put the pre-shared key in `/etc/sysconfig/wpa_supplicant-wifi0.conf`. SSID is the string that the access point/router transmits to identify itself. Run the following command as the `root` user:

```
wpa_passphrase SSID SECRET_PASSWORD > /etc/sysconfig/wpa_supplicant-wifi0.conf
```

`/etc/sysconfig/wpa_supplicant-wifi0.conf` can hold the details of several access points. When `wpa_supplicant` is started, it will scan for the SSIDs it can see and choose the appropriate password to connect.

If you want to connect to an access point that isn't password protected, put an entry like this in `/etc/sysconfig/wpa_supplicant-wifi0.conf`. Replace "Some-SSID" with the SSID of the access point/router.

```
network={  
    ssid="Some-SSID"  
    key_mgmt=NONE  
}
```

There are many options that you could use to tweak how you connect to each access point. They are described in some detail in the `wpa_supplicant/wpa_supplicant.conf` file in the source tree.

## Connecting to an Access Point

If you want to configure network interfaces at boot using `wpa_supplicant`, you need to install the `/lib/services/wpa` script included in `blfs-bootscripts-20130512` package:

```
make install-service-wpa
```

If your router/access point uses DHCP to allocate IP addresses, you can install DHCP-4.2.5-P1 client and use it to automatically obtain network addresses. Create the `/etc/sysconfig/ifconfig-wifi0` by running the following command as the root user:

```
cat > /etc/sysconfig/ifconfig.wifi0 << "EOF"
ONBOOT="yes"
IFACE="wlan0"
SERVICE="wpa"

# Additional arguments to wpa_supplicant
WPA_ARGS=""

WPA_SERVICE="dhclient"
DHCP_START=""
DHCP_STOP=""

# 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
```

If you prefer dhcpcd-5.6.7 instead of DHCP-4.2.5-P1 client, then create the `/etc/sysconfig/ifconfig-wifi0` by running the following command as the root user:

```
cat > /etc/sysconfig/ifconfig.wifi0 << "EOF"
ONBOOT="yes"
IFACE="wlan0"
SERVICE="wpa"

# Additional arguments to wpa_supplicant
WPA_ARGS=""

WPA_SERVICE="dhcpcd"
DHCP_START="-b -q <insert appropriate start options here>"
DHCP_STOP="-k <insert additional stop options here>"
EOF
```

Alternatively, if you use static addresses on your local network, then create the `/etc/sysconfig/ifconfig-wifi0` by running the following command as the `root` user:

```
cat > /etc/sysconfig/ifconfig.wifi0 << "EOF"
ONBOOT="yes"
IFACE="wlan0"
SERVICE="wpa"

# Additional arguments to wpa_supplicant
WPA_ARGS=""

WPA_SERVICE="ipv4-static"
IP="192.168.1.1"
GATEWAY="192.168.1.2"
PREFIX="24"
BROADCAST="192.168.1.255"
EOF
```

You can connect to the wireless access point by running the following command as the `root` user:

```
ifup wifi0
```

Replace `wlan0` with the correct wireless interface and `wifi0` with desired name for the configuration file. Please note that `wpa_supplicant-* .conf` and `ifconfig.*` configuration files need to have identical names, ie both contain `wifi0` in their name.

## Contents

<b>Installed Programs:</b>	wpa_gui, wpa_supplicant, wpa_passphrase and wpa_cli
<b>Installed Libraries:</b>	None
<b>Installed Directories:</b>	None

## Short Descriptions

<b>wpa_gui</b>	is a graphical frontend program for interacting with wpa_supplicant.
<b>wpa_supplicant</b>	is a daemon that can connect to a password protected wireless access point.
<b>wpa_passphrase</b>	takes an SSID and a password and generates a simple configuration that <b>wpa_supplicant</b> can understand.
<b>wpa_cli</b>	is a command line interface used to control a running <b>wpa_supplicant</b> daemon.

## Other Networking Programs

NCPFS contains client and administration tools for use with Novell networks. See the User Notes for details.

# Chapter 16. Networking Utilities

This chapter contains some tools that come in handy when the network needs investigating.

# Avahi-0.6.31

## Introduction to Avahi

The Avahi package is a system which facilitates service discovery on a local network.

This package is known to build and work properly using an LFS-7.2 platform.

## Package Information

- Download (HTTP): <http://avahi.org/download/avahi-0.6.31.tar.gz>
- 
- Download MD5 sum: 2f22745b8f7368ad5a0a3fddac343f2d
- Download size: 1.3 MB
- Estimated disk space required: 23 MB
- Estimated build time: 0.4 SBU

## Avahi Dependencies

### Required

GLib-2.34.3 and Intltool-0.50.2

### Recommended

D-Bus Python Bindings-1.1.1, gobject-introspection-1.34.2, GTK+-2.24.17, GTK+-3.6.4, libdaemon-0.14 and libglade-2.6.4

### Optional

Qt-4.8.4

## Installation of Avahi

There should be a dedicated user and group to take control of the **avahi-daemon** daemon after it is started. Issue the following commands as the `root` user:

```
groupadd -fg 84 avahi &&
useradd -c "Avahi Daemon Owner" -d /var/run/avahi-daemon -u 84 \
        -g avahi -s /bin/false avahi
```

There should also be a dedicated privileged access group for Avahi clients. Issue the following command as the `root` user:

```
groupadd -fg 86 netdev
```

Install Avahi by running the following commands:

```
./configure --prefix=/usr \
            --sysconfdir=/etc \
            --localstatedir=/var \
            --disable-static \
            --disable-mono \
            --disable-monodoc \
            --disable-python \
            --disable-qt3 \
            --disable-qt4 \
            --enable-core-docs \
            --with-distro=none &&
make
```

This package does not come with a test suite.

Now, as the root user:

```
make install
```

## Command Explanations

- disable-static: This switch prevents installation of static versions of the libraries.
- disable-mono: This parameter disables the Mono bindings.
- disable-monodoc: This parameter disables documentation for the Mono bindings.
- disable-python: This parameter disables the scripts that depend on Python. It also allows a regular install to complete successfully.
- disable-qt3: This parameter disables the building of Qt3 mainloop integration.
- disable-qt4: This parameter disables the building of Qt4Core mainloop integration. Omit this if you have installed Qt4.
- enable-core-docs: This parameter enables the building of documentation.
- with-distro=none: There is an obsolete boot script in the distribution for LFS. This option disables it.
- disable-dbus: This parameter disables the use of D-Bus.
- disable-gtk: This parameter disables the use of GTK+2.
- disable-gtk3: This parameter disables the use of GTK+3.
- disable-libdaemon: This parameter disables the use of libdaemon. If you remove this option, **avahi-daemon** won't be built.
- enable-tests: This option enables the building of tests and examples.
- enable-compat-howl: This option enables the compatibility layer for HOWL.
- enable-compat-libdns\_sd: This option enables the compatibility layer for libdns\_sd.

# Configuring avahi

## Boot Script

To automatically start the **avahi-daemon** when the system is rebooted, install the `/etc/rc.d/init.d/avahi` bootscript from the blfs-bootscripts-20130512 package.

```
make install-avahi
```

## Contents

<b>Installed Programs:</b>	avahi-autoipd, avahi-bookmarks, avahi-browse, avahi-browse-domains, avahi-daemon, avahi-discover, avahi-discover-standalone, avahi-dnsconfd, avahi-publish, avahi-publish-address, avahi-publish-service, avahi-resolve, avahi-resolve-address, avahi-resolve-host-name, avahi-set-host-name, bshell, bssh, and bvnc
<b>Installed Libraries:</b>	libavahi-client.so, libavahi-common.so, libavahi-core.so, libavahi-glib.so, libavahi-gobject.so, libavahi-ui-gtk3.so, libavahi-ui.so, libdns_sd.so, and libhowl.so,
<b>Installed Directories:</b>	/etc/avahi/services, /usr/{include/{avahi-client,avahi-common, avahi-compat-howl/{corby,discovery,rendezvous,salt}}, avahi-compat-libdns_sd,avahi-core,avahi-glib,avahi-gobject,avahi-ui}, lib/{avahi,python2.7/site-packages/{avahi, avahi_discover}},share/{avahi/interfaces,locale/en_NZ/LC_MESSAGES}}

## Short Descriptions

<b>avahi-autoipd</b>	is a IPv4LL network address configuration daemon.
<b>avahi-bookmarks</b>	is a Web service showing mDNS/DNS-SD announced HTTP services using the Avahi daemon.
<b>avahi-browse</b>	browses for mDNS/DNS-SD services using the Avahi daemon.
<b>avahi-browse-domains</b>	browses for mDNS/DNS-SD services using the Avahi daemon.
<b>avahi-daemon</b>	is the Avahi mDNS/DNS-SD daemon.
<b>avahi-discover</b>	browses for mDNS/DNS-SD services using the Avahi daemon.
<b>avahi-discover-standalone</b>	browses for mDNS/DNS-SD services using the Avahi daemon.
<b>avahi-dnsconfd</b>	is a Unicast DNS server from mDNS/DNS-SD configuration daemon.
<b>avahi-publish</b>	registers a mDNS/DNS-SD service or host name or address mapping using the Avahi daemon.
<b>avahi-publish-address</b>	registers a mDNS/DNS-SD service or host name or address mapping using the Avahi daemon.
<b>avahi-publish-service</b>	registers a mDNS/DNS-SD service or host name or address mapping using the Avahi daemon.
<b>avahi-resolve</b>	resolves one or more mDNS/DNS host name(s) to IP address(es) (and vice versa) using the Avahi daemon.
<b>avahi-resolve-address</b>	resolves one or more mDNS/DNS host name(s) to IP address(es) (and vice versa) using the Avahi daemon.
<b>avahi-resolve-host-name</b>	resolves one or more mDNS/DNS host name(s) to IP address(es) (and vice versa) using the Avahi daemon.

**avahi-set-host-name**

changes the mDNS host name.

**bssh**

browses for SSH servers on the local network.

**bvnc**

browses for VNC servers on the local network.

# BIND Utilities-9.9.2-P2

## 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-9.9.2-P2. 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.

This package is known to build and work properly using an LFS-7.3 platform.

## Package Information

- 
- Download (FTP): <ftp://ftp.isc.org/isc/bind9/9.9.2-P2/bind-9.9.2-P2.tar.gz>
- Download MD5 sum: 2be7763c99b7e7b42ac3a18a267ce1aa
- Download size: 7.0 MB
- Estimated disk space required: 128 MB
- Estimated build time: 0.5 SBU

## BIND Utilities Dependencies

### Optional

OpenSSL-1.0.1e

## 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
```

This portion of the package does not come with a test suite.

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

<b>Installed Programs:</b>	dig, host, and nslookup
<b>Installed Libraries:</b>	None
<b>Installed Directories:</b>	None

## Short Descriptions

See the program descriptions in the BIND-9.9.2-P2 section.

# mod\_dnssd-0.6

## Introduction to mod\_dnssd

The mod\_dnssd package is an Apache HTTPD module which adds Zeroconf support via DNS-SD using Avahi. This allows Apache to advertise itself and the websites available to clients compatible with the protocol.

This package is known to build and work properly using an LFS-7.2 platform.

## Package Information

- Download (HTTP): [http://0pointer.de/lennart/projects/mod\\_dnssd/mod\\_dnssd-0.6.tar.gz](http://0pointer.de/lennart/projects/mod_dnssd/mod_dnssd-0.6.tar.gz)
- 
- Download MD5 sum: bed3d95a98168bf0515922d1c05020c5
- Download size: 84 KB
- Estimated disk space required: 1 MB
- Estimated build time: less than 0.1 SBU

## mod\_dnssd Dependencies

### Required

Apache-2.4.4 and Avahi-0.6.31

### Optional

Lynx-2.8.8dev.15

## Installation of mod\_dnssd

Install mod\_dnssd by running the following commands:

```
./configure --prefix=/usr \
            --disable-lynx &&
make
```

This package does not come with a test suite.

Now, as the root user:

```
make install
```

## Command Explanations

**--disable-lynx:** This parameter turns off Lynx usage for documentation generation. Remove it if you have Lynx installed.

## Contents

<b>Installed Programs:</b>	None
<b>Installed Library:</b>	mod_dnssd.so
<b>Installed Directories:</b>	None

## Short Descriptions

`mod_dnssd.so` is the Apache HTTPD module.

# NetworkManager-0.9.8.0

## Introduction to NetworkManager

NetworkManager is a set of co-operative tools that make networking simple and straightforward. Whether WiFi, wired, 3G, or Bluetooth, NetworkManager allows you to quickly move from one network to another: Once a network has been configured and joined once, it can be detected and re-joined automatically the next time it's available.

This package is known to build and work properly using an LFS-7.3 platform.

## Package Information

- Download (HTTP): <http://ftp.gnome.org/pub/gnome/sources/NetworkManager/0.9/>*NetworkManager-0.9.8.0.tar.xz*
- Download (FTP): <ftp://ftp.gnome.org/pub/gnome/sources/NetworkManager/0.9/>*NetworkManager-0.9.8.0.tar.xz*
- Download MD5 sum: 38d28f6bd9220d85dff47210706195c
- Download size: 2.0 MB
- Estimated disk space required: 105 MB
- Estimated build time: 1.0 SBU

## Additional Downloads

- Required patch: [http://www.linuxfromscratch.org/patches/blfs/svn/NetworkManager-0.9.8.0-upstream\\_fixes-1.patch](http://www.linuxfromscratch.org/patches/blfs/svn/NetworkManager-0.9.8.0-upstream_fixes-1.patch)

## NetworkManager Dependencies

### Required

D-Bus GLib Bindings-0.100.2, Intltool-0.50.2, libnl-3.2.22, NSS-3.14.3 and udev-Installed LFS Version or udev-extras (from systemd) (for GUdev)

### Recommended

ConsoleKit-0.4.6, dhcpcd-5.6.7 or DHCP-4.2.5-P1 (client only), gobject-introspection-1.34.2, Iptables-1.4.18, libsoup-2.40.3, Polkit-0.111, UPower-0.9.20 and Vala-0.18.1

### Optional

GTK-Doc-1.18, *ModemManager* (0.7 and later), and wpa\_supplicant-2.0 (built with D-Bus support).

## Installation of NetworkManager

Install NetworkManager by running the following commands:

```
patch -Np1 -i ../NetworkManager-0.9.8.0-upstream_fixes-1.patch &&
./configure --prefix=/usr \
            --sysconfdir=/etc \
            --localstatedir=/var \
            --libexecdir=/usr/lib/NetworkManager \
            --disable-ppp &&
make
```

This package does not come with a testsuite.

Now, as the root user:

```
make install
```

## Command Explanations

- disable-ppp: This parameter disables optional PPP support in NetworkManager.
- enable-doc: Use this switch if you have installed GTK-Doc-1.18 and wish to build the API manuals.
- without-iptables: Use this switch if you do not have Iptables.

## Configuring NetworkManager

### Config Files

/etc/NetworkManager/NetworkManager.conf

### Configuration Information

For NetworkManager to work, at least minimal configuration file must be present. Such file is not installed with **make install**. Issue following command as the root user to create minimal NetworkManager.conf file:

```
cat >> /etc/NetworkManager/NetworkManager.conf << "EOF"
[main]
plugins=keyfile
EOF
```

See **man 5 NetworkManager.conf** for any additional options.

### Boot Script

To automatically start the **NetworkManager** daemon when the system is rebooted, install the `/etc/rc.d/init.d/networkmanager` bootscript from the blfs-bootscripts-20130512 package.

```
make install-networkmanager
```

## Contents

<b>Installed Programs:</b>	nmcli, nm-online, nm-tool and NetworkManager
<b>Installed Libraries:</b>	libnm-glib.so, libnm-glib-vpn.so and libnm-util.so
<b>Installed Directories:</b>	/etc/NetworkManager, /usr/include/libnm-glib, /usr/include/NetworkManager, /usr/lib/NetworkManager, /usr/share/gtk-doc/html/libnm-glib, /usr/share/gtk-doc/html/libnm-util, /usr/share/gtk-doc/html/NetworkManager and /var/lib/NetworkManager

## Short Descriptions

<b>nmcli</b>	is a command-line tool for controlling NetworkManager and getting its status.
<b>nm-online</b>	is a utility to find out whether you are online.
<b>nm-tool</b>	is used to provide information about NetworkManager, device, and wireless networks.

<b>NetworkManager</b>	is the network management daemon.
<code>libnm-glib.so</code>	contains functions used by NetworkManager.
<code>libnm-glib-vpn.so</code>	contains functions used by NetworkManager VPN plugins.
<code>libnm-util.so</code>	contains functions used by NetworkManager utils.

# Nmap-6.01

## Introduction to Nmap

Nmap is a utility for network exploration and security auditing. It supports ping scanning, port scanning and TCP/IP fingerprinting.

This package is known to build and work properly using an LFS-7.2 platform.

## Package Information

- Download (HTTP): <http://anduin.linuxfromscratch.org/sources/BLFS/svn/n/nmap-6.01.tar.bz2>
- Download (FTP): <ftp://mirror.ovh.net/gentoo-distfiles/distfiles/nmap-6.01.tar.bz2>
- Download MD5 sum: a1a71940f238abb835dbf3ee7412bcea
- Download size: 21 MB
- Estimated disk space required: 115 MB
- Estimated build time: 0.9 SBU

## Nmap Dependencies

### Optional

OpenSSL-1.0.1e, PCRE-8.32, libpcap-1.4.0, GTK+-2.24.17 (run time dependency), and *libdnet*

## 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

<b>Installed Programs:</b>	ncat, ndiff, nmap, nmapfe, nping, uninstall_zenmap, xnmap, and zenmap
<b>Installed Libraries:</b>	/usr/lib/python2.7.5/site-packages/
<b>Installed Directory:</b>	/usr/share/nmap

## Short Descriptions

<b>ncat</b>	is a utility for reading and writing data across networks from the command line.
<b>ndiff</b>	is a tool to aid in the comparison of Nmap scans.
<b>nmap</b>	is a utility for network exploration and security auditing. It supports ping scanning, port scanning and TCP/IP fingerprinting.
<b>nmapfe</b>	is a symbolic link to <b>zenmap</b> .
<b>xnmap</b>	is a symbolic link to <b>zenmap</b> .

**zenmap** is a Python based graphical nmap frontend viewer. GTK+-2.24.17 is a required run time dependency.

# Traceroute-2.0.19

## 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.



### Note

This package overwrites the version of **traceroute** that was installed in the inetutils package in LFS. This version is more powerful and allows many more options than the standard version.

This package is known to build and work properly using an LFS-7.3 platform.

## Package Information

- Download (HTTP): <http://downloads.sourceforge.net/traceroute/traceroute-2.0.19.tar.gz>
- 
- Download MD5 sum: dd15d563993020d088ba02e8f987deaf
- Download size: 72 KB
- Estimated disk space required: 632 KB
- Estimated build time: Less than 0.1 SBU

## Installation of Traceroute

Install Traceroute by running the following commands:

```
make
```

This package does not come with a test suite.

Now, as the `root` user:

```
make prefix=/usr install &&
mv /usr/bin/traceroute /bin
```

## Contents

<b>Installed Program:</b>	traceroute
<b>Installed Libraries:</b>	None
<b>Installed Directories:</b>	None

## Short Descriptions

<b>traceroute</b>	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.
-------------------	---

# Whois-5.0.25

## Introduction to Whois

Whois is a client-side application which queries the whois directory service for information pertaining to a particular domain name. This package by default will install two programs: **whois** and **mkpasswd**. The **mkpasswd** command is also installed by the Expect-5.45 package.

This package is known to build and work properly using an LFS-7.3 platform.

## Package Information

- Download (HTTP): [http://ftp.debian.org/debian/pool/main/w/whois/whois\\_5.0.25.tar.xz](http://ftp.debian.org/debian/pool/main/w/whois/whois_5.0.25.tar.xz)
- Download (FTP): [ftp://ftp.debian.org/debian/pool/main/w/whois/whois\\_5.0.25.tar.xz](ftp://ftp.debian.org/debian/pool/main/w/whois/whois_5.0.25.tar.xz)
- Download MD5 sum: 8f873c1c51592ee419b2a46b0a3c8432
- Download size: 72 KB
- Estimated disk space required: 1.5 MB
- Estimated build time: less than 0.1 SBU

## Installation of Whois

Build the application with:

**make**

You can install the **whois** program, the **mkpasswd** program, and the locale files independently. Control your choice of what is installed with the following commands issued as the **root** user:



### Note

Installing this version of **mkpasswd** will overwrite the same command installed by Expect-5.45.

```
make prefix=/usr install-whois
make prefix=/usr install-mkpasswd
make prefix=/usr install-pos
```

## Contents

<b>Installed Programs:</b>	whois and mkpasswd
<b>Installed Libraries:</b>	None
<b>Installed Directories:</b>	None

## Short Descriptions

**whois** is a client-side application which queries the whois directory service for information pertaining to a particular domain name.

# Wicd-1.7.2.4

## Introduction to Wicd

Wicd is a network manager written in Python. It simplifies network setup by automatically detecting and connecting to wireless and wired networks. Wicd includes support for WPA authentication and DHCP configuration. It provides Curses- and GTK-based graphical frontends for user-friendly control. An excellent KDE-based frontend is also available [here](#).

This package is known to build and work properly using an LFS-7.2 platform.

## Package Information

- Download (HTTP): <http://launchpad.net/wicd/1.7/1.7.2.4/+download/wicd-1.7.2.4.tar.gz>
- 
- Download MD5 sum: c2435ddfdef0b9898852d72a85a45f0f
- Download size: 429 KB
- Estimated disk space required: 4.2 MB
- Estimated build time: less than 0.1 SBU

## Wicd Dependencies



### Note

Wicd uses **ifconfig** to activate network connections. **ifconfig** is provided by both the Inetutils and Net-tools packages. The Inetutils package is part of LFS, but the **ifconfig** command is not installed by the LFS instructions. If you choose to install the Inetutils version of **ifconfig**, you need to reinstall the package and configure it without the **--disable-ifconfig** switch.

### Required

Python-2.7.5, D-Bus Python Bindings-1.1.1, Wireless Tools-29 and Net-tools-CVS\_20101030 (Wicd needs **ifconfig** and **mii-tool** from this package)

### Recommended

PyGTK-2.24.0 (for the GTK frontend), wpa\_supplicant-2.0 (for WPA support) and dhcpcd-5.6.7 or DHCP-4.2.5-P1 (for DHCP support)

### Optional

*Urwid* (for the Curses-based frontend), *pm-utils* (for suspend/resume integration) and *Babel* (for internationalization)

## Installation of Wicd

Install Wicd by running the following commands:

```
sed -i '/wpath.logrotate\|wpath.systemd/d' setup.py &&
python setup.py configure --no-install-kde \
                         --no-install-acpi \
                         --no-install-pmutils \
                         --no-install-init
```

This package does not come with a test suite.

Now, as the `root` user, install the package:

```
python setup.py install
```

## Command Explanations

**sed -i '/wpath...':** This `sed` prevents installation of **logrotate** and `systemd` configuration files. You may omit it if you use these utilities.

**--no-install-kde:** Prevent installation of an autostart desktop file for KDE. If you use KDE, you should instead install the *Wicd KDE Client*.

**--no-install-acpi:** Prevent installation of **suspend** and **resume** scripts for `acpid`. Omit this option if you use `acpid`.

**--no-install-pmutils:** Prevent installation of hooks for `pm-utils`. Omit this option if you use `pm-utils`.

**--no-install-init:** Prevent installation of any init scripts, as a bootscript is installed later in the instructions.

**--wicdgroup=<group>:** The group that will have permission to use the Wicd client (default is the `users` group).

## Configuring Wicd

### Config Files

`/etc/wicd/manager-settings.conf`, `/etc/wicd/wired-settings.conf` and `/etc/wicd/wireless-settings.conf`

### Configuration Information

To automatically start Wicd at boot time, you need to first install the Wicd bootscript, `/etc/rc.d/init.d/wicd`, included in the `blfs-bootscripts-20130512` package (as user `root`):

```
make install-wicd
```

Since Wicd will now handle all configuration of network devices, the network bootscript installed by LFS should be disabled. This can be achieved by either removing any `S*network` and `K*network` symlinks in the `/etc/rc*.d` directories or by setting `ONBOOT=no` in any `/etc/sysconfig/ifconfig.*` files.

No manual configuration of Wicd is needed if you use the graphical frontends. If you are only going to use Wicd from command-line, you can configure it using the configuration files in `/etc/wicd`. For a list of available options, look at the man-pages for: `wicd-manager-settings.conf`, `wicd-wired-settings.conf` and `wicd-wireless-settings.conf`.

Be sure to add all users who are to have rights to open and close network connections with Wicd to the `users` group (or the group specified with the `--wicdgroup` configuration option).

## Contents

<b>Installed Programs:</b>	wicd, wicd-cli, wicd-client, wicd-curses and wicd-gtk
<b>Installed Libraries:</b>	none
<b>Installed Directories:</b>	/etc/wicd, /usr/lib/python2.7/site-packages/wicd, /usr/share/doc/wicd, /usr/share/pixmaps/wicd, /usr/share/wicd, /var/lib/wicd and /var/log/wicd

## Short Descriptions

<b>wicd</b>	is the wicd daemon.
<b>wicd-cli</b>	is a command line interface for configuring the wicd daemon.
<b>wicd-client</b>	is the wicd client. This script attempts to automatically choose the relevant configuration interface.
<b>wicd-curses</b>	is a curses interface for configuring the wicd daemon.
<b>wicd-gtk</b>	is a GTK interface for configuring the wicd daemon

# Wireshark-1.8.3

## Introduction to Wireshark

The Wireshark 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. Wireshark provides both a graphical and TTY-mode front-end for examining captured network packets from over 500 protocols, as well as the capability to read capture files from many other popular network analyzers.

This package is known to build and work properly using an LFS-7.2 platform.

## Package Information

- Download (HTTP): <http://www.wireshark.org/download/src/all-versions/wireshark-1.8.3.tar.bz2>
- 
- Download MD5 sum: 898b4c60e32efcd77ecf875a6ad07a92
- Download size: 23 MB
- Estimated disk space required: 1.0 GB
- Estimated build time: 6.0 SBU

## Additional Downloads

- Additional Documentation: <http://www.wireshark.org/download/docs/>

From this page you can download many different docs in a variety of formats.

## Wireshark dependencies

### Required

GLib-2.34.3 (to build the TTY-mode front-end only)

Note that if you don't have Gtk+ installed, you will need to pass `--disable-wireshark` to the `configure` command.

### Recommended

libpcap-1.4.0 (required to capture data)

### Optional

`pkg-config-0.28`, `GTK+-2.24.17` or `GTK+-3.6.4` (to build the GUI front-end), `OpenSSL-1.0.1e`, `MIT Kerberos V5-1.11.2`, `Python-2.7.5`, `PCRE-8.32`, `GnuTLS-3.2.0`, `PortAudio`, `GeoIP`, `adns`, and `Lua`

## Kernel Configuration

The kernel must have the Packet protocol enabled for Wireshark to capture live packets from the network. Enable the Packet protocol by choosing “Y” in the “Networking” – “Packet socket” configuration parameter. Alternatively, build the `af_packet.ko` module by choosing “M” in this parameter.

## Installation of Wireshark

Optionally, fix the description of the program in the title. The first change overwrites the default "SVN Unknown" in the title and the second overwrites a utility script that resets the version to "unknown".

```
cat > svnversion.h << "EOF"
#define SVNVERSION "BLFS"
#define SVNPATH "source"
EOF

cat > make-version.pl << "EOF"
#!/usr/bin/perl
EOF
```

Wireshark is a very large and complex application. These instructions provide additional security measures to ensure that only trusted users are allowed to view network traffic. First, set up a system group for wireshark. As the root user:

```
groupadd -g 62 wireshark
```

Continue to install Wireshark 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 &&

install -v -m755 -d /usr/share/doc/wireshark-1.8.3 &&
install -v -m755 -d /usr/share/pixmaps/wireshark &&

install -v -m644 README{,.linux} doc/README.* doc/*.{pod,txt} \
/usr/share/doc/wireshark-1.8.3 &&

pushd /usr/share/doc/wireshark-1.8.3 &&
for FILENAME in ../../wireshark/*.html; do
    ln -s -v $FILENAME .
done &&
popd &&

install -v -m644 -D wireshark.desktop \
/usr/share/applications/wireshark.desktop &&

install -v -m644 -D image/wsicon48.png \
/usr/share/pixmaps/wireshark.png &&

install -v -m644 image/*.{png,ico,xpm,bmp} \
/usr/share/pixmaps/wireshark
```

If you downloaded any of the documentation files from the page listed in the 'Additional Downloads', install them by issuing the following commands as the `root` user:

```
install -v -m644 <Downloaded_Files> /usr/share/doc/wireshark-1.8.3
```

Now, set ownership and permissions of sensitive applications to only allow authorized users. As the `root` user:

```
chown -v root:wireshark /usr/bin/{tshark,dumpcap} &&
chmod -v 6550 /usr/bin/{tshark,dumpcap}
```

Finally, add any users to the wireshark group with `usermod -a -G wireshark <username>`.

## Command Explanations

`--enable-threads`: This parameter enables the use of threads in **wireshark**.

`--with-ssl`: This parameter is required if you are linking Kerberos libraries into the build so that the OpenSSL `libcrypto` library is found.

`--with-python`: This parameter is required if you want Python bindings built.

## Configuring Wireshark

### Config Files

`/etc/wireshark.conf` and `~/.wireshark/*`

### Configuration Information

Though the default configuration parameters are very sane, reference the configuration section of the *Wireshark User's Guide* for configuration information. Most of Wireshark's configuration can be accomplished using the menu options of the **wireshark** graphical interface.



#### Note

If you want to look at packets, make sure you don't filter them out with Iptables-1.4.18. If you want to exclude certain classes of packets, it is more efficient to do it with iptables than it is with Wireshark.

## Contents

<b>Installed Programs:</b>	capinfos, dftest, dumpcap, editcap, idl2wrs, mergecap, randpkt, rawshark, text2pcap, tshark and wireshark
<b>Installed Libraries:</b>	libwireshark.so, libwiretap.so, libwsutil.so, and numerous plugin modules
<b>Installed Directories:</b>	/usr/lib/wireshark, /usr/share/doc/wireshark-1.8.3, /usr/share/pixmaps/wireshark and /usr/share/wireshark

## Short Descriptions

<b>capinfos</b>	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 Wireshark package.
<b>dftest</b>	is a display-filter-compiler test program.

<b>dumpcap</b>	is a network traffic dump tool. It lets you capture packet data from a live network and write the packets to a file.
<b>editcap</b>	edits and/or translates the format of capture files. It knows how to read libpcap capture files, including those of <b>tcpdump</b> , Wireshark and other tools that write captures in that format.
<b>idl2wrs</b>	takes a user specified CORBA IDL file and generates “C” source code that can be used to create an Wireshark plugin.
<b>mergecap</b>	combines multiple saved capture files into a single output file.
<b>randpkt</b>	creates random-packet capture files.
<b>rawshark</b>	dump and analyze raw libpcap data.
<b>text2pcap</b>	reads in an ASCII hex dump and writes the data described into a libpcap-style capture file.
<b>tshark</b>	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.
<b>wireshark</b>	is a GUI network protocol analyzer. It lets you interactively browse packet data from a live network or from a previously saved capture file.
<b>libwireshark.so</b>	contains functions used by the Wireshark programs to perform filtering and packet capturing.
<b>libwiretap.so</b>	is a library being developed as a future replacement for libpcap, the current standard Unix library for packet capturing. For more information, see the README file in the source <b>wiretap</b> directory.

# Chapter 17. 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-7.30.0

## Introduction to cURL

The cURL package contains an utility and a library used for transferring files with URL syntax to any of the following protocols: FTP, FTPS, HTTP, HTTPS, SCP, SFTP, TFTP, TELNET, DICT, LDAP, LDAPS and FILE. Its ability to both download and upload files can be incorporated into other programs to support functions like streaming media.

This package is known to build and work properly using an LFS-7.3 platform.

## Package Information

- Download (HTTP): <http://curl.haxx.se/download/curl-7.30.0.tar.bz2>
- 
- Download MD5 sum: 0db5ec03a5001b42a2edc03bf63b5ceb
- Download size: 2.6 MB
- Estimated disk space required: 35 MB (additional 4 MB for tests)
- Estimated build time: 0.5 SBU (additional 3.5 SBU for tests)

## cURL Dependencies

### Recommended

Certificate Authority Certificates and OpenSSL-1.0.1e or GnuTLS-3.2.0

### Optional

*c-ares, krb4, libidn-1.26, libmetalink, libssh2, MIT Kerberos V5-1.11.2, OpenLDAP-2.4.35 and SPNEGO*

### Optional for Running the Test Suite

stunnel-4.54 (for the HTTPS and FTPS tests)

## Installation of cURL

Install cURL by running the following commands:

```
sed -i '/--static-libs)/{N;s#\echo .*\#echo #;}' curl-config.in &&
./configure --prefix=/usr \
            --disable-static \
            --enable-threaded-resolver \
            --with-ca-path=/etc/ssl/certs &&
make
```

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

Now, as the root user:

```
make install &&
find docs \( -name "Makefile*" -o -name "*.1" -o -name "*.*" \) -exec rm {} \; &&
install -v -d -m755 /usr/share/doc/curl-7.30.0 &&
cp -v -R docs/* /usr/share/doc/curl-7.30.0
```

## Command Explanations

**sed -i '/--static-libs/!{N;s#echo .\*#echo #;}' curl-config.in:** Since the static libraries have not been installed, this sed removes the static libs line from **curl-config** as it might otherwise confuse other applications.

**--disable-static:** This switch prevents installation of static versions of the libraries.

**--enable-threaded-resolver:** This switch enables cURL's builtin threaded DNS resolver.

**--with-ca-path=/etc/ssl/certs:** This parameter sets the directory to use as the path to the SSL certificates. If you've not installed OpenSSL-1.0.1e or GnuTLS-3.2.0 and the Certificate Authority Certificates you can remove this option.

**--with-gssapi:** This parameter adds Kerberos 5 support to libcurl.

**--without-ssl --with-gnutls:** Use to build with GnuTLS support instead of OpenSSL for SSL/TLS.

**find docs \(` -name "Makefile\*" -o -name "\*.1" -o -name "\*.3" `) -exec rm {} \;:** This command removes Makefiles and man files from the documentation directory that would otherwise be installed by the commands that follow.

## Contents

**Installed Programs:** curl and curl-config

**Installed Library:** libcurl.so

**Installed Directories:** /usr/include/curl and /usr/share/doc/curl-7.30.0

## Short Descriptions

**curl** is a command line tool for transferring files with URL syntax.

**curl-config** prints information about the last compile, like libraries linked to and prefix setting.

**libcurl.so** provides the API functions required by **curl** and other programs.

# GeoClue-0.12.0

## Introduction to GeoClue

GeoClue is a modular geoinformation service built on top of the D-Bus messaging system. The goal of the GeoClue project is to make creating location-aware applications as simple as possible.

This package is known to build and work properly using an LFS-7.3 platform.

## Package Information

- Download (HTTP): <https://launchpad.net/geoclue/trunk/0.12/+download/geoclue-0.12.0.tar.gz>
- 
- Download MD5 sum: 33af8307f332e0065af056ecba65fec2
- Download size: 556 KB
- Estimated disk space required: 11 MB
- Estimated build time: 0.1 SBU

## Additional Downloads

- Required patch (if GPSD is installed): [http://www.linuxfromscratch.org/patches/blfs/svn/geoclue-0.12.0-gpsd\\_fix-1.patch](http://www.linuxfromscratch.org/patches/blfs/svn/geoclue-0.12.0-gpsd_fix-1.patch)

## GeoClue Dependencies

### Required

D-Bus GLib Bindings-0.100.2, GConf-3.2.6 and libxslt-1.1.28

### Recommended if you are building GNOME

libsoup-2.40.3 and NetworkManager-0.9.8.0

### Optional

*GPSD*, GTK+-2.24.17 and *oFono*

## Installation of GeoClue

Install GeoClue by running the following commands:

```
patch -Np1 -i ../geoclue-0.12.0-gpsd_fix-1.patch &&
sed -i "s@ -Werror@@" configure &&
sed -i "s@libnm_glib@libnm-glib@g" configure &&
sed -i "s@geoclue/libgeoclue.la@& -lgthread-2.0@g" \
      providers/skyhook/Makefile.in &&
./configure --prefix=/usr --libexecdir=/usr/lib/geoclue &&
make
```

This package does not come with a test suite.

Now, as the root user:

```
make install
```

## Command Explanations

**sed -i "s@ -Werror@@" configure:** This **sed** removes *-Werror* from the **CFLAGS** variable, otherwise the build will fail with gcc-4.7.

**sed -i "s@libnm\_glib@libnm-glib@g" configure:** This **sed** fixes detection of NetworkManager libraries.

**sed -i "s@geoclue/libgeoclue.la@& -lgthread-2.0@g" .. :** This **sed** fixes building GeoClue with recent binutils.

**--libexecdir=/usr/lib/geoclue:** This option installs GeoClue's private executables into /usr/lib/geoclue.

## Contents

**Installed Programs:** None

**Installed Library:** libgeoclue.so

**Installed Directory:** /usr/include/geoclue, /usr/lib/geoclue, /usr/share/geoclue-providers, and /usr/share/gtk-doc/html/geoclue

## Short Descriptions

**libgeoclue.so** contains functions that provide the GeoClue geoinformation application programming interface.

# glib-networking-2.34.2

## Introduction to GLib Networking

The GLib Networking package contains Network related gio modules for GLib.

This package is known to build and work properly using an LFS-7.2 platform.

### Package Information

- Download (HTTP): <http://ftp.gnome.org/pub/gnome/sources/glib-networking/2.34/glib-networking-2.34.2.tar.xz>
- Download (FTP): <ftp://ftp.gnome.org/pub/gnome/sources/glib-networking/2.34/glib-networking-2.34.2.tar.xz>
- Download MD5 sum: 7c95f09884d563e27937ac6185b03a8d
- Download size: 340 KB
- Estimated disk space required: 8.0 MB
- Estimated build time: 0.1 SBU

## GLib Networking Dependencies

### Required

GnuTLS-3.2.0 and gsettings-desktop-schemas-3.6.1

### Recommended

p11-kit-0.18.2

### Optional

libgcrypt-1.5.2 and libproxy

## Installation of GLib Networking

Install GLib Networking by running the following commands:

```
./configure --prefix=/usr \
            --libexecdir=/usr/lib/glib-networking \
            --with-ca-certificates=/etc/ssl/ca-bundle.crt \
            --disable-static &&
make
```

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

Now, as the root user:

```
make install
```

## Command Explanations

**--with-ca-certificates=/etc/ssl/ca-bundle.crt**: This parameter specifies where the trusted root certificates are located.

**--disable-static**: This switch prevents installation of static versions of the libraries.

## Contents

**Installed Program:** glib-pacrunner  
**Installed Libraries:** libgiognomeproxy.so, libgiognutls.so and libgiolibproxy.so  
**Installed Directories:** /usr/lib/glib-networking

# libevent-2.0.21

## Introduction to libevent

libevent is an asynchronous event notification software library. The libevent API provides a mechanism to execute a callback function when a specific event occurs on a file descriptor or after a timeout has been reached. Furthermore, libevent also supports callbacks due to signals or regular timeouts.

This package is known to build and work properly using an LFS-7.2 platform.

## Package Information

- Download (HTTP): <https://github.com/downloads/libevent/libevent/libevent-2.0.21-stable.tar.gz>
- 
- Download MD5 sum: b2405cc9ebf264aa47ff615d9de527a2
- Download size: 832 KB
- Estimated disk space required: 21 MB
- Estimated build time: 0.2 SBU

## libevent Dependencies

### Recommended

OpenSSL-1.0.1e

## Installation of libevent

Install libevent by running the following commands:

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

If you have Doxygen-1.8.4 installed and wish to build API documentation, issue **doxygen Doxyfile**.

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

Now, as the **root** user:

```
make install
```

If you built the API documentation, install it by issuing the following commands as the **root** user:

```
install -v -m755 -d /usr/share/doc/libevent-2.0.21/api &&
cp      -v -R      doxygen/html/* \
          /usr/share/doc/libevent-2.0.21/api
```

## Command Explanations

**--disable-static**: This switch prevents installation of static versions of the libraries.

## Contents

<b>Installed Program:</b>	event_rpcgen.py
<b>Installed Libraries:</b>	libevent_core.so, libevent_extra.so, libevent_openssl.so, libevent_pthreads.so and libevent.so
<b>Installed Directory:</b>	/usr/include/event2

# libnice-0.1.3

## Introduction to libnice

The libnice package is an implementation of the IETF's draft Interactice Connectivity Establishment standard (ICE). It provides GLib-based library, libnice and GStreamer elements.

This package is known to build and work properly using an LFS-7.2 platform.

## Package Information

- Download (HTTP): <http://nice.freedesktop.org/releases/libnice-0.1.3.tar.gz>
- 
- Download MD5 sum: 1a0907605f852dcda32a3b3daf38d36c
- Download size: 660 KB
- Estimated disk space required: 20 MB
- Estimated build time: less than 0.1 SBU

## libnice Dependencies

### Required

GLib-2.34.3

### Recommended

gst-plugins-base-1.0.7

### Optional

gst-plugins-base-0.10.36, GTK-Doc-1.18 and gupnp-igd

## Installation of libnice

Install libnice by running the following commands:

```
./configure --prefix=/usr \
            --disable-static \
            --without-gstreamer-0.10 &&
make
```

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

Now, as the root user:

```
make install
```

## Command Explanations

**--disable-static**: This switch prevents installation of static versions of the libraries.

**--without-gstreamer-0.10**: This switch disables building of the GStreamer 0.10 plugins which are not necessary for anything in BLFS. Remove it if you have installed gst-plugins-base-0.10.36.

--enable-gtk-doc: Use this parameter if GTK-Doc is installed and you wish to rebuild and install the API documentation.

## Contents

<b>Installed Programs:</b>	stunbdc and stund
<b>Installed Libraries:</b>	libnice.so and libgstnice.so (GStreamer Plugin)
<b>Installed Directories:</b>	/usr/include/nice, /usr/include/stun and /usr/share/gtk-doc/html/libnice

## Short Descriptions

<b>stunbdc</b>	performs Session Traversal for NAT (STUN) Binding Discovery.
<b>stund</b>	is a Session Traversal for NAT (STUN) daemon.
<b>libnice.so</b>	contains the libnice API functions.

# libnl-3.2.22

## Introduction to libnl

The libnl suite is a collection of libraries providing APIs to netlink protocol based Linux kernel interfaces. This package is known to build and work properly using an LFS-7.3 platform.

### Package Information

- Download (HTTP): <http://www.infradead.org/~tgr/libnl/files/libnl-3.2.22.tar.gz>
- 
- Download MD5 sum: 2e1c889494d274aca24ce5f6a748e66e
- Download size: 716 KB
- Estimated disk space required: 25 MB
- Estimated build time: 0.3 SBU

## Installation of libnl

Install libnl by running the following commands:

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

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

Now, as the root user:

```
make install
```

## Command Explanations

**--disable-static**: This switch prevents installation of static versions of the libraries.

**--disable-cli**: Use this parameter if you don't want to install cli tools provided by the package.

## Contents

<b>Installed Programs:</b>	genl-ctrl-list, nl-class-add, nl-class-delete, nl-classid-lookup, nl-class-list, nl-cls-add, nl-cls-delete, nl-cls-list, nl-link-list, nl-pktloc-lookup, nl-qdisc-add, nl-qdisc-delete and nl-qdisc-list
<b>Installed Libraries:</b>	libnl-3.so, libnl-cli-3.so, libnl-genl-3.so, libnl-nf-3.so and libnl-route-3.so
<b>Installed Directories:</b>	/etc/libnl, /usr/include/libnl3 and /usr/lib/libnl

## Short Descriptions

**libnl\*-3.so** These libraries contain API functions used to access Netlink interfaces in Linux kernel.

# libpcap-1.4.0

## Introduction to libpcap

libpcap provides functions for user-level packet capture, used in low-level network monitoring.

This package is known to build and work properly using an LFS-7.3 platform.

## Package Information

- Download (HTTP): <http://www.tcpdump.org/release/libpcap-1.4.0.tar.gz>
- 
- Download MD5 sum: 56e88a5aabdd1e04414985ac24f7e76c
- Download size: 608 KB
- Estimated disk space required: 10 MB
- Estimated build time: 0.1 SBU

## libpcap Dependencies

### Optional

BlueZ-4.101, Software distribution for the *DAG*, libnl-3.2.22, libusb-1.0.9 and *Septel* range of passive network monitoring cards.

## 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
```

## Contents

<b>Installed Program:</b>	libpcap-config
<b>Installed Libraries:</b>	libpcap.{a,so}
<b>Installed Directory:</b>	/usr/include/pcap

## Short Descriptions

<b>libpcap-config</b>	provides configuration information for libpcap.
<b>libpcap.{a,so}</b>	are libraries used for user-level packet capture.

# librest-0.7.90

## Introduction to librest

librest was designed to make it easier to access web services that claim to be "RESTful". It includes convenience wrappers for libsoup and libxml to ease remote use of the RESTful API.

This package is known to build and work properly using an LFS-7.2 platform.

## Package Information

- Download (HTTP): <http://ftp.gnome.org/pub/gnome/sources/rest/0.7/rest-0.7.90.tar.xz>
- Download (FTP): <ftp://ftp.gnome.org/pub/gnome/sources/rest/0.7/rest-0.7.90.tar.xz>
- Download MD5 sum: 639d51e9e9276726db93b1b4c46887f2
- Download size: 300 KB
- Estimated disk space required: 7.0 MB
- Estimated build time: 0.2 SBU

## librest Dependencies

### Required

Certificate Authority Certificates and libsoup-2.40.3

### Recommended

gobject-introspection-1.34.2

### Optional

GTK-Doc-1.18

## Installation of librest

Install librest by running the following commands:

```
./configure --prefix=/usr \
            --with-ca-certificates=/etc/ssl/ca-bundle.crt &&
make
```

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

Now, as the root user:

```
make install
```

## Command Explanations

**--with-ca-certificates=/etc/ssl/ca-bundle.crt**: The configure script needs to be pointed to the certificates.

## Contents

**Installed Programs:** None  
**Installed Libraries:** librest-0.7.so and librest-extras-0.7.so  
**Installed Directories:** /usr/include/rest-0.7 and /usr/share/gtk-doc/html/rest-0.7

## Short Descriptions

`librest-0.7.so` contains the RESTful Web API Query functions.  
`librest-extras-0.7.so` contains extra RESTful Web API Query functions.

# libsoup-2.40.3

## Introduction to libsoup

The libsoup is HTTP client/server library for GNOME. It uses GObject and the GLib main loop to integrate with GNOME applications and it also has asynchronous API for use in threaded applications.

This package is known to build and work properly using an LFS-7.2 platform.

## Package Information

- Download (HTTP): <http://ftp.gnome.org/pub/gnome/sources/libsoup/2.40/libsoup-2.40.3.tar.xz>
- Download (FTP): <ftp://ftp.gnome.org/pub/gnome/sources/libsoup/2.40/libsoup-2.40.3.tar.xz>
- Download MD5 sum: ee111c5cf9f95b4a7aa24afe13dddb98
- Download size: 696 KB
- Estimated disk space required: 32 MB
- Estimated build time: 0.3 SBU

## libsoup Dependencies

### Required

glib-networking-2.34.2 and libxml2-2.9.1

### Recommended

gobject-introspection-1.34.2, libgnome-keyring-3.6.0 and SQLite-3.7.16.2

### Optional

Apache-2.4.4 (required to run the test suite), cURL-7.30.0 (required to run the test suite), GTK-Doc-1.18, PHP-5.4.11 compiled with XMLRPC-EPI support (only used for the XMLRPC regression tests) and Samba-3.6.12 (ntlm\_auth is required to run the test suite).

## Installation of libsoup

Install libsoup by running the following commands:

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

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

Now, as the root user:

```
make install
```

## Command Explanations

**--disable-static**: This switch prevents installation of static versions of the libraries.

**--without-gnome**: This switch prevents **configure** looking for GNOME specific dependencies. Use this switch if you have not installed libgnome-keyring-3.6.0.

--enable-gtk-doc: Use this parameter if GTK-Doc is installed and you wish to rebuild and install the API documentation.

## Contents

<b>Installed Programs:</b>	None
<b>Installed Libraries:</b>	libsoup-2.4.so and libsoup-gnome-2.4.so
<b>Installed Directories:</b>	/usr/include/libsoup-2.4, /usr/include/libsoup-gnome-2.4 and /usr/share/gtk-doc/html/libsoup-2.4

## Short Descriptions

libsoup-2.4.so	provides functions for asynchronous HTTP connections.
libsoup-gnome-2.4.so	provides GNOME specific features.

# libtirpc-0.2.3

## Introduction to libtirpc

The libtirpc package contains libraries that support programs that use the Remote Procedure Call (RPC) API. It replaces the RPC, but not the NIS library entries that used to be in glibc.

This package is known to build and work properly using an LFS-7.3 platform.

## Package Information

- Download (HTTP): <http://downloads.sourceforge.net/project/libtirpc/libtirpc/0.2.3/libtirpc-0.2.3.tar.bz2>
- 
- Download MD5 sum: b70e6c12a369a91e69fcc3b9feb23d61
- Download size: 456 KB
- Estimated disk space required: 7.5 MB
- Estimated build time: 0.2 SBU

## Additional Downloads

- Required header tar file (Add rpc/nis headers): <ftp://anduin.linuxfromscratch.org/other/rpcnis-headers.tar.bz2>
- Required Patch (Remove nis dependencies): [http://www.linuxfromscratch.org/patches/blfs/svn/libtirpc-0.2.3-remove\\_nis-1.patch](http://www.linuxfromscratch.org/patches/blfs/svn/libtirpc-0.2.3-remove_nis-1.patch)

## libtirpc Dependencies

### Required

*pkg-config-0.28*

### Optional

*libgssapi*

## Installation of libtirpc

In LFS-7.1 the NIS and RPC related headers were not installed by default. If that applies to your system, install them by running the following command as the `root` user:

```
if [ ! -r /usr/include/rpc/rpc.h ]; then
    tar -xvf ../rpcnis-headers.tar.bz2 -C /usr/include
fi
```

Install libtirpc by running the following commands:

```
patch -Np1 -i ../libtirpc-0.2.3-remove_nis-1.patch &&
sed "s@AM_CONFIG_HEADER@AC_CONFIG_HEADERS@g" -i configure.ac &&
autoreconf -fi &&
./configure --prefix=/usr --sysconfdir=/etc CFLAGS="-fPIC" &&
make
```

This package does not come with a test suite.

Now, as the root user:

```
make install &&
mv -v /usr/lib/libtirpc.so.* /lib &&
ln -sfv ../../lib/libtirpc.so.1.0.10 /usr/lib/libtirpc.so
```

## Command Explanations

**sed "s@AM\_CONFIG\_HEADER@AC\_CONFIG\_HEADERS@g" -i configure.ac:** This sed fixes some issues with Automake 1.13 and later.

**mv -v /usr/lib/libtirpc.so.\* ...:** Move shared libraries into /lib so they are available before /usr is mounted.

## Contents

<b>Installed Programs:</b>	None
<b>Installed Libraries:</b>	libtirpc.{so,a}
<b>Installed Directory:</b>	/usr/include/libtirpc

## Short Descriptions

**libtirpc.{so,a}** provides the Remote Procedure Call (RPC) API functions required by other programs.

# neon-0.29.6

## Introduction to neon

The neon package is an HTTP and WebDAV client library, with a C interface.

This package is known to build and work properly using an LFS-7.3 platform.

## Package Information

- Download (HTTP): <http://www.webdav.org/neon/neon-0.29.6.tar.gz>
- 
- Download MD5 sum: 591e0c82e6979e7e615211b386b8f6bc
- Download size: 862 KB
- Estimated disk space required: 26 MB
- Estimated build time: 0.1 SBU

## neon Dependencies

### Required

libxml2-2.9.1 or expat-2.1.0

### Optional

OpenSSL-1.0.1e or GnuTLS-3.2.0, *Libproxy* (requires *pkg-config-0.28* to find it), MIT Kerberos V5-1.11.2 and *pakchois*

## Installation of neon

Install neon by running the following commands:

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

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

Now, as the **root** user:

```
make install
```

## Command Explanations

**--enable-shared**: This parameter is needed to build the shared libraries, otherwise only static libraries are built and installed.

**--disable-static**: This parameter prevents the static libraries being installed.

**--with-ssl=openssl**: This option enables SSL support using openssl.

**--with-ssl=gnutls**: This option enables SSL support using gnutls.

**--with-libxml2**: This option forces the use of libxml2.

**--with-expat**: This option forces the use of expat.

If you wish to use the other optional dependencies, consult the output of **./configure --help**.

## Contents

<b>Installed Program:</b>	neon-config
<b>Installed Library:</b>	libneon.so
<b>Installed Directories:</b>	/usr/{include/neon,share/doc/neon-0.29.6/html}

## Short Descriptions

<b>neon-config</b>	is a script which provides information about an installed copy of the neon library.
<b>libneon.so</b>	is used as a high-level interface to common HTTP and WebDAV methods.

## Chapter 18. 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-2.7

## 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.

This package is known to build and work properly using an LFS-7.2 platform.

### Package Information

- Download (HTTP): <http://links.twibright.com/download/links-2.7.tar.bz2>
- Download (FTP): <ftp://mirror.ovh.net/gentoo-distfiles/distfiles/links-2.7.tar.bz2>
- Download MD5 sum: d06aa6e14b2172d73188871a5357185a
- Download size: 3.7 MB
- Estimated disk space required: 30 MB
- Estimated build time: 0.2 SBU

## Links Dependencies

### Recommended

GPM-1.20.7 (if mouse support is desired) and OpenSSL-1.0.1e

### Optional

Support for graphical mode requires at least one of GPM-1.20.7 (to be used with a framebuffer-based console), *SVGAlib*, *DirectFB*, and X Window System

For decoding various image formats Links can utilize libpng-1.6.2, libjpeg-turbo-1.2.1, and LibTIFF-4.0.3

## 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 &&
install -v -d -m755 /usr/share/doc/links-2.7 &&
install -v -m644 doc/links_cal/* KEYS BRAILLE_HOWTO \
/usr/share/doc/links-2.7
```

## Command Explanations

--enable-graphics: This switch enables support for graphics mode.

# 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

<b>Installed Program:</b>	links
<b>Installed Libraries:</b>	None
<b>Installed Directories:</b>	/usr/share/doc/links-2.7

## Short Descriptions

**links** is a text and graphics mode WWW browser.

# Lynx-2.8.8dev.15

## Introduction to Lynx

Lynx is a text based web browser.

This package is known to build and work properly using an LFS-7.3 platform.

## Package Information

- Download (HTTP): <http://lynx.isc.org/current/lynx2.8.8dev.15.tar.bz2>
- Download (FTP): <ftp://lynx.isc.org/current/lynx2.8.8dev.15.tar.bz2>
- Download MD5 sum: 3dbf5699cc987598139634350a514592
- Download size: 2.4 MB
- Estimated disk space required: 26 MB
- Estimated build time: 0.4 SBU

## Lynx Dependencies

### Optional

OpenSSL-1.0.1e or GnuTLS-3.2.0 (experimental), Zip-3.0, UnZip-6.0, an MTA (that provides a **sendmail** command), and Sharutils-4.13.5 (for a **uudecode** program)

## Installation of Lynx

Install Lynx by running the following commands:

```
./configure --prefix=/usr          \
            --sysconfdir=/etc/lynx \
            --datadir=/usr/share/doc/lynx-2.8.8dev.15 \
            --with-zlib           \
            --with-bzlib          \
            --with-screen=ncursesw \
            --enable-locale-charset &&
make
```

This package does not come with a test suite.

Now, as the root user:

```
make install-full &&
chgrp -v -R root /usr/share/doc/lynx-2.8.8dev.15/lynx_doc
```

## Command Explanations

**--sysconfdir=/etc/lynx**: This parameter is used so that the configuration files are located in `/etc/lynx` instead of `/usr/etc`.

**--datadir=/usr/share/doc/lynx-2.8.8dev.15**: This parameter is used so that the documentation files are installed into `/usr/share/doc/lynx-2.8.8dev.15` instead of `/usr/share/lynx_{doc,help}`.

**--with-zlib**: This enables support for linking libz into Lynx.

--with-bzlib: This enables support for linking libbz2 into Lynx.

--with-screen=ncursesw: This switch enables the use of advanced wide-character support present in the system NCurses library. This is needed for proper display of characters and line wrapping in multibyte locales.

--enable-locale-charset: This switch allows Lynx to deduce the proper character encoding for terminal output from the current locale. A configuration step is still needed (see below), but unlike the situation without this switch, the configuration step becomes the same for all users (without the switch one must specify the display character set explicitly). This is important for environments such as a LiveCD, where the amount of system-specific configuration steps has to be reduced to the minimum.

--enable-nls: This switch allows Lynx to print translated messages (such as questions about cookies and SSL certificates).

--with-ssl: This enables support for linking SSL into Lynx.



### Note

Due to an error in the **configure** process, building with openssl also requires running the following before running **make**.

```
echo "#define USE_OPENSSL_INCL 1" >> lynx_cfg.h
```

--with-gnutls: This enables experimental support for linking GnuTLS into Lynx.

**make install-full**: In addition to the standard installation, this target installs the documentation and help files.

**chgrp -v -R root /usr/share/doc/lynx-2.8.8dev.15/lynx\_doc**: This command corrects the improper group ownership of installed documentation files.

## Configuring Lynx

### Config Files

/etc/lynx/lynx.cfg

### Configuration Information

The proper way to get the display character set is to examine the current locale. However, Lynx does not do this by default. Change this setting:

```
sed -i 's/#\(\LOCALE_CHARSET\):FALSE/\1:TRUE/' /etc/lynx/lynx.cfg
```

The built-in editor in Lynx Breaks Multibyte Characters. This issue manifests itself in multibyte locales, e.g., as the Backspace key not erasing non-ASCII characters properly, and as incorrect data being sent to the network when one edits the contents of text areas. The only solution to this problem is to configure Lynx to use an external editor (bound to the “Ctrl+X e” key combination by default):

```
sed -i 's/#\(\DEFAULT_EDITOR\):/\1:vi/' /etc/lynx/lynx.cfg
```

Lynx handles the following values of the DEFAULT\_EDITOR option specially by adding cursor-positioning arguments: “emacs”, “jed”, “jmacs”, “joe”, “jove”, “jpico”, “jstar”, “nano”, “pico”, “rjoe”, “vi” (but not “vim”: in order to position the cursor in Vim-7.3, set this option to “vi”).

By default, Lynx doesn't save cookies between sessions. Change this setting:

```
sed -i 's/#\(\PERSISTENT_COOKIES\):FALSE/\1:TRUE/' /etc/lynx/lynx.cfg
```

Many other system-wide settings such as proxies can also be set in the /etc/lynx/lynx.cfg file.

## Contents

<b>Installed Program:</b>	lynx
<b>Installed Libraries:</b>	None
<b>Installed Directories:</b>	/etc/lynx and /usr/share/doc/lynx-2.8.8dev.15

## Short Descriptions

**lynx** is a general purpose, text-based, distributed information browser for the World Wide Web.

# W3m-0.5.3

## Introduction to W3m

w3m is primarily a pager but it can also be used as a text-mode WWW browser.

This package is known to build and work properly using an LFS-7.2 platform.

## Package Information

- Download (HTTP): <http://downloads.sourceforge.net/w3m/w3m-0.5.3.tar.gz>
- 
- Download MD5 sum: 1b845a983a50b8dec0169ac48479eacc
- Download size: 2.1 MB
- Estimated disk space required: 26 MB
- Estimated build time: 0.3 SBU

## Additional Downloads

- Required patch: <http://www.linuxfromscratch.org/patches/blfs/svn/w3m-0.5.3-bdwgc72-1.patch>

## W3m Dependencies

### Required

GC-7.2d

### Optional

GPM-1.20.7, OpenSSL-1.0.1e, Imlib2-1.4.5, GTK+-2.24.17, *Imlib* (not recommended: obsolete, abandoned upstream, buggy, and gives no additional functionality as compared to other image loading libraries), gdk-pixbuf-2.26.5, Compface-1.5.2, *nkf*, a Mail User Agent and an External Browser

## Installation of W3m

Install w3m by running the following commands:

```
patch -p1 < ../w3m-0.5.3-bdwgc72-1.patch &&
sed -i 's/file_handle/file_foo/' istream.{c,h} &&
sed -i 's#gdk-pixbuf-xlib-2.0##& x11#' configure &&
./configure --prefix=/usr --sysconfdir=/etc --libexecdir=/usr/lib &&
make
```

This package does not come with a test suite.

Now, as the root user:

```
make install &&
install -v -m644 -D doc/keymap.default /etc/w3m/keymap &&
install -v -m644 doc/menu.default /etc/w3m/menu &&
install -v -m755 -d /usr/share/doc/w3m-0.5.3 &&
install -v -m644 doc/{HISTORY,READ*,keymap.*,menu.*,* .html} \
/usr/share/doc/w3m-0.5.3
```

## Command Explanations

**patch -p1 < ../w3m-0.5.3-bdwgc72-1.patch:** This patch fixes compiling w3m with GC-7.2 installed.

**sed -i 's/file\_handle/file\_foo/' istream.{c,h}:** This sed renames the file\_handle function to avoid a clash with a glibc function that has the same name, defined in /usr/include/bits/fcntl.h.

**sed -i '#gdk-pixbuf-xlib-2.0#& x11#' configure:** This sed fixes compiling w3m using GTK+-2.24.17 as its image library. It has no impact if GTK+-2.24.17 is not installed.

**--sysconfdir=/etc:** This option puts the configuration files in /etc.

## Configuring W3m

### Config Files

/etc/w3m/\* and ~/.w3m/\*

### Contents

**Installed Programs:** w3m and w3mman

**Installed Libraries:** None

**Installed Directories:** /usr/libexec/w3m, /usr/share/w3m and /usr/share/doc/w3m-0.5.3

### Short Descriptions

**w3m** is a text based web browser and pager.

**w3mman** is an interface to the on-line reference manuals in **w3m**.

## Chapter 19. Mail/News Clients

Mail Clients help you retrieve (Fetchmail), sort (Procmail), read and compose responses (Heirloom mailx, Mutt, Pine, Kmail, Balsa, Evolution, SeaMonkey) 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).

# mailx-12.4

## Introduction to Heirloom mailx

The Heirloom mailx package (formerly known as the Nail package) contains **mailx**, a command-line Mail User Agent derived from Berkeley Mail. It 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. Heirloom mailx is especially useful for writing scripts and batch processing.

This package is known to build and work properly using an LFS-7.3 platform.

## Package Information

- Download (HTTP): <http://downloads.sourceforge.net/heirloom/mailx-12.4.tar.bz2>
- 
- Download MD5 sum: 0c93759e34200eb56a0e7c464680a54a
- Download size: 265 KB
- Estimated disk space required: 3.6 MB
- Estimated build time: less than 0.1 SBU

## Additional Downloads

- Required patch: [http://www.linuxfromscratch.org/patches/blfs/svn/mailx-12.4-openssl\\_1.0.0\\_build\\_fix-1.patch](http://www.linuxfromscratch.org/patches/blfs/svn/mailx-12.4-openssl_1.0.0_build_fix-1.patch) (if you intend to link this package against openssl)

## Heirloom mailx Dependencies

### Optional

OpenSSL-1.0.1e or NSS-3.14.3, MIT Kerberos V5-1.11.2 (for IMAP GSSAPI authentication), and an MTA

## Installation of Heirloom mailx

Install Heirloom mailx by running the following commands.

```
patch -Np1 -i ../../mailx-12.4-openssl_1.0.0_build_fix-1.patch &&
make SENDMAIL=/usr/sbin/sendmail
```

This package does not come with a test suite.

Now, as the root user:

```
make PREFIX=/usr UCBINSTALL=/usr/bin/install install &&
ln -v -sf mailx /usr/bin/mail &&
ln -v -sf mailx /usr/bin/nail &&
install -v -m755 -d /usr/share/doc/mailx-12.4 &&
install -v -m644 README mailx.1.html /usr/share/doc/mailx-12.4
```

## Command Explanations

**make SENDMAIL=/usr/sbin/sendmail**: This changes the default MTA path of **/usr/lib/sendmail**.

**make PREFIX=/usr UCBINSTALL=/usr/bin/install install:** This changes the default installation path of /usr/local and the default **install** command path of /usr/ucb.

## Configuring Heirloom mailx

### Config Files

/etc/nail.rc, ~/.mailrc and ~/.nailrc

### Contents

**Installed Programs:** mail, mailx and nail

**Installed Libraries:** None

**Installed Directories:** None

### Short Descriptions

**mailx** is a command-line mail user agent compatible with the **mailx** command found on commercial Unix versions.

**mail** is a symbolic link to **mailx**.

**nail** is a symbolic link to **mailx**.

# Procmail-3.22

## Introduction to Procmail

The Procmail package contains an autonomous mail processor. This is useful for filtering and sorting incoming mail. This package is known to build and work properly using an LFS-7.3 platform.

### Package Information

- Download (HTTP): <http://www.ring.gr.jp/archives/net/mail/procmail/procmail-3.22.tar.gz>
- Download (FTP): <ftp://ftp.psg.com/pub/unix/procmail/procmail-3.22.tar.gz>
- Download MD5 sum: 1678ea99b973eb77eda4ecf6acae53f1
- Download size: 226 KB
- Estimated disk space required: 1.7 MB
- Estimated build time: less than 0.1 SBU

## Installation of Procmail

This package does not come with a test suite.

Install Procmail by running the following commands as the `root` user:

```
sed -i 's/getline/get_line/' src/*.[ch] &&
make LOCKINGTEST=/tmp install &&
make install-suid
```

## Command Explanations

**sed -i 's/getline/get\_line/' src/\*.[ch]:** This renames procmail's getline function to avoid conflict with the getline function from glibc.

**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 `~/.procmailrc` for execution. The `procmailex` man page is the starting place to learn how to write recipes. For additional information, see also <http://pm-doc.sourceforge.net/>.

## Contents

<b>Installed Programs:</b>	formail, lockfile, mailstat and procmail
<b>Installed Libraries:</b>	None
<b>Installed Directories:</b>	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-6.3.21

## Introduction to Fetchmail

The Fetchmail package contains a mail retrieval program. It retrieves mail from remote mail servers and forwards it to the local (client) machine's delivery system, so it can then be read by normal mail user agents.

This package is known to build and work properly using an LFS-7.3 platform.

## Package Information

- Download (HTTP): <http://downloads.sourceforge.net/fetchmail.berlios/fetchmail-6.3.21.tar.xz>
- Download (FTP): <ftp://ftp.at.gnucash.org/pub/infosys/mail/fetchmail/fetchmail-6.3.21.tar.xz>
- Download MD5 sum: db75ef2058423599386add311bc954ce
- Download size: 1.2 MB
- Estimated disk space required: 15 MB
- Estimated build time: 0.1 SBU

## Fetchmail Dependencies

### Required

OpenSSL-1.0.1e and a local MDA (Procmail-3.22)

### Optional

Python-2.7.5 and Tk-8.6.0

## 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 support, 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 the 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

<b>Installed Programs:</b>	fetchmail and fetchmailconf
<b>Installed Libraries:</b>	None
<b>Installed Directories:</b>	None

## Short Descriptions

<b>fetchmail</b>	when executed as a user, this will source <code>~/.fetchmailrc</code> and download the appropriate mail.
<b>fetchmailconf</b>	it will assist you in setting up and editing a <code>~/.fetchmailrc</code> configuration file, by using a Tk GUI interface. It requires Python and it must have the Tkinter module available.

# Mutt-1.5.21

## Introduction to Mutt

The Mutt package contains a Mail User Agent. This is useful for reading, writing, replying to, saving, and deleting your email.

This package is known to build and work properly using an LFS-7.3 platform.

## Package Information

- Download (HTTP): <http://downloads.sourceforge.net/mutt/mutt-1.5.21.tar.gz>
- Download (FTP): <ftp://ftp.mutt.org/mutt-devel/mutt-1.5.21.tar.gz>
- Download MD5 sum: a29db8f1d51e2f10c070bf88e8a553fd
- Download size: 3.6 MB
- Estimated disk space required: 34 MB
- Estimated build time: 0.3 SBU (plus a further 0.3SBU to regenerate the html if the required dependencies are present)

## Mutt Dependencies

### Optional

GnuPG-1.4.13 or GnuPG-2.0.20, OpenSSL-1.0.1e or GnuTLS-3.2.0, an MTA (that provides a **sendmail** command), Aspell-0.60.6.1, MIT Kerberos V5-1.11.2, Cyrus SASL-2.1.26, S-Lang-2.2.4, libidn-1.26, texlive-20120701 Berkeley DB-5.3.21 or *QDBM* or *Tokyo Cabinet*, and *GDB*

### Optional (To Regenerate HTML Documentation)

libxslt-1.1.28 and either Lynx-2.8.8dev.15, w3m-0.5.3 or *Elinks*

### Optional (To Generate PDF Manual)

docbook-dsssl-1.79

## Installation of Mutt



### Note

This version of Mutt is a development release. The BLFS staff has determined that it provides a stable program and fixes two issues in the current stable version of Mutt: a segmentation fault that occurs under certain conditions and a compilation problem when building with recent versions of GCC. To find the current stable release, please refer to the *Mutt home page*.

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 an MTA, such as Postfix-2.10.0 or sendmail-8.14.5, 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 \
            --with-docdir=/usr/share/doc/mutt-1.5.21 \
            --enable-pop --enable-imap \
            --enable-hcache --without-qdbm \
            --without-tokyocabinet \
            --with-gdbm --without-bdb &&
make
```

To generate the PDF manual with texlive-20120701, run the following command:

```
make -C doc manual.pdf
```

This package does not come with a test suite.

Now, as the root user:

```
make install
```

If you generated the PDF manual, install it and the source TeX file by issuing the following command as the root user:

```
install -v -m644 doc/manual.{pdf,tex} \
        /usr/share/doc/mutt-1.5.21
```

## Command Explanations

- enable-pop: This switch enables POP3 support.
- enable-imap: This switch enables IMAP support.
- enable-hcache: This switch enables header caching.
- without-qdbm: This switch disables QDBM as the header cache backend.
- without-tokyocabinet: This switch disables Tokyo Cabinet as the header cache backend.
- with-gdbm: This switch enables GDBM as the header cache backend.
- without-bdb: This switch disables Berkeley DB as the header cache backend.
- enable-smtp: This switch enables SMTP relay support.
- with-ssl: This parameter adds SSL/TLS support from OpenSSL-1.0.1e in POP3/IMAP/SMTP if they are enabled.
- with-sasl: This parameter adds authentication support from Cyrus SASL-2.1.26 in POP3/IMAP/SMTP if they are enabled. Depending on the server configuration, this may not be needed for POP3 or IMAP. However, it is needed for SMTP authentication.
- with-slang: Use S-Lang instead of Ncurses.

## Configuring Mutt

### Config Files

/etc/Muttrc, ~/.muttrc, /etc/mime.types, ~/.mime.types

## Configuration Information

No changes in these files are necessary to begin using Mutt. When you are ready to make changes, the man page for `muttrc` is a good starting place.

In order to utilize GnuPG, use the following command:

```
cat /usr/share/doc/mutt-1.5.21/samples/gpg.rc >> ~/.muttrc
```

Mutt uses `gpg` in the imported sample. If you have GnuPG-2.0.20 installed and you do not have GnuPG-1.4.13 installed you can create a symlink to satisfy this condition:

```
ln -v -s gpg2 /usr/bin/gpg
```

If, however, you have GnuPG-1.4.13 installed and you wish to use GnuPG-2.0.20, then you should edit `~/.muttrc` by hand and change all occurrences of `gpg` to `gpg2`.

## Contents

<b>Installed Programs:</b>	flea, mutt, mutt_dotlock, muttbug, pgpewrap, pgpring, and smime_keys
<b>Installed Libraries:</b>	None
<b>Installed Directories:</b>	/usr/share/doc/mutt-1.5.21

## Short Descriptions

<b>flea</b>	is a bug submitter for Mutt.
<b>mutt</b>	is a Mail User Agent (MUA) which enables you to read, write and delete your email.
<b>mutt_dotlock</b>	implements the mail spool file lock.
<b>muttbug</b>	is a script that executes <b>flea</b> .
<b>pgpewrap</b>	prepares a command line for the GnuPG-1.4.13 utilities.
<b>pgpring</b>	is a key ring dumper for <i>PGP</i> . It is not needed for GnuPG-1.4.13.
<b>smime_keys</b>	manages a keystore for S/MIME certificates.

# Re-alpine-2.02

## Introduction to Re-alpine

Re-alpine is the continuation of Alpine; a text-based email client developed by the University of Washington. This package is known to build and work properly using an LFS-7.2 platform.

### Package Information

- Download (HTTP): <http://sourceforge.net/projects/re-alpine/files/re-alpine-2.02.tar.bz2>
- 
- Download MD5 sum: 5e75826b15f05674856be8618bdefdfb
- Download size: 5.3 MB
- Estimated disk space required: 112 MB
- Estimated build time: 1.2 SBU

## Re-alpine Dependencies

### Recommended

OpenSSL-1.0.1e

### Optional

OpenLDAP-2.4.35, MIT Kerberos V5-1.11.2, Aspell-0.60.6.1, Tcl-8.6.0 and Linux-PAM-1.1.6

## Installation of Re-alpine

Install Re-alpine by running the following commands:

```
./configure --prefix=/usr \
            --sysconfdir=/etc \
            --without-ldap \
            --without-krb5 \
            --with-ssl-dir=/usr \
            --with-passfile=.pine-passfile &&
make
```

This package does not come with a test suite.

Now, as the root user:

```
make install
```

## Command Explanations

- without-ldap: Disables LDAP support.
- without-krb5: Disables Kerberos support.
- with-ssl-dir=/usr: Sets the root path to OpenSSL libraries and include files.
- with-passfile=.pine-passfile: Sets the password cache file.

--without-ssl: Disables OpenSSL support.

## Configuring Re-alpine

### Config Files

~/.pinerc

### Configuration Information

It is not required to manually edit any configuration files to use the Alpine email client. Users can configure Alpine using the graphical configuration menu, which stores the changes in ~/.pinerc.

## Contents

**Installed Programs:** alpine, pico, pilot, rpdump and rupload

**Installed Libraries:** none

**Installed Directories:** none

### Short Descriptions

**alpine** is the Alpine mailer.

**pico** is a standalone text editor similar to the Alpine message composer.

**pilot** is a standalone file system navigator.

**rpdump** is an utility for downloading a pinerc or address book to the local machine.

**rupload** is an utility for uploading a local pinerc or address book to an IMAP server.

## Other Mail and News Programs

Balsa-2.4.12 is a GTK2 based mail client.

SeaMonkey-2.13.2 includes both a mail client and newsreader in its installation.

Thunderbird-17.0.6 is a mail/news client based on the Mozilla code base.

Evolution-3.6.4 includes a GTK2 based mail client.

## **Part V. Servers**

# Chapter 20. Major Servers

Major servers are the programs that provide content or services to users or other programs.

# Apache-2.4.4

## Introduction to Apache HTTPD

The Apache HTTPD package contains an open-source HTTP server. It is useful for creating local intranet web sites or running huge web serving operations.

This package is known to build and work properly using an LFS-7.3 platform.

### Package Information

- Download (HTTP): <http://archive.apache.org/dist/httpd/httpd-2.4.4.tar.bz2>
- 
- Download MD5 sum: 0e712ee2119cd798c8ae39d5f11a9206
- Download size: 4.6 MB
- Estimated disk space required: 105 MB
- Estimated build time: 0.5 SBU

### Additional Downloads

- Required patch: [http://www.linuxfromscratch.org/patches/blfs/svn/httpd-2.4.4-blfs\\_layout-1.patch](http://www.linuxfromscratch.org/patches/blfs/svn/httpd-2.4.4-blfs_layout-1.patch)

## Apache HTTPD Dependencies

### Required

Apr-Util-1.5.2

### Recommended

OpenSSL-1.0.1e

### Optional

Berkeley DB-5.3.21, Doxygen-1.8.4, Lynx-2.8.8dev.15, OpenLDAP-2.4.35, PCRE-8.32, rsync-3.0.9, *Distcache* and *Lua* (5.1)

## Installation of Apache HTTPD

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 /srv/www -g apache \
        -s /bin/false -u 25 apache
```

Build and install Apache HTTPD by running the following commands:

```
patch -Np1 -i ../httpd-2.4.4-blfs_layout-1.patch &&
./configure --enable-layout=BLFS \
    --enable-mods-shared="all cgi" \
    --enable-mpms-shared=all \
    --with-apr=/usr/bin/apr-1-config \
    --with-apr-util=/usr/bin/apu-1-config \
    --enable-suexec=shared \
    --with-suexec-bin=/usr/lib/httpd/suexec \
    --with-suexec-docroot=/srv/www \
    --with-suexec-caller=apache \
    --with-suexec-userdir=public_html \
    --with-suexec-logfile=/var/log/httpd/suexec.log \
    --with-suexec-uidmin=100 &&
make
```

This package does not come with a test suite.

Now, as the root user:

```
make install &&

mv -v /usr/sbin/suexec /usr/lib/httpd/suexec &&
chgrp apache /usr/lib/httpd/suexec &&
chmod 4754 /usr/lib/httpd/suexec &&

chown -v -R apache:apache /srv/www
```

## Command Explanations

**--enable-mods-shared="all cgi":** 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-mpm-shared=all:** This switch ensures that all MPM (Multi Processing Modules) are built as Dynamic Shared Objects (DSOs), so the user can choose which one to use at runtime.

**--enable-suexec:** This switch enables building of the Apache suEXEC module which can be used to allow users to run CGI and SSI scripts under user IDs different from the user ID of the calling web server.

**--with-suexec-\***: These switches control suEXEC module behavior, such as default document root, minimal UID that can be used to run the script under the suEXEC. Please note that with minimal UID 100, you can't run CGI or SSI scripts under suEXEC as the apache user.

**... /usr/lib/httpd/suexec:** These commands put **suexec** wrapper into proper location, since it is not meant to be run directly. They also adjust proper permissions of the binary, making it segid apache.

**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/httpd/httpd.conf and /etc/httpd/extr/\*

## Configuration Information

See */usr/share/httpd/manual/configuring.html* for detailed instructions on customising your Apache HTTP server configuration file.

## Boot Script

If you want the Apache server to start automatically when the system is booted, install the /etc/rc.d/init.d/httpd init script included in the blfs-bootscripts-20130512 package.

```
make install-httpd
```

## Contents

<b>Installed Programs:</b>	ab, apachectl, apxs, checkgid, dbmmanage, fcgistarter, htcacheclen, htdbm, htdigest, htpasswd, httpd, httxt2dbm, logresolve and rotatelogs
<b>Installed Libraries:</b>	None
<b>Installed Directories:</b>	/etc/httpd, /srv/www, /usr/include/httpd, /usr/lib/httpd, /usr/share/httpd /var/log/httpd and /var/run/httpd

## Short Descriptions

<b>ab</b>	is a tool for benchmarking your Apache HTTP server.
<b>apachectl</b>	is a front end to the Apache HTTP server which is designed to help the administrator control the functioning of the Apache httpd daemon.
<b>apxs</b>	is a tool for building and installing extension modules for the Apache HTTP server.
<b>checkgid</b>	is a program that checks whether it can setgid to the group specified. This is to see if it is a valid group for Apache2 to use at runtime. If the user (should be run as superuser) is in that group, or can setgid to it, it will return 0.
<b>dbmmanage</b>	is used to create and update the DBM format files used to store usernames and passwords for basic authentication of HTTP users.
<b>htcacheclen</b>	is used to clean up the disk cache.
<b>htdbm</b>	is used to manipulate the DBM password databases.
<b>htdigest</b>	is used to create and update the flat-files used to store usernames, realms and passwords for digest authentication of HTTP users.
<b>htpasswd</b>	is used to create and update the flat-files used to store usernames and passwords for basic authentication of HTTP users.
<b>httpd</b>	is the Apache HTTP server program.
<b>htttx2dbm</b>	is used to generate DBM files from text, for use in RewriteMap.
<b>logresolve</b>	is a post-processing program to resolve IP-addresses in Apache's access log files.

**rotatelogs**

is a simple program for use in conjunction with Apache's piped log file feature.

# BIND-9.9.2-P2

## 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-9.9.2-P2.

This package is known to build and work properly using an LFS-7.3 platform.

### Package Information

- 
- Download (FTP): <ftp://ftp.isc.org/isc/bind9/9.9.2-P2/bind-9.9.2-P2.tar.gz>
- Download MD5 sum: 2be7763c99b7e7b42ac3a18a267ce1aa
- Download size: 7.0 MB
- Estimated disk space required: 178 (additional 162 MB to run the test suite)
- Estimated build time: 1.7 SBU (additional 15 minutes, processor independent, to run the complete test suite)

### Additional Downloads

- Optional patch (if net-tools is not installed): [http://www.linuxfromscratch.org/patches/blfs/svn/bind-9.9.2-P2-use\\_iproute2-1.patch](http://www.linuxfromscratch.org/patches/blfs/svn/bind-9.9.2-P2-use_iproute2-1.patch)

### BIND Dependencies

#### Optional

OpenSSL-1.0.1e

#### Optional (to run the test suite)

Net::DNS-0.70 and Net-tools-CVS\_20101030 (you may omit net-tools by using the optional patch to utilize iproute2, but the IPv6 tests will fail)

#### Optional (to rebuild the documentation)

Doxygen-1.8.4, texlive-20120701, and libxslt-1.1.28

## Installation of BIND

If you have chosen not to install net-tools, apply the iproute2 patch with the following command:

```
patch -Np1 -i ../bind-9.9.2-P2-use_iproute2-1.patch
```

Install BIND by running the following commands:

```
./configure --prefix=/usr          \
            --sysconfdir=/etc    \
            --localstatedir=/var  \
            --mandir=/usr/share/man \
            --enable-threads      \
            --with-libtool        &&
make
```

Issue the following commands to run the complete suite of tests. First, as the `root` user, 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 179 tests ran successfully:

```
grep "R:PASS" check.log | wc -l
```

Finally, install the package as the `root` user:

```
make install &&
chmod -v 0755 /usr/lib/lib{bind9,isc{,cc,cfg},lwres,dns}.so.*.??.? &&

install -v -m755 -d /usr/share/doc/bind-9.9.2-P2/{arm,misc} &&
install -v -m644 doc/arm/*.html \
          /usr/share/doc/bind-9.9.2-P2/arm &&

install -v -m644 \
          doc/misc/{dnssec,ipv6,migrat*,options,rfc-compliance,roadmap,sdb} \
          /usr/share/doc/bind-9.9.2-P2/misc
```

## Command Explanations

`--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.*.??.?}`: Enable the execute bit to prevent a warning when using `ldd` to check library dependencies.

`cd doc; install ...`: These commands install additional package documentation. Omit any or all of these commands if desired.

## 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 -c "BIND Owner" -g named -s /bin/false -u 20 named &&
install -d -m770 -o named -g named /srv/named
```

Set up some files, directories and devices needed by BIND:

```
cd /srv/named &&
mkdir -p dev etc/namedb/{slave,pz} usr/lib/engines var/run/named &&
mknod /srv/named/dev/null c 1 3 &&
mknod /srv/named/dev/random c 1 8 &&
chmod 666 /srv/named/dev/{null,random} &&
cp /etc/localtime etc &&
touch /srv/named/managed-keys.bind &&
cp /usr/lib/engines/libgost.so usr/lib/engines &&
[ $(uname -m) = x86_64 ] && ln -sv lib usr/lib64
```

The rndc.conf file contains information for controlling **named** operations with the **rndc** utility. Generate a key for use in the named.conf and rndc.conf with the **rndc-confgen** command:

```
rndc-confgen -r /dev/urandom -b 512 > /etc/rndc.conf &&
sed '/conf/d;/^#/!d;s:^# ::' /etc/rndc.conf > /srv/named/etc/named.conf
```

Complete the named.conf file from which **named** will read the location of zone files, root name servers and secure DNS keys:

```
cat >> /srv/named/etc/named.conf << "EOF"
options {
    directory "/etc/namedb";
    pid-file "/var/run/named.pid";
    statistics-file "/var/run/named.stats";

};

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
    severity info;                                // facility
                                                // only send priority info
                                                // and higher
};

channel default_debug {
    file "named.run";                            // write to named.run in
                                                // the working directory
    severity dynamic;                           // 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
};

channel default_stderr {
    stderr;                                     // writes to stderr
    severity info;                                // only send priority info
                                                // and higher
};

channel null {
    null;                                       // toss anything sent to
                                                // this channel
};

EOF

```

Create a zone file with the following contents:

```

cat > /srv/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      IN      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.

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 /srv/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-20130512 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

<b>Installed Programs:</b>	dig, dnssec-keygen, dnssec-signzone, host, isc-config.sh, lwresd, named, named-checkconf, named-checkzone, nslookup, nsupdate, rndc, and rndc-confgen
<b>Installed Libraries:</b>	libbind9.{so,a}, libdns.{so,a}, libisc.{so,a}, libisccc.{so,a}, libisccfg.{so,a}, and liblwres.{so,a}
<b>Installed Directories:</b>	/srv/named, /usr/include/bind9, /usr/include/dns, /usr/include/dst, /usr/include/isc, /usr/include/isccc, /usr/include/isccfg, /usr/include/lwres, and /usr/share/doc/bind-9.9.2-P2

## Short Descriptions

<b>dig</b>	interrogates DNS servers.
<b>dnssec-keygen</b>	is a key generator for secure DNS.
<b>dnssec-signzone</b>	generates signed versions of zone files.
<b>host</b>	is a utility for DNS lookups.
<b>lwresd</b>	is a caching-only name server for local process use.
<b>named</b>	is the name server daemon.
<b>named-checkconf</b>	checks the syntax of named.conf files.
<b>named-checkzone</b>	checks zone file validity.
<b>nslookup</b>	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 `rndc.conf` files.

# ProFTPD-1.3.4b

## 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.

This package is known to build and work properly using an LFS-7.2 platform.

## Package Information

- 
- Download (FTP): <ftp://ftp.proftpd.org/distrib/source/proftpd-1.3.4b.tar.gz>
- Download MD5 sum: 0871e0b93c9c3c88ca950b6d9a04aed2
- Download size: 7.3 MB
- Estimated disk space required: 29 MB
- Estimated build time: 0.3 SBU

## ProFTPD Dependencies

### Optional

Linux-PAM-1.1.6 and to run tests Check-0.9.10 and *Test::Unit-0.14*

## 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 /srv/ftp -g proftpd \
        -s /usr/bin/proftpdshell -u 46 proftpd &&
install -v -d -m775 -o proftpd -g proftpd /srv/ftp &&
ln -v -s /bin/false /usr/bin/proftpdshell &&
echo /usr/bin/proftpdshell >> /etc/shells
```

Install ProFTPD as an unprivileged user by running the following commands:

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

The tests for this package require a very old (2001) version of the Perl Module `Test::Unit`. Using the lastest version of this `Test::Unit` results in many failures (34/1089) although the program appears to run well. The tests take a long time (38 minutes, not CPU dependent) and are not recommended. To test the results anyway, issue: **make check**.

Now, as the `root` user:

```
make install
```

## Command Explanations

**install -v -d -m775 -o proftpd -g proftpd /srv/ftp:** Create the home directory for ProFTPD.

**ln -v -s /bin/false /usr/bin/proftpdshell:** Set the default shell as a link to an invalid shell.

**echo /usr/bin/proftpdshell >> /etc/shells:** Fake a valid shell for compatibility purposes.



### Note

The above two 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.

--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

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
    DisplayChdir           .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-20130512 package.

```
make install-proftpd
```

## Contents

<b>Installed Programs:</b>	ftpcount, ftpdctl, ftppasswd, ftpmail, ftpquota, ftpscrub, ftptop, ftpshut, ftpcount, ftpwho, proftpd
<b>Installed Libraries:</b>	None
<b>Installed Directory:</b>	/var/run/proftpd

## Short Descriptions

<b>proftpd</b>	is the FTP daemon.
<b>ftpcount</b>	shows the current number of connections.
<b>ftpdctl</b>	is used to control the proftpd daemon while it is running.

<b>ftpasswd</b>	is a Perl script designed to create and manage AuthUserFiles and AuthGroupFiles of the correct format for proftpd.
<b>ftpmail</b>	is a Perl script for sending email based on the proftpd TransferLog.
<b>ftpquota</b>	is a Perl script designed to create and manage limits and tally files for the mod_quotatab + mod_quotatab_file module combination for proftpd.
<b>ftpscrub</b>	provides a way to scrub the scoreboard file on demand.
<b>ftpshut</b>	shuts down all proftpd servers at a given time.
<b>ftptop</b>	displays running status on connections.
<b>ftpwho</b>	shows current process information for each session.

# vsftpd-3.0.2

## Introduction to vsftpd

The vsftpd package contains a very secure and very small FTP daemon. This is useful for serving files over a network. This package is known to build and work properly using an LFS-7.2 platform.

### Package Information

- Download (FTP): <https://security.appspot.com/downloads/vsftpd-3.0.2.tar.gz>
- Download MD5 sum: 8b00c749719089401315bd3c44dddb2
- Download size: 196 KB
- Estimated disk space required: 1.8 MB
- Estimated build time: less than 0.1 SBU

### vsftpd Dependencies

#### Optional

Linux-PAM-1.1.6, OpenSSL-1.0.1e and libcap2-2.22

## 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 &&
groupadd -g 45 ftp &&
useradd -c "vsftpd User" -d /dev/null -g vsftpd -s /bin/false -u 47 vsftpd &&
useradd -c anonymous_user -d /home/ftp -g ftp -s /bin/false -u 45 ftp
```

If you did not install the optional libcap2 package, run the following to avoid a build error:

```
sed -i -e 's|#define VSF_SYSDEP_HAVE_LIBCAP|//&|' sysdeputil.c
```

Build vsftpd as an unprivileged user using the following command:

```
make
```

This package does not come with a test suite.

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. 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-20130512` package.

```
make install-vsftpd
```

## Contents

<b>Installed Program:</b>	<code>vsftpd</code>
<b>Installed Libraries:</b>	None
<b>Installed Directories:</b>	<code>/var/ftp</code> , <code>/var/ftp/empty</code> , <code>/home/ftp</code>

## Short Descriptions

**vsftpd** is the FTP daemon.

## Chapter 21. Mail Server Software

MTAs are the programs which transport mail from one machine to the other. The traditional MTA is Sendmail, however there are several other choices.

As well as SMTP servers there is a POP server (qpopper) and an IMAP server (Courier-IMAP).

# Exim-4.80.1

## Introduction to Exim

The Exim package contains a Mail Transport Agent written by the University of Cambridge, released under the GNU Public License.

This package is known to build and work properly using an LFS-7.2 platform.

## Package Information

- Download (HTTP): <http://ftp.exim.org/pub/exim/exim4/exim-4.80.1.tar.bz2>
- Download (FTP): <ftp://ftp.exim.org/pub/exim/exim4/exim-4.80.1.tar.bz2>
- Download MD5 sum: 1a95dc9f02834b1b7430403a75edf162
- Download size: 1.6 MB
- Estimated disk space required: 16 MB
- Estimated build time: 0.2 SBU

## Additional Downloads

- Additional formats of the documentation (text-based docs are shipped with the sources) can be downloaded by following the links shown at <http://exim.org/docs.html>.

## Exim Dependencies

### Required

Berkeley DB-5.3.21 or GDBM (GDBM built in LFS) or *TDB*

### Optional

X Window System, OpenLDAP-2.4.35, OpenSSL-1.0.1e or GnuTLS-3.2.0, Cyrus SASL-2.1.26, MySQL-5.6.11, PostgreSQL-9.2.4, SQLite-3.7.16.2 and Linux-PAM-1.1.6

## 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
```

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
```

This package does not come with a test suite.

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-4.80.1 &&
install -v -m644 doc/* /usr/share/doc/exim-4.80.1 &&
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 or add additional functionality.

If you wish to build and install the .info documentation, refer to [http://exim.org/exim-html-4.80.1/doc/html/spec\\_html/ch04.html#SECTinsinfdoc](http://exim.org/exim-html-4.80.1/doc/html/spec_html/ch04.html#SECTinsinfdoc).

If you wish to build in Exim's interfaces for calling virus and spam scanning software directly from access control lists, uncomment the WITH\_CONTENT\_SCAN=yes parameter and review the information found at [http://exim.org/exim-html-4.80.1/doc/html/spec\\_html/ch41.html](http://exim.org/exim-html-4.80.1/doc/html/spec_html/ch41.html).

To use a backend database other than Berkeley DB, see the instructions at [http://exim.org/exim-html-4.80.1/doc/html/spec\\_html/ch04.html#SECTdb](http://exim.org/exim-html-4.80.1/doc/html/spec_html/ch04.html#SECTdb).

For SSL functionality, see the instructions at [http://exim.org/exim-html-4.80.1/doc/html/spec\\_html/ch04.html#SECTinctlssl](http://exim.org/exim-html-4.80.1/doc/html/spec_html/ch04.html#SECTinctlssl) and [http://exim.org/exim-html-4.80.1/doc/html/spec\\_html/ch39.html](http://exim.org/exim-html-4.80.1/doc/html/spec_html/ch39.html).

For tcpwrappers functionality, see the instructions at [http://exim.org/exim-html-4.80.1/doc/html/spec\\_html/ch04.html#SECID27](http://exim.org/exim-html-4.80.1/doc/html/spec_html/ch04.html#SECID27).

For information about adding authentication mechanisms to the build, see chapters 33-37 of [http://exim.org/exim-html-4.80.1/doc/html/spec\\_html/index.html](http://exim.org/exim-html-4.80.1/doc/html/spec_html/index.html).

For information about linking Linux-PAM, refer to the instructions [http://exim.org/exim-html-4.80.1/doc/html/spec\\_html/ch11.html#SECTexpcond](http://exim.org/exim-html-4.80.1/doc/html/spec_html/ch11.html#SECTexpcond).

For information about linking database engine libraries used for Exim name lookups, see the instructions at [http://exim.org/exim-html-4.80.1/doc/html/spec\\_html/ch09.html](http://exim.org/exim-html-4.80.1/doc/html/spec_html/ch09.html).

If you wish to add Readline support to Exim when invoked in “test expansion” (-be) mode, see the information in the -be section of [http://exim.org/exim-html-4.80.1/doc/html/spec\\_html/ch05.html#id2525974](http://exim.org/exim-html-4.80.1/doc/html/spec_html/ch05.html#id2525974).

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://exim.org/exim-html-4.80.1/doc/html/spec\\_html/ch49.html](http://exim.org/exim-html-4.80.1/doc/html/spec_html/ch49.html).

## 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-20130512 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:** /usr/share/doc/exim-4.80.1 and /var/spool/exim

## Short Descriptions

<b>exicyclog</b>	cycles Exim log files.
<b>exigrep</b>	searches Exim log files.
<b>exim</b>	is a symlink to the <b>exim-4.43-2</b> MTA daemon.
<b>exim-4.43-2</b>	is the Exim mail transport agent daemon.
<b>exim_checkaccess</b>	states whether a given recipient address from a given host is acceptable or not.
<b>exim_dbmbuild</b>	creates and rebuilds Exim databases.
<b>exim_dumpdb</b>	writes the contents of Exim databases to the standard output.
<b>exim_fixdb</b>	modifies data in Exim databases.
<b>exim_lock</b>	locks a mailbox file.
<b>exim_tidydb</b>	removes old records from Exim databases.
<b>eximstats</b>	generates mail statistics from Exim log files.
<b>exinext</b>	queries remote host retry times.
<b>exipick</b>	selects messages based on various criteria.
<b>exiqgrep</b>	is a utility for selective queue listing.
<b>exiqsumm</b>	produces a summary of the messages in the mail queue.
<b>exiwhat</b>	queries running Exim processes.
<b>eximon</b>	is a start-up shell script for <b>eximon.bin</b> used to set the required environment variables before running the program.
<b>eximon.bin</b>	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-2.10.0

## Introduction to Postfix

The Postfix package contains a Mail Transport Agent (MTA). This is useful for sending email to other users of your host machine. It can also be configured to be a central mail server for your domain, a mail relay agent or simply a mail delivery agent to your local Internet Service Provider.

This package is known to build and work properly using an LFS-7.3 platform.

## Package Information

- 
- Download (FTP): <ftp://ftp.porcupine.org/mirrors/postfix-release/official/postfix-2.10.0.tar.gz>
- Download MD5 sum: b2a563b2d5c53462952886e6fc4e4b7b
- Download size: 3.7 MB
- Estimated disk space required: 70 MB
- Estimated build time: 0.5 SBU

## Postfix Dependencies

### Required

Berkeley DB-5.3.21

### Recommended

Cyrus SASL-2.1.26 and OpenSSL-1.0.1e

### Optional

MySQL-5.6.11, OpenLDAP-2.4.35, PCRE-8.32, PostgreSQL-9.2.4, SQLite-3.7.16.2 and *CDB* or *TinyCDB*

Note that SQLite, MySQL, PostgreSQL and CDB are only useful if there is a known need for them.

## Installation of Postfix

### Adding Users and Groups

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 &&
useradd -c "Postfix Daemon User" -d /var/spool/postfix -g postfix \
        -s /bin/false -u 32 postfix &&
chown -v postfix:postfix /var/mail
```

## Configuring the Build

The README files are formatted to be read with a pager like Less or More. If you want to read them in a text editor, make them legible with a sed:

```
sed -i 's/.\\x08//g' README_FILES/*
```

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.

For more details read the readme files.

## Cyrus-SASL

To use Cyrus-SASL with Postfix, use the following arguments:

```
CCARGS=' -DUSE_SASL_AUTH -DUSE_CYRUS_SASL -I/usr/include/sasl '
AUXLIBS=' -lsasl2 '
```

## OpenLDAP

To use OpenLDAP with Postfix, use the following arguments:

```
CCARGS=' -DHAS_LDAP '
AUXLIBS=' -lldap -lber '
```

## Sqlite

To use Sqlite with Postfix, use the following arguments:

```
CCARGS=' -DHAS_SQLITE '
AUXLIBS=' -lsqlite3 -lpthread '
```

## MySQL

To use MySQL with Postfix, use the following arguments:

```
CCARGS=' -DHAS_MYSQL -I/usr/include/mysql '
AUXLIBS=' -lmysqlclient -lz -lm '
```

## PostgreSQL

To use PostgreSQL with Postfix, use the following arguments:

```
CCARGS=' -DHAS_PGSQ -I/usr/include/postgresql '
AUXLIBS=' -lpq -lz -lm '
```

## CDB/TinyCDB

To use CDB or TinyCDB with Postfix, use the following arguments:

```
CCARGS=' -DHAS_CDB '
AUXLIBS=' </path/to/CDB> /libcddb.a '
```

## StartTLS Authentication

To use OpenSSL with Postfix, use the following arguments:

```
CCARGS=' -DUSE_TLS -I/usr/include/openssl/'
AUXLIBS=' -lssl -lcrypto '
```

## Installing Postfix

If you have Cyrus SASL and OpenSSL installed, install Postfix by running the following commands:

```
make CCARGS="--DNO_NIS -DUSE_TLS -I/usr/include/openssl/ \
          -DUSE_SASL_AUTH -DUSE_CYRUS_SASL -I/usr/include/sasl" \
          AUXLIBS="-lssl -lcrypto -lsasl2" \
          makefiles &&
make
```

This package does not come with a useful test suite.

Now, as the root user:

```
sh postfix-install -non-interactive \
  daemon_directory=/usr/lib/postfix \
  manpage_directory=/usr/share/man \
  html_directory=/usr/share/doc/postfix-2.10.0/html \
  readme_directory=/usr/share/doc/postfix-2.10.0/readme
```

## Command Explanations

**make makefiles**: This command rebuilds the makefiles throughout the source tree to use the options contained in the CCARGS and AUXLIBS variables.

**-DNO\_NIS**: This option disables building Network Information Service/Yellow Pages support. The RPC implementation in Glibc (on which NIS/YP depends) is deprecated.

**sh postfix-install -non-interactive**: This keeps the install script from asking any questions, thereby accepting default destination directories in all but the few cases. If the `html_directory` and `readme_directory` options are not set then the documentation will not be installed.

## Configuring Postfix

### Config Files

/etc/aliases, /etc/postfix/main.cf, and /etc/postfix/master.cf

### Configuration Information

Create (or append to an existing) /etc/aliases with the following command. Change `<LOGIN>` for your non-root login identity so mail addressed to root can be forwarded to you. As the root user:

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

MAILER-DAEMON:      postmaster
postmaster:         root

root:                <LOGIN>
# End /etc/aliases
EOF
```

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.



### Note

The `/etc/postfix/main.cf` and `/etc/postfix/master.cf` files must be personalized for your system. The `main.cf` file needs your fully qualified hostname. You will find that `main.cf` is self documenting, so load it into your editor to make the changes you need for your situation.



### Note

Postfix can also be set up to run in a chroot jail. See the file in the source `examples/chroot-setup/LINUX2` for details.

If you have an existing configuration, you can run the **postfix** utility to add any necessary definitions to your existing files. As the root user:

```
/usr/sbin/postfix upgrade-configuration
```

Before starting Postfix, you should check that your configuration and file permissions will work properly. Run the following commands as the root user to check and start your Postfix server:

```
/usr/sbin/postfix check &&
/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-20130512` package.

```
make install-postfix
```

## Contents

<b>Installed Programs:</b>	mailq, newaliases, postalaliases, postcat, postconf, postdrop, postfix, postkick, postlock, postlog, postmap, postmulti, postqueue, postsuper and sendmail
<b>Installed Libraries:</b>	None
<b>Installed Directories:</b>	/etc/postfix, /usr/lib/postfix, /usr/share/doc/postfix-2.10.0, /var/lib/postfix and /var/spool/postfix

## Short Descriptions

<b>mailq</b>	A symlink to <code>sendmail</code> .
<b>newaliases</b>	A symlink to <code>sendmail</code> .
<b>postalaliases</b>	is a utility for Postfix alias database maintenance
<b>postcat</b>	Prints the contents of files from the Postfix queue in human readable format.
<b>postconf</b>	Displays or changes the value of Postfix configuration parameters.
<b>postdrop</b>	Creates a file in the maildrop directory and copies its standard input to the file.
<b>postfix</b>	is the Postfix control program.

<b>postkick</b>	Sends requests to the specified service over a local transport channel.
<b>postlock</b>	Locks a mail folder for exclusive use, and executes commands passed to it.
<b>postlog</b>	A Postfix-compatible logging interface for use in, for example, shell scripts.
<b>postmap</b>	Creates or queries one or more Postfix lookup tables, or updates an existing one.
<b>postmulti</b>	is the Postfix multi-instance manager. It allows a system administrator to manage multiple Postfix instances on a single host.
<b>postqueue</b>	The Postfix user interface for queue management.
<b>postsuper</b>	The Postfix user interface for superuser queue management.
<b>sendmail</b>	is the Postfix to Sendmail compatibility interface.

# Qpopper-4.1.0

## Introduction to Qpopper

The Qpopper package contains a POP3 mail server.

This package is known to build and work properly using an LFS-7.2 platform.

## Package Information

- 
- Download (FTP): <ftp://ftp.qualcomm.com/eudora/servers/unix/popper/qpopper4.1.0.tar.gz>
- Download MD5 sum: 3b62b70fbc16bb17795e1762dd33765
- Download size: 1.2 MB
- Estimated disk space required: 7.2 MB
- Estimated build time: 0.1 SBU

## Qpopper Dependencies

### Required

An MTA

### Optional

OpenSSL-1.0.1e, Linux-PAM-1.1.6, and MIT Kerberos V5-1.11.2

## Installation of Qpopper

Install Qpopper with the following commands:

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

This package does not come with a test suite.

Now, as the root user:

```
make install &&
install -D -m644 GUIDE.pdf /usr/share/doc/qpopper-4.1.0/GUIDE.pdf
```

## Command Explanations

--enable-standalone: This option gives the flexibility to run Qpopper in standalone mode.

## 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 want Qpopper to start automatically when the system is booted, install the `/etc/rc.d/init.d/qpopper` init script included in the `blfs-bootscripts-20130512` package.

```
make install-qpopper
```

This startup procedure uses a configuration file. The details of the configuration file can be found in the documentation file `GUIDE.pdf`.

```
cat > /etc/mail/qpopper.conf << "EOF"
# Qpopper configuration file

set debug = false

set spool-dir = /var/spool/mail/
set temp-dir = /var/spool/mail/

set downcase-user = true
set trim-domain = true

set statistics = true

# End /etc/shells
EOF
```

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.

## Contents

<b>Installed Program:</b>	popper
<b>Installed Libraries:</b>	None
<b>Installed Directories:</b>	None

## Short Descriptions

**popper** is the POP3 server daemon.

# sendmail-8.14.5

## Introduction to sendmail

The sendmail package contains a Mail Transport Agent (MTA).

This package is known to build and work properly using an LFS-7.2 platform.

## Package Information

- Download (HTTP): <http://www.sendmail.org/ftp/sendmail.8.14.5.tar.gz>
- Download (FTP): <ftp://ftp.sendmail.org/pub/sendmail/sendmail.8.14.5.tar.gz>
- Download MD5 sum: 02ccfc331cc81ed00ec8bb5ecfc69018
- Download size: 2.0 MB
- Estimated disk space required: 19 MB
- Estimated build time: 0.3 SBU

## sendmail Dependencies

### Required

OpenLDAP-2.4.35

### Optional

OpenSSL-1.0.1e, Cyrus SASL-2.1.26, Procmail-3.22, *nph*, and ghostscript-9.06 (for creating PDF documentation)

## Installation of sendmail

Before building sendmail, create the required user, group and directory with the following commands issued as the **root** user:

```
groupadd -g 26 smmsp &&
useradd -c "Sendmail Daemon" -g smmsp -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 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 -DSASL -DLDAPMAP')
APPENDDEF(`confLIBS', ``-lssl -lcrypto -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
cd sendmail &&
sh Build &&
cd ../cf/cf &&
cp generic-linux.mc sendmail.mc &&
sh Build sendmail.cf
```

This package does not come with a test suite.

Now, as the root user:

```
install -v -d -m755 /etc/mail &&
sh Build install-cf &&

cd ../../ &&
sh Build install &&

install -v -m644 cf/cf/{submit,sendmail}.mc /etc/mail &&
cp -v -R cf/* /etc/mail &&

install -v -m755 -d /usr/share/doc/sendmail-8.14.5/{cf,sendmail} &&
install -v -m644 \
    CACerts FAQ KNOWNBUGS LICENSE PGPKEYS README RELEASE_NOTES \
    /usr/share/doc/sendmail-8.14.5 &&
install -v -m644 sendmail/{README,SECURITY,TRACEFLAGS,TUNING} \
    /usr/share/doc/sendmail-8.14.5/sendmail &&
install -v -m644 cf/README /usr/share/doc/sendmail-8.14.5/cf &&

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 '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-8.14.5 &&
install -v -m644 op.ps op.txt op.pdf /usr/share/doc/sendmail-8.14.5 &&
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 Makefiles. 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 for changing it 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-20130512 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

<b>Installed Programs:</b>	editmap, hoststat, mailstats, mailq, makemap, newaliases, praliases, purgestat, sendmail, smrsh, and vacation
<b>Installed Libraries:</b>	None
<b>Installed Directories:</b>	/etc/mail, /usr/share/doc/sendmail-8.14.5, /var/spool/mqueue, and /var/spool/clientmqueue

## Short Descriptions

<b>editmap</b>	queries and edits sendmail map files.
<b>hoststat</b>	prints sendmail's persistent host status.
<b>mailstats</b>	displays sendmail statistics.
<b>mailq</b>	prints a summary of outbound mail messages waiting for delivery.
<b>makemap</b>	creates sendmail map files.
<b>newaliases</b>	rebuilds /etc/mail/aliases.db from the contents of /etc/mail/aliases.
<b>praliases</b>	displays current sendmail aliases.
<b>purgestat</b>	causes sendmail to clear (purge) all its host-status information.
<b>sendmail</b>	is the sendmail mail transport agent.
<b>smrsh</b>	is a restricted shell for sendmail.
<b>vacation</b>	is an email auto responder.

## Chapter 22. 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-5.3.21

## Introduction to Berkeley DB

The Berkeley DB package contains programs and utilities used by many other applications for database related functions.

This package is known to build and work properly using an LFS-7.3 platform.

## Package Information

- Download (HTTP): <http://download.oracle.com/berkeley-db/db-5.3.21.tar.gz>
- 
- Download MD5 sum: 3fda0b004acdaa6fa350bfc41a3b95ca
- Download size: 34 MB
- Estimated disk space required: 265 MB
- Estimated build time: 0.4 SBU

## Berkeley DB Dependencies

### Optional

Tcl-8.6.0, OpenJDK-1.7.0.9, and Sharutils-4.13.5 (for the **uudecode** command)

## Installation of Berkeley DB

Install Berkeley DB by running the following commands:

```
cd build_unix          &&
./dist/configure --prefix=/usr      \
                  --enable-compat185 \
                  --enable-dbm        \
                  --disable-static    \
                  --enable-cxx         &&
make
```

Now, as the root user:

```
make docdir=/usr/share/doc/db-5.3.21 install &&
chown -v -R root:root           \
      /usr/bin/db_*               \
      /usr/include/db{_185,_cxx}.h \
      /usr/lib/libdb*.{so,la}       \
      /usr/share/doc/db-5.3.21
```

## 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 the DB-1.85 compatibility API.

--enable-cxx: This switch enables building C++ API libraries.

--enable-dbm: Enables legacy interface support needed by some older packages.

**make docdir=/usr/share/doc/db-5.3.21 install:** This installs the documentation in the standard location instead of /usr/docs.

**chown -v -R root:root ...:** This command changes the ownership of various installed files from the uid:gid of the builder to root:root.

--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.

## Contents

**Installed Programs:** db\_archive, db\_checkpoint, db\_deadlock, db\_dump, db\_hotbackup, db\_load, db\_log\_verify, db\_printlog, db\_recover, db\_replicate, db\_stat, db\_tuner, db\_upgrade and db\_verify.

**Installed Libraries:** libdb.so and libdb\_cxx.so

**Installed Directory:** /usr/share/doc/db-5.3.21

## Short Descriptions

<b>db_archive</b>	prints the pathnames of log files that are no longer in use.
<b>db_checkpoint</b>	is a daemon process used to monitor and checkpoint database logs.
<b>db_deadlock</b>	is used to abort lock requests when deadlocks are detected.
<b>db_dump</b>	converts database files to a flat file format readable by <b>db_load</b> .
<b>db_hotbackup</b>	creates "hot backup" or "hot failover" snapshots of Berkeley DB databases.
<b>db_load</b>	is used to create database files from flat files created with <b>db_dump</b> .
<b>db_log_verify</b>	verifies the log files of a database.
<b>db_printlog</b>	converts database log files to human readable text.
<b>db_recover</b>	is used to restore a database to a consistent state after a failure.
<b>db_replicate</b>	is a daemon process that provides replication/HA services on a transactional environment.
<b>db_stat</b>	displays database environment statistics.
<b>db_tuner</b>	analyzes the data in a btree database, and suggests a page size that is likely to deliver optimal operation.
<b>db_upgrade</b>	is used to upgrade database files to a newer version of Berkeley DB.
<b>db_verify</b>	is used to run consistency checks on database files.

# MySQL-5.6.11

## 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.

This package is known to build and work properly using an LFS-7.3 platform.

## Package Information

- Download (HTTP): <http://cdn.mysql.com/Downloads/MySQL-5.6/mysql-5.6.11.tar.gz>
- 
- Download MD5 sum: 9241be729964ab4594de11baa30aec48
- Download size: 34 MB
- Estimated disk space required: 1.0 GB
- Estimated build time: 4.5 SBU

## Additional Downloads

- Optional patch (recommended if building for Amarok): [http://www.linuxfromscratch.org/patches/blfs/svn/mysql-5.6.11-embedded\\_library\\_shared-1.patch](http://www.linuxfromscratch.org/patches/blfs/svn/mysql-5.6.11-embedded_library_shared-1.patch)
- Optional Documentation (see tip below): <http://dev.mysql.com/doc/>

## MySQL Dependencies

### Required

CMake-2.8.11

### Recommended

libevent-2.0.21 and OpenSSL-1.0.1e

### Optional

*libaio* and *libedit*

## Installation of MySQL

For security reasons, running the server as an unprivileged user and group is strongly encouraged. Issue the following (as `root`) to create the user and group:

```
groupadd -g 40 mysql &&
useradd -c "MySQL Server" -d /srv/mysql -g mysql -s /bin/false -u 40 mysql
```

If the MySQL server is not needed, it is possible to build only the client libraries of MySQL. To do this you need to add `-DWITHOUT_SERVER=ON` to the `cmake` command below.

MySQL contains an embedded server library. By default, it is built as a statically linked library, `libmysqld.a`, but by applying the optional patch, a shared version of this library can be built. The library is needed by certain applications, such as Amarok and it is recommended to use the shared libraries whenever it is possible.

There are numerous options available to `cmake`. Check the output of the ``cmake . -LH`` for additional customization options. See the *MySQL Documentation* for a full listing of all options.

If you want to build shared version of the embedded server library, apply the following patch:

```
patch -Np1 -i ../mysql-5.6.11-embedded_library_shared-1.patch
```

Install MySQL by running the following commands:

```
sed -i "/ADD_SUBDIRECTORY(sql\/share)/d" CMakeLists.txt &&
sed -i "s/ADD_SUBDIRECTORY(libmysql)/&\nADD_SUBDIRECTORY(sql\/share)/" CMakeLists.txt &&
sed -i "s@data/test@\${INSTALL_MYSQLSHAREDIR}@g" sql/CMakeLists.txt &&
sed -i "s@data/mysql@\${INSTALL_MYSQLTESTDIR}@g" sql/CMakeLists.txt &&
mkdir build &&
cd build &&
cmake -DCMAKE_BUILD_TYPE=Release \
      -DCMAKE_INSTALL_PREFIX=/usr \
      -DINSTALL_DOCDIR=share/doc/mysql \
      -DINSTALL_DOCREADMEDIR=share/doc/mysql \
      -DINSTALL_INCLUDEDIR=include/mysql \
      -DINSTALL_INFODIR=share/info \
      -DINSTALL_MANDIR=share/man \
      -DINSTALL_MYSQLDATADIR=/srv/mysql \
      -DINSTALL_MYSQLSHAREDIR=share/mysql \
      -DINSTALL_MYSQLTESTDIR=share/mysql/test \
      -DINSTALL_PLUGINDIR=lib/mysql/plugin \
      -DINSTALL_SBINDIR=sbin \
      -DINSTALL_SCRIPTDIR=bin \
      -DINSTALL_SQLBENCHDIR=share/mysql/bench \
      -DINSTALL_SUPPORTFILESDIR=share/mysql \
      -DMYSQL_DATADIR=/srv/mysql \
      -DMYSQL_UNIX_ADDR=/run/mysqld/mysqld.sock \
      -DSYSCONFDIR=/etc/mysql \
      -DWITH_PARTITION_STORAGE_ENGINE=OFF \
      -DWITH_PERFSHEMA_STORAGE_ENGINE=OFF \
      -DWITH_EXTRA_CHARSETS=complex \
      -DWITH_LIBEVENT=system \
      -DWITH_SSL=system \
      .. &&
make
```

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

Now, as the root user:

```
make install
```

### Tip

The only documentation shipped in the source tarball are mysql.info and man pages. You can download various formats of the MySQL Reference Manual from <http://dev.mysql.com/doc/>.

## Command Explanations

**sed -i ...:** First two sed's fix client-only builds. Last two sed's set correct installation directories for some components.

**-DWITHOUT\_SERVER=ON:** Use this switch if you don't want the server and would like to build the client only.

**-DWITH\_EXTRA\_CHARSETS=complex:** This switch enables support for the complex character sets.

**-DWITH\_LIBEVENT=system:** This switch is used to tell the build system to use installed libevent. Remove it if you didn't install libevent.

**-DWITH\_SSL=system:** This switch is used to tell the build system to use installed OpenSSL. Remove it if you didn't install OpenSSL.

## Configuring MySQL

### Config Files

/etc/mysql/my.cnf and ~/my.cnf

### Configuration Information



#### Note

If you are upgrading from previous major version of MySQL, be sure to consult the *MySQL Reference Manual* for notes on upgrading the software.

```

# Don't listen on a TCP/IP port at all.
skip-networking

# required unique id between 1 and 2^32 - 1
server-id      = 1

# Uncomment the following if you are using BDB tables
#bdb_cache_size = 4M
#bdb_max_lock = 10000

# Uncomment the following if you are using InnoDB tables
#innodb_data_home_dir = /srv/mysql
#innodb_data_file_path = ibdata1:10M:autoextend
#innodb_log_group_home_dir = /srv/mysql
# You can set .._buffer_pool_size up to 50 - 80 %
# of RAM but beware of setting memory usage too high
#innodb_buffer_pool_size = 16M
#innodb_additional_mem_pool_size = 2M
# Set .._log_file_size to 25 % of buffer pool size
#innodb_log_file_size = 5M
#innodb_log_buffer_size = 8M
#innodb_flush_log_at_trx_commit = 1
#innodb_lock_wait_timeout = 50

[mysqldump]
quick
max_allowed_packet = 16M

[mysql]
no-auto-rehash
# Remove the next comment character if you are not familiar with SQL
#safe-updates

[isamchk]
key_buffer = 20M
sort_buffer_size = 20M
read_buffer = 2M
write_buffer = 2M

[myisamchk]
key_buffer_size = 20M
sort_buffer_size = 20M
read_buffer = 2M
write_buffer = 2M

[mysqlhotcopy]
interactive-timeout

# End /etc/mysql/my.cnf
EOF

```

You can now install a database and change the ownership to the unprivileged user and group (perform as the `root` user):

```
mysql_install_db --basedir=/usr --datadir=/srv/mysql --user=mysql &&
chown -R mysql:mysql /srv/mysql
```

Further configuration requires that the MySQL server is running. Start the server using the following commands as the `root` user:

```
install -v -m755 -o mysql -g mysql -d /var/run/mysqld &&
mysqld_safe --user=mysql 2>&1 >/dev/null &
```

A default installation does not set up 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-20130512` package as the `root` user to start the MySQL server during system boot-up.

```
make install-mysql
```

## Contents

<b>Installed Programs:</b>	innchecksum, msql2mysql, myisamchk, myisam_ftdump, myisamlog, myisampack, my_print_defaults, mysql, mysqlaccess, mysqlaccess.conf, mysqladmin, mysqlbinlog, mysqlbug, mysqlcheck, mysql_client_test, mysql_client_test_embedded, mysql_config, mysql_config_editor, mysql_convert_table_format, mysqld, mysqld_multi, mysqld_safe, mysqldump, mysqldumpslow, mysql_embedded, mysql_find_rows, mysql_fix_extensions, mysqlhotcopy, mysqlimport, mysql_install_db, mysql_plugin, mysql_secure_installation, mysql_setpermission, mysqlshow, mysqlslap, mysqltest, mysqltest_embedded, mysql_tzinfo_to_sql, mysql_upgrade, mysql_waitpid, mysql_zap, perror, replace, resolveip and resolve_stack_dump
<b>Installed Libraries:</b>	libmysqlclient.{so,a}, libmysqlclient_r.{so,a}, libmysqld.{so,a} and libmysqld.a
<b>Installed Directories:</b>	/etc/mysql, /srv/mysql, /usr/include/mysql, /usr/lib/mysql, /usr/share/doc/mysql and /usr/share/mysql

## Short Descriptions

Descriptions of all the programs and libraries would be several pages long. Instead, consult the `mysql.info` documentation or the on-line reference manual at <http://dev.mysql.com/doc/refman/5.6/en/index.html>.

The Perl DBI modules must be installed for some of the MySQL support programs to function properly.

# PostgreSQL-9.2.4

## Introduction to PostgreSQL

PostgreSQL is an advanced object-relational database management system (ORDBMS), derived from the Berkeley Postgres database management system.

There may be a more recent release available from the PostgreSQL home page. You can check <http://www.postgresql.org/> and probably use the existing BLFS instructions. Note that versions other than the one shown in the download URLs have not been tested in a BLFS environment.

This package is known to build and work properly using an LFS-7.2 platform.

## Package Information

- Download (FTP): <ftp://ftp5.us.postgresql.org/pub/PostgreSQL/source/v9.2.4/postgresql-9.2.4.tar.bz2>
- Download MD5 sum: 6ee5bb53b97da7c6ad9cb0825d3300dd
- Download size: 16.0 MB
- Estimated disk space required: 181 MB (additional 151 MB to run the testsuite)
- Estimated build time: 1.4 SBU (additional 0.2 SBU to run the testsuite)

## PostgreSQL Dependencies

### Optional

Python-2.7.5, Tcl-8.6.0, OpenSSL-1.0.1e, libxml2-2.9.1, libxslt-1.1.28, OpenLDAP-2.4.35, Linux-PAM-1.1.6, MIT Kerberos V5-1.11.2 and *Bonjour*

### Optional (To Regenerate Documentation)

docbook-4.5, docbook-dsssl-1.79, OpenJade-1.3.2, and SGMLSp-1.1

## Installation of PostgreSQL

Install PostgreSQL with the following commands:

```
sed -e "s@DEFAULT_PGSOCKET_DIR  \"/tmp\"@DEFAULT_PGSOCKET_DIR  \"/run/postgresql\"
       -i src/include/pg_config_manual.h &&
./configure --prefix=/usr           \
            --enable-thread-safety \
            --docdir=/usr/share/doc/postgresql-9.2.4 &&
make
```

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

Now, as the root user:

```
make install      &&
make install-docs
```



## 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 -dm700 /srv/pgsql/data &&
install -v -dm755 /run/postgresql &&
groupadd -g 41 postgres &&
useradd -c "PostgreSQL Server" -g postgres -d /srv/pgsql/data \
-u 41 postgres &&
chown -Rv postgres:postgres /srv/pgsql /run/postgresql &&
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 -e ...:** This sed changes server socket location from /tmp to /run/postgresql.

**--docdir=/usr/share/doc/postgresql-9.2.4:** This switch puts the documentation in a versioned directory.

**--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.

**--with-openssl:** build with support for OpenSSL encrypted connections.

**--with-perl:** build the PL/Perl server-side language.

**--with-python:** build the PL/Python server-side language.

**--with-tcl:** build the PL/Tcl server-side language.

**groupadd ...; useradd ...:** These commands add an unprivileged user and group 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

`$PGDATA/pg_ident.conf`, `$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-9.2.4/html/index.html*.

### Boot Script

Install the `/etc/rc.d/init.d/postgresql` init script included in the blfs-bootscripts-20130512 package.

```
make install-postgresql
```

## Contents

<b>Installed Programs:</b>	clusterdb, createdb, createlang, createuser, dropdb, droplang, dropuser, ecpg, initdb, pg_basebackup, pg_config, pg_controldata, pg_ctl, pg_dump, pg_dumpall, pg_resetxlog, pg_restore, pltcl_delmod, pltcl_listmod, pltcl_loadmod, postgres, postmaster, psql, reindexdb, and vacuumdb
<b>Installed Libraries:</b>	libecpg.{so,a}, libecpg_compat.{so,a}, libpqport.a, libpgtypes.{so,a}, libpq.{so,a}, and various charset (and optionally, programming language) modules.
<b>Installed Directories:</b>	/srv/pgsql, /usr/include/libpq, /usr/include/postgresql, /usr/lib/postgresql, /usr/share/doc/postgresql-9.2.4, and /usr/share/postgresql

## Short Descriptions

<b>clusterdb</b>	is a utility for reclustering tables in a PostgreSQL database.
<b>createdb</b>	creates a new PostgreSQL database.
<b>createlang</b>	defines a new PostgreSQL procedural language.
<b>createuser</b>	defines a new PostgreSQL user account.
<b>dropdb</b>	removes a PostgreSQL database.
<b>droplang</b>	removes a PostgreSQL procedural language.
<b>dropuser</b>	removes a PostgreSQL user account.
<b>ecpg</b>	is the embedded SQL preprocessor.
<b>initdb</b>	creates a new database cluster.
<b>pg_basebackup</b>	takes base backups of a running PostgreSQL cluster.
<b>pg_config</b>	retrieves PostgreSQL version information.
<b>pg_controldata</b>	returns information initialized during <b>initdb</b> , such as the catalog version and server locale.

<b>pg_ctl</b>	controls stopping and starting the database server.
<b>pg_dump</b>	dumps database data and metadata into scripts which are used to recreate the database.
<b>pg_dumpall</b>	recursively calls <b>pg_dump</b> for each database in a cluster.
<b>pg_resetxlog</b>	clears the write-ahead log and optionally resets some fields in the <b>pg_control</b> file.
<b>pg_restore</b>	creates databases from dump files created by <b>pg_dump</b> .
<b>pltcl_delmod</b>	is a support script used to delete a module from a PL/Tcl table. The command requires the <i>Pgtcl</i> package to be installed also.
<b>pltcl_listmod</b>	is a support script used to list the modules in a PL/Tcl table. The command requires the <i>Pgtcl</i> package to be installed also.
<b>pltcl_loadmod</b>	is a support script used to load a module into a PL/Tcl table. The command requires the <i>Pgtcl</i> package to be installed also.
<b>postgres</b>	is a single user database server, generally used for debugging.
<b>postmaster</b>	(a symlink to <b>postgres</b> ) is a multi-user database daemon.
<b>psql</b>	is a console based database shell.
<b>reindexdb</b>	is a utility for rebuilding indexes in a database.
<b>vacuumdb</b>	compacts databases and generates statistics for the query analyzer.
<b>libecpg.{so,a}</b>	contains functions to support embedded SQL in C programs.
<b>libecpg_compat.{so,a}</b>	is the ecpg compatibility library.
<b>libgport.a</b>	is the port-specific subsystem of the Postgres backend.
<b>libpgtypes.{so,a}</b>	contains functions for dealing with Postgres data types.
<b>libpq.{so,a}</b>	is the C programmer's API to Postgres.

# SQLite-3.7.16.2

## Introduction to SQLite

The SQLite package is a software library that implements a self-contained, serverless, zero-configuration, transactional SQL database engine.

This package is known to build and work properly using an LFS-7.3 platform.

## Package Information

- Download (HTTP): <http://sqlite.org/2013/sqlite-autoconf-3071602.tar.gz>
- 
- Download MD5 sum: ce7d2bc0d9b8dd18995b888c6b0b220f
- Download size: 1.8 MB
- Estimated disk space required: 35 MB (includes optional documentation)
- Estimated build time: 0.2 SBU

## Additional Downloads

### Optional Documentation

- Download (HTTP): <http://sqlite.org/2013/sqlite-doc-3071602.zip>
- Download MD5 sum: 2561853991248a951cd15347d51375d0
- Download size: 4.0 MB

## SQLite Dependencies

### Optional

UnZip-6.0 (required to unzip the documentation).

## Installation of SQLite

If you downloaded the optional documentation, issue the following command to install the documentation into the source tree:

```
unzip -q ../sqlite-doc-3071602.zip
```

Install SQLite by running the following commands:

```
./configure --prefix=/usr --disable-static \
    CFLAGS="-g -O2 -DSQLITE_ENABLE_FTS3=1 \
    -DSQLITE_ENABLE_COLUMN_METADATA=1 \
    -DSQLITE_ENABLE_UNLOCK_NOTIFY=1 \
    -DSQLITE_SECURE_DELETE=1" &&
make
```

This package does not come with a test suite.

Now, as the root user:

```
make install
```

If you downloaded the optional documentation, issue the following commands as the `root` user to install it:

```
install -v -m755 -d /usr/share/doc/sqlite-3.7.16.2 &&
cp -v -R sqlite-doc-3071602/* /usr/share/doc/sqlite-3.7.16.2
```

## Command Explanations

`--disable-static`: This switch prevents installation of static versions of the libraries.

`CFLAGS="-g -O2 -DSQLITE_ENABLE_FTS3=1 -DSQLITE_ENABLE_COLUMN_METADATA=1 -DSQLITE_SECURE_DELETE -DSQLITE_ENABLE_UNLOCK_NOTIFY=1"`: Applications such as Firefox require secure delete and enable unlock notify to be turned on. The only way to do this is to include them in the `CFLAGS`. By default, these are set to `"-g -O2"` so we specify that to preserve those settings. You may, of course, wish to omit the '`-g`' if you do not wish to create debugging information. For further information on what can be specified see <http://www.sqlite.org/compile.html>.

## Contents

<b>Installed Program:</b>	sqlite3
<b>Installed Library:</b>	libssqlite3.so
<b>Installed Directory:</b>	/usr/share/doc/sqlite-3.7.16.2

## Short Descriptions

<b>sqlite3</b>	A terminal-based front-end to the SQLite library that can evaluate queries interactively and display the results.
<b>libssqlite3.so</b>	contains the SQLite API functions.

## Chapter 23. 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.

# OpenLDAP-2.4.35

## Introduction to OpenLDAP

The OpenLDAP package provides an open source implementation of the Lightweight Directory Access Protocol.

This package is known to build and work properly using an LFS-7.3 platform.

## Package Information

- Download (FTP): <ftp://ftp.openldap.org/pub/OpenLDAP/openldap-release/openldap-2.4.35.tgz>
- Download MD5 sum: cd75d82ca89fb0280cba66ca6bd97448
- Download size: 5.3 MB
- Estimated disk space required: 130 MB
- Estimated build time: 1.2 SBU

## Additional Downloads

- Required patch: [http://www.linuxfromscratch.org/patches/blfs/svn/openldap-2.4.35-blfs\\_paths-1.patch](http://www.linuxfromscratch.org/patches/blfs/svn/openldap-2.4.35-blfs_paths-1.patch)
- Required patch: [http://www.linuxfromscratch.org/patches/blfs/svn/openldap-2.4.35-symbol\\_versions-1.patch](http://www.linuxfromscratch.org/patches/blfs/svn/openldap-2.4.35-symbol_versions-1.patch)
- Optional patch: <http://www.linuxfromscratch.org/patches/blfs/svn/openldap-2.4.35-ntlm-1.patch>

## OpenLDAP Dependencies

### Required

Berkeley DB-5.3.21

### Recommended

Cyrus SASL-2.1.26 and OpenSSL-1.0.1e

### Optional

ICU-51.1, MySQL-5.6.11 or PostgreSQL-9.2.4, OpenSLP, Pth-2.0.7 and unixODBC-2.3.1

## Installation of OpenLDAP



### Important

Without the following patch, the Evolution Exchange addressbook integration uses simple binds with cleartext passwords. If you are going to build Evolution Data Server with OpenLDAP support, apply the following patch:

```
patch -Npl -i ../../openldap-2.4.35-ntlm-1.patch
```



## Note

If you only need to install the client side **ldap\*** binaries, corresponding man pages, libraries and header files (referred to as a “client-only” install), issue the following **configure** command instead of the other one, and then proceed with the remaining commands (no test suite available):

```
patch -Np1 -i ../openldap-2.4.35-blfs_paths-1.patch &&
patch -Np1 -i ../openldap-2.4.35-symbol_versions-1.patch &&
autoconf &&
./configure --prefix=/usr      \
            --sysconfdir=/etc \
            --enable-dynamic \
            --disable-debug   \
            --disable-slapd &&
make depend &&
make
```

There should be a dedicated user and group to take control of the **slapd** daemon after it is started. Issue the following commands as the **root** user:

```
groupadd -g 83 ldap &&
useradd -c "OpenLDAP Daemon Owner" -d /var/lib/openldap -u 83 \
        -g ldap -s /bin/false ldap
```

Install OpenLDAP by running the following commands:

```
patch -Np1 -i ../openldap-2.4.35-blfs_paths-1.patch &&
patch -Np1 -i ../openldap-2.4.35-symbol_versions-1.patch &&
autoconf &&
./configure --prefix=/usr      \
            --sysconfdir=/etc \
            --localstatedir=/var \
            --libexecdir=/usr/lib \
            --disable-static   \
            --disable-debug   \
            --enable-dynamic \
            --enable-crypt    \
            --enable-spasswd  \
            --enable-modules \
            --enable-rlookups \
            --enable-backends=mod \
            --enable-overlays=mod \
            --disable-ndb     \
            --disable-sql &&
make depend &&
make
```

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

Now, as the root user:

```
make install &&

chown -R ldap:ldap /var/lib/openldap &&

install -v -dm755 /usr/share/doc/openldap-2.4.35 &&
cp -vfr doc/drafts /usr/share/doc/openldap-2.4.35 &&
cp -vfr doc/rfc /usr/share/doc/openldap-2.4.35 &&
cp -vfr doc/guide /usr/share/doc/openldap-2.4.35
```

## Command Explanations

--disable-static: This switch prevents installation of static versions of the libraries.

--disable-debug: This switch disables the debugging code in OpenLDAP.

--enable-dynamic: This switch forces the OpenLDAP libraries to be dynamically linked to the executable programs.

--enable-crypt: This switch enables using of **crypt(3)** passwords.

--enable-spasswd: This switch enables SASL password verification.

--enable-modules: This switch enables dynamic module support.

--enable-rlookups: This switch enables reverse lookups of client hostnames.

--enable-backends: This switch enables all available backends.

--enable-overlays: This switch enables all available overlays.

--disable-ndb: This switch disables MySQL NDB Cluster backend which causes configure to fail if MySQL is present.

--disable-sql: This switch explicitly disables the SQL backend. Omit this switch if a SQL server is installed and you are going to use a SQL backend.

--enable-slp: This switch enables SLPv2 support. Use it if you have installed *OpenSLP*.



### Note

You can run **./configure --help** to see if there are other switch you can pass to the **configure** command to enable other options or dependency packages.

## Configuring OpenLDAP

### Config Files

/etc/openldap/\*

### Configuration Information

Configuring the **slapd** 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 2.4 Administrator's Guide* (also installed locally in `/usr/share/doc/openldap-2.4.35/guide/admin`).
- Documents located at <http://www.openldap.org/pub/>.

## 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/slapd` init script included in the `blfs-bootscripts-20130512` package using the following command:

```
make install-slapd
```

### Note

The init script starts the daemon without any parameters. You'll need to modify the `/etc/sysconfig/slapd` to include the parameters needed for your specific configuration. See the `slapd` man page for parameter information.

## Testing the Configuration

Start the LDAP server using the init script:

```
/etc/rc.d/init.d/slapd 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

<b>Installed Programs:</b>	ldapadd, ldapcompare, ldapdelete, ldapexop, ldapmodify, ldapmodrdn, ldappasswd, ldapsearch, ldapurl, ldapwhoami, slapacl, slapadd, slapauth, slapcat, slapd, slapdn, slapindex, slappasswd, slapschema and slaptest
<b>Installed Libraries:</b>	liblber.so, libldap.so and libldap_r.so
<b>Installed Directories:</b>	/etc/openldap, /usr/lib/openldap and /var/lib/openldap

## Short Descriptions

<b>ldapadd</b>	opens a connection to an LDAP server, binds and adds entries.
<b>ldapcompare</b>	opens a connection to an LDAP server, binds and performs a compare using specified parameters.
<b>ldapdelete</b>	opens a connection to an LDAP server, binds and deletes one or more entries.
<b>ldapexop</b>	issues the LDAP extended operation specified by oid or one of the special keywords whoami, cancel, or refresh.
<b>ldapmodify</b>	opens a connection to an LDAP server, binds and modifies entries.
<b>ldapmodrdn</b>	opens a connection to an LDAP server, binds and modifies the RDN of entries.
<b>ldappasswd</b>	is a tool used to set the password of an LDAP user.
<b>ldapsearch</b>	opens a connection to an LDAP server, binds and performs a search using specified parameters.
<b>ldapurl</b>	is a command that allows to either compose or decompose LDAP URIs.
<b>ldapwhoami</b>	opens a connection to an LDAP server, binds and displays whoami information.
<b>slapacl</b>	is used to check the behavior of slapd by verifying access to directory data according to the access control list directives defined in its configuration.
<b>slapadd</b>	is used to add entries specified in LDAP Directory Interchange Format (LDIF) to an LDAP database.

<b>slapauth</b>	is used to check the behavior of the slapd in mapping identities for authentication and authorization purposes, as specified in slapd.conf.
<b>slapcat</b>	is used to generate an LDAP LDIF output based upon the contents of a slapd database.
<b>slapd</b>	is the standalone LDAP server.
<b>slapdn</b>	checks a list of string-represented DNs based on schema syntax.
<b>slapindex</b>	is used to regenerate slapd indexes based upon the current contents of a database.
<b>slappasswd</b>	is an OpenLDAP password utility.
<b>slapschema</b>	is used to check schema compliance of the contents of a slapd database.
<b>slaptest</b>	checks the sanity of the <code>slapd.conf</code> file.
<b>liblber.so</b>	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.
<b>libldap.so</b>	supports the LDAP programs and provide functionality for other programs interacting with LDAP.
<b>libldap_r.so</b>	contains the functions required by the LDAP programs to produce the results from LDAP requests.

# Virtuoso-6.1.6

## Introduction to Virtuoso

Virtuoso is a cross-platform server that implements multiple server-side protocols as part of a single-server product offering. There is one server product that offers WebDAV/HTTP, Application, and Database-server functionality alongside Native XML Storage, Universal Data-Access Middleware, Business Process Integration and a Web-Services Platform.

This package is known to build and work properly using an LFS-7.2 platform.

## Package Information

- Download (HTTP): <http://downloads.sourceforge.net/virtuoso/virtuoso-opensource-6.1.6.tar.gz>
- 
- Download MD5 sum: 3991149c570f3738c3e819ce603e487f
- Download size: 113 MB
- Estimated disk space required: 770 MB (additional 2 GB to run the test suite)
- Estimated build time: 5.0 SBU (additional 10 SBU to run the test suite)

## Virtuoso Dependencies

### Recommended

libiodbc-3.52.8, libxml2-2.9.1, OpenSSL-1.0.1e, and OpenLDAP-2.4.35

### Optional

ImageMagick-6.8.5-6, Python-2.7.5, and MIT Kerberos V5-1.11.2

## Installation of Virtuoso

Install virtuoso by running the following commands:

```
sed -i "s|virt_iodbc_dir/include|&/iodbc|" configure &&
./configure --prefix=/usr \
             --sysconfdir=/etc \
             --localstatedir=/var \
             --with-iodbc=/usr \
             --with-readline \
             --without-internal-zlib \
             --program-transform-name="s/isql/isql-v/" \
             --disable-all-vads \
             --disable-static &&
make
```

To test the results, issue **make -k check**.

Now, as the root user:

```
make install &&
install -v -m755 -d /usr/share/doc/virtuoso-6.1.6 &&
ln -s -v      ../../virtuoso/doc \
                  /usr/share/doc/virtuoso-6.1.6
```

## Command Explanations

**sed -i ...:** This command is used to modify the CPPFLAGS variable so that the libiodbc interface headers are found by the **configure** script.

**--with-iodbc=/usr:** This parameter is used so that the build will use the system libiodbc interface headers and not the headers in the source tree.

**--with-readline:** This parameter is used so that the system Readline library is used.

**--without-internal-zlib:** This parameter is set so that the installed zlib library is used and not the bundled one.

**--program-transform-name:** Both Virtuoso and unixODBC install a program named **isql**. Use this parameter to rename virtuosos program to **isql-v**.

**--disable-all-vads:** This parameter disables building all the VAD packages (tutorials, demos, etc.).

**--disable-static:** This option disables building static libraries. However, the main Virtuoso libraries, libvirtuoso-t and libvirtuoso-iodbc-t are still built as static libraries.

**--enable-python:** Add this option if Python is installed to enable building Python bindings.

**--with-port:** Add this if you want the Virtuoso server to listen on a port other than 1111.

**--enable-aio:** Add this if you want Virtuoso to perform asynchronous file I/O operations instead of synchronous file I/O.

**--enable-perl:** Do not use this option if you built Perl according to the LFS instructions. The build will fail with a note similar to Your perl should be compiled w -Dusemultiplicity. Check the output of perl -V:usemultiplicity.

Note that passing the **with-jdk4=\${JAVA\_HOME}**, **--enable-php5=/usr**, **--enable-ruby**, and **--enable-wbxm12=/usr** options all will fail during the **configure** phase of the build. They will not break the build, but the desired support will not be included in the build.

## Configuration



### Note

If Virtuoso is only to be used for KDE, there is no need to start the Virtuoso server at boot time.

## Boot Script

If you want the Virtuoso server to start automatically when the system is booted, install the **/etc/rc.d/init.d/virtuoso** init script included in the **blfs-bootscripts-20130512** package.

```
make install-virtuoso
```

## User accounts

When the server is started using the start script, there is a web interface to Virtuoso at <http://localhost:8890/>. Several links are pointing to the OpenLink site, but the Conductor at <http://localhost:8890/conductor/>. This is a full featured configuration site for Virtuoso. Login as dba with the predefined password dba.



## Change password

Remember to immediately change the password of user dba as well as of all other predefined users. Click on [System Admin] and then on [User Accounts].

## Contents

<b>Installed Programs:</b>	inifile, isql-v, isql-vw, virt_mail and virtuoso-t
<b>Installed Libraries:</b>	libvirtuoso-t.a, virtodbc.so, virtodbc_r.so, virtodbcu.so and virtodbcu_r.so
<b>Installed Directories:</b>	/var/lib/virtuoso, /usr/lib/{hibernate,jdbc-{2,3,4}.0,jena,sesame,virtuoso} and /usr/share/virtuoso

## Short Descriptions

<b>isql-v</b>	is a interactive SQL utility.
<b>virtuoso-t</b>	is the Universal Server daemon.

# Soprano-2.9.2

## Introduction to Soprano

Soprano (formally known as QRDF) is a library which provides a nice Qt interface to RDF storage solutions. It has a modular structure which allows to replace the actual RDF storage implementation used.

This package is known to build and work properly using an LFS-7.3 platform.

## Package Information

- Download (HTTP): <http://downloads.sourceforge.net/soprano/soprano-2.9.2.tar.bz2>
- 
- Download MD5 sum: 60ce910cf3c8e4655c614b45d73f2b2a
- Download size: 1.9 MB
- Estimated disk space required: 31 MB
- Estimated build time: 0.6 SBU

## Soprano Dependencies

### Required

D-Bus-1.6.10, CMake-2.8.11, Qt-4.8.4 and Redland-1.0.16

### Recommended (Required if building KDE)

libiodbc-3.52.8 (required for the Virtuoso backend. Additionally, Virtuoso-6.1.6 is required as a runtime dependency for this backend.)

### Optional

Doxygen-1.8.4 (to build the documentation), *CLucene* (no longer required to use Soprano in KDE) and *Sesame2*

## Installation of Soprano

Install soprano by running the following commands:

```
mkdir build &&
cd build &&
cmake -DCMAKE_INSTALL_PREFIX=/usr \
      -DCMAKE_BUILD_TYPE=Release \
      .. &&
make
```

This package does not come with a working test suite.

Now, as the root user:

```
make install
```

## Command Explanations

*-DCMAKE\_BUILD\_TYPE=Release*: This switch is used to apply higher level of the compiler optimizations.

`-DSOPRANO_DISABLE_CLUCENE_INDEX=1`: Soprano might not build with recent Clucene versions. Use this switch to fix it.

## Configuration of Soprano

Create a directory where Soprano places some runtime data:

```
install -m755 -d /srv/soprano
```

The **sopranod** accepts some parameters. To configure how the bootscript starts **sopranod**, create a configuration file:

```
cat > /etc/sysconfig/soprano <<EOF
# Begin /etc/sysconfig/soprano

SOPRANO_STORAGE="/srv/soprano"
SOPRANO_BACKEND="virtuoso"                                # virtuoso, sesame2, redland
#SOPRANO_OPTIONS="$SOPRANO_OPTIONS --port 4711" # Default port is 5000

# End /etc/sysconfig/soprano
EOF
```

## Boot Script



### Note

It is not required to start the Soprano server at boottime for KDE. KDE will start Soprano as needed.

In order to get Soprano started automatically when the system is booted, install the `/etc/rc.d/init.d/soprano` init script included in the `blfs-bootscripts-20130512` package.

```
make install-soprano
```

## Contents

<b>Installed Programs:</b>	onto2vocabularyclass, sopranocmd and sopranod
<b>Installed Libraries:</b>	libsopranoclient.so, libsopranoserver.so and libsoprano.so
<b>Installed Directories:</b>	/usr/include/soprano, /usr/include/Soprano, /usr/lib/soprano and /usr/share/soprano

# xinetd-2.3.15

## Introduction to xinetd

xinetd is the eXtended InterNET services daemon, a secure replacement for **inetd**.

### Package Information

- Download (HTTP): <http://www.xinetd.org/xinetd-2.3.15.tar.gz>
- Download (FTP): <ftp://mirror.ovh.net/gentoo-distfiles/distfiles/xinetd-2.3.15.tar.gz>
- Download MD5 sum: 77358478fd58efa6366accae99b8b04c
- Download size: 308 KB
- Estimated disk space required: 5.0 MB
- Estimated build time: less than 0.1 SBU

## xinetd Dependencies

### Required

libtirpc-0.2.3

### Optional

*tcpwrappers (deprecated)*

## Installation of xinetd

Install xinetd by running the following commands:

```
sed -i -e "/^LIBS/s/-lpset/& -ltirpc/" xinetd/Makefile.in      &&
sed -i -e "/register unsigned count/s/register//" xinetd/itox.c &&
./configure --prefix=/usr --with-loadavg                      &&
make
```

This package does not come with a test suite.

Now, as the **root** user:

```
make install
```

## Command Explanations

**sed ... xinetd/Makefile.in:** Ensure the program links against the libtirpc library.

**sed ... xinetd/itox.c:** Fix some compiler warnings.

## Configuring xinetd

### Config Files

/etc/xinetd.conf and /etc/xinetd.d/\*

## Configuration Information

Ensure the path to all daemons is /usr/sbin, rather than the default path of /usr/bin, 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 several xinetd applications. In many cases, these applications are not needed. Some classic 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/systat << "EOF" &&
# Begin /etc/xinetd.d/systat

service systat
{
    disable          = yes
    socket_type     = stream
    wait            = no
    user            = nobody
    server          = /usr/bin/ps
    server_args     = -auwx
    only_from       = 128.138.209.0
```

```

    log_on_success      = HOST
}

# End /etc/xinetd.d/systat
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
```

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-20130512` package.

```
make install-xinetd
```

As the `root` user, use the new boot script to start **xinetd**:

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

Check the `/var/log/daemon.log` to ensure the appropriate services are started. If no services are enabled, the program will not start without the `-stayalive` option.

## Contents

<b>Installed Programs:</b>	itox, xconv.pl, and xinetd
<b>Installed Libraries:</b>	None
<b>Installed Directories:</b>	<code>/etc/xinetd.d/</code>

## Short Descriptions

- |                 |   |
|-----------------|---|
| <b>itox</b>     | is a utility used for converting <code>inetd.conf</code> files to <code>xinetd.conf</code> format.                              |
| <b>xconv.pl</b> | is a Perl script used for converting <code>inetd.conf</code> files to <code>xinetd.conf</code> format, similar to <b>itox</b> . |

**xinetd** is the Internet services daemon.

## **Part VI. X + Window Managers**

# Chapter 24. X Window System Environment

This chapter contains instructions to build and configure a graphical user environment.

Xorg, in addition to clearing up some licensing issues with *XFree86*, introduced a completely auto-tooled build for the X Window system. This means that the packages build and install using the conventional **configure**, **make** and **make install** commands, as opposed to a proprietary build system that required hand editing of configuration parameters in a C-like syntax.

Xorg also brought with it a modular build system. While this separation into modules resulted in full control of the features available to the X server on any given installation, it also made the installation more tedious as it requires installing more than 100 different packages to obtain a functional X Window environment. Most large commercial distributions have elected to use Xorg over the XFree86 distribution due to both licensing issues and the increased functionality provided by it over XFree86. With the modular build system, also came incremental updates to individual packages. The distribution of Xorg is given a release number by the developers, in this case Xorg-7.7, and is referred to as the "katamari" by the upstream developers.

## Introduction to Xorg-7.7

Xorg is a freely redistributable, open-source implementation of the X Window System. This system 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).

### Xorg Download and Installation Instructions

Xorg-7.0 introduced a completely auto-tooled, modular build system. With the new modular build system, it is no longer possible to download the entire package in a single file. In fact, there will be well over 100 packages that need to be fetched from the download location. To assist with such a large task, installing Wget-1.14 is strongly recommended for downloading the needed files. A complete wget file list is provided for each page that includes multiple packages.

Given the number of packages available, deciding which packages you need to install for your particular setup may seem a bit overwhelming at first. Take a look at *this page* and *this thread* to get an idea of what you will need. If you are unsure, you should install all packages at the cost of extra disk space.



#### Note

Even if you intend to download only the necessary packages, you should download the wget file lists. The list of files are ordered by dependency, and the package versions listed in the files are known to work well with each other. Further, the wget file lists contain comments for specific packages that are deprecated or are not recommended to install. Newer packages are likely intended for the next release of Xorg and have already proved to be incompatible with current versions of software installed in BLFS. The installed size of Xorg can be reduced considerably by installing only the packages that you will need and use, however, the BLFS book cannot account for all dependencies and build options for the individual Xorg packages. The instructions assume that all packages have been built. A *wiki* page containing dependency information is under development. You are encouraged to add to these pages if you discover additional information that may be helpful to other users who selectively install individual packages.

Additionally, because of the large number of repetitive commands, you are encouraged to partially automate the build. Instructions have been given that utilize the Sudo-1.8.6p3 package. It is recommended that you use the :*NOPASSWD* configuration option for the user that will be building the xorg packages.

## Setting up the Xorg Build Environment

First, you'll need to create a working directory:

```
mkdir xc &&
cd xc
```

As with previous releases of the X Window System, it may be desirable to install Xorg into an alternate prefix. This is no longer common practice among Linux distributions. The common installation prefix for Xorg on Linux is `/usr`. There is no standard alternate prefix, nor is there any exception in the current revision of the Filesystem Hierarchy Standard for Release 7 of the X Window System. Alan Coopersmith of Sun Microsystems, has recently stated "At Sun, we were using `/usr/X11` and plan to stick with it." Only the `/opt/*` prefix or the `/usr` prefix adhere to the current FHS guidelines.

Choose your installation prefix, and set the `XORG_PREFIX` variable with the following command:

```
export XORG_PREFIX=""
```

Throughout these instructions, you will use the following `configure` switches for all of the packages. Create the `XORG_CONFIG` variable to use for this parameter substitution:

```
export XORG_CONFIG="--prefix=$XORG_PREFIX --sysconfdir=/etc \
--localstatedir=/var --disable-static"
```

Create an `/etc/profile.d/xorg.sh` configuration file containing these variables as the `root` user:

```
cat > /etc/profile.d/xorg.sh << "EOF"
XORG_PREFIX=""
XORG_CONFIG="--prefix=$XORG_PREFIX \
--sysconfdir=/etc \
--localstatedir=/var \
--disable-static"
export XORG_PREFIX XORG_CONFIG
EOF
chmod 644 /etc/profile.d/xorg.sh
```

If you've decided to use the standard `/usr` prefix, you can omit the remainder of this page. Otherwise, be sure to add `$XORG_PREFIX/bin` to your `PATH` environment variable, and `$XORG_PREFIX/lib/pkgconfig` and `$XORG_PREFIX/share/pkgconfig` to your `PKG_CONFIG_PATH` variable. Issue the following commands as the `root` user:

```
cat >> /etc/profile.d/xorg.sh << "EOF"

pathappend $XORG_PREFIX/bin PATH
pathappend $XORG_PREFIX/lib/pkgconfig PKG_CONFIG_PATH
pathappend $XORG_PREFIX/share/pkgconfig PKG_CONFIG_PATH
export PATH PKG_CONFIG_PATH
EOF
```

You should also add `$XORG_PREFIX/lib` to the `/etc/ld.so.conf` file. Again, as the `root` user, issue the following command:

```
echo "${XORG_PREFIX}/lib" >> /etc/ld.so.conf
```

You should also modify `/etc/man_db.conf`, adding appropriate `MANDATORY_MANPATH`, `MANPATH_MAP`, and `MANDB_MAP` entries following the examples for `/usr/X11R6`. Issue the following command as the `root` user:

```
sed 's@/usr/X11R6@<PREFIX>@g' -i /etc/man_db.conf
```

Finally, if building on `x86_64`, you will need to create the `$XORG_PREFIX/lib` directory and the `$XORG_PREFIX/lib64` symlink. Again, as the `root` user, issue the following commands:

```
install -v -m755 -d $XORG_PREFIX &&
install -v -m755 -d $XORG_PREFIX/lib &&
ln -s lib $XORG_PREFIX/lib64
```

# util-macros-1.17

## Introduction to util-macros

The util-macros package contains the m4 macros used by all of the Xorg packages.

This package is known to build and work properly using an LFS-7.3 platform.

## Package Information

- Download (HTTP): <http://xorg.freedesktop.org/releases/individual/util/util-macros-1.17.tar.bz2>
- Download (FTP): <ftp://ftp.x.org/pub/individual/util/util-macros-1.17.tar.bz2>
- Download MD5 sum: 4f41667e1bf4938bb2b24fa09d517f77
- Download size: 76 KB
- Estimated disk space required: 517 KB
- Estimated build time: less than 0.1 SBU

## Installation of util-macros

Install util-macros by running the following commands:

```
./configure $XORG_CONFIG &&
make
```

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

Now, as the root user:

```
make install
```

# Xorg Protocol Headers

## Introduction to Xorg Protocol Headers

The Xorg protocol headers provide the header files required to build the system, and to allow other applications to build against the installed X Window system.

This package is known to build and work properly using an LFS-7.3 platform.

### Package Information

- Download (HTTP): <http://xorg.freedesktop.org/releases/individual/proto/>
- Download (FTP): <ftp://ftp.x.org/pub/individual/proto/>
- Download size: 3.0 MB
- Estimated disk space required: 25 MB
- Estimated build time: 0.8 SBU

## Xorg Protocol Headers Dependencies

### Required

util-macros-1.17

### Recommended

Sudo-1.8.6p3 and Wget-1.14

### Optional

fop-1.1 and xmlto-0.0.25 (to build additional documentation)



### Note

There is a reciprocal dependency with fop-1.1. If you wish to build the documentation, you'll need to re-install the Protocol Headers after the installation is complete and fop-1.1 has been installed.

## Downloading Xorg Protocol Headers

First, create a list of files to be downloaded. This file will also be used to verify the integrity of the downloads when complete:

```
cat > proto-7.7.md5 << "EOF"
1a05fb01fa1d5198894c931cf925c025 bigreqsproto-1.1.2.tar.bz2
98482f65ba1e74a08bf5b056a4031ef0 compositeproto-0.4.2.tar.bz2
998e5904764b82642cc63d97b4ba9e95 damageproto-1.2.1.tar.bz2
4ee175bbd44d05c34d43bb129be5098a dmxproto-2.3.1.tar.bz2
b2721d5d24c04d9980a0c6540cb5396a dri2proto-2.8.tar.bz2
e7431ab84d37b2678af71e29355e101d fixesproto-5.0.tar.bz2
c5f4f1fb4ba7766eedbc9489e81f3be2 fontsproto-2.1.2.tar.bz2
3847963c1b88fd04a030b932b0aece07 glproto-1.4.16.tar.bz2
94db391e60044e140c9854203d080654 inputproto-2.3.tar.bz2
677ea8523eec6caca86121ad2dca0b71 kbproto-1.0.6.tar.bz2
ce4d0b05675968e4c83e003cc809660d randrproto-1.4.0.tar.bz2
1b4e5dede5ea51906f1530cale21d216 recordproto-1.14.2.tar.bz2
a914ccc1de66ddeb4b611c6b0686e274 renderproto-0.11.1.tar.bz2
cfdb57dae221b71b2703f8e2980eaaf4 resourceproto-1.2.0.tar.bz2
edd8a73775e8ece1d69515dd17767fbf scrnsaverproto-1.2.2.tar.bz2
c3b348c6e2031b72b11ae63fc7f805c2 videoprotproto-2.3.1.tar.bz2
5f4847c78e41b801982c8a5e06365b24 xcmiscproto-1.2.2.tar.bz2
eaac343af094e6b608cf15cfba0f77c5 xextproto-7.2.1.tar.bz2
120e226ede5a4687b25dd357cc9b8efe xf86bigfontproto-1.2.0.tar.bz2
a036dc2fcbf052ec10621fd48b68dbb1 xf86dgaproto-2.1.tar.bz2
1d716d0dac3b664e5ee20c69d34bc10e xf86driproto-2.1.1.tar.bz2
e793ecefefeaecfeabd1aed6a01095174e xf86vidmodeproto-2.3.1.tar.bz2
9959fe0fb22a0e7260433b8d199590a xineramaproto-1.2.1.tar.bz2
d4d241a4849167e4e694fe73371c328c xproto-7.0.23.tar.bz2
EOF
```

To download the needed files using wget, use the following commands:

```
mkdir proto &&
cd proto &&
grep -v '^#' ../proto-7.7.md5 | awk '{print $2}' | wget -i- -c \
-B http://xorg.freedesktop.org/releases/individual/proto/ &&
md5sum -c ../proto-7.7.md5
```

## Installation of Xorg Protocol Headers



### Note

When installing multiple packages in a script, the installation needs to be done as the root user. There are three general options that can be used to do this:

1. Run the entire script as the root user (not recommended).
2. Use the **sudo** command from the Sudo-1.8.6p3 package.
3. Use **su -c "command arguments"** (quotes required) which will ask for the root password for every iteration of the loop.

One way to handle this situation is to create a short **bash** function that automatically selects the appropriate method. Once the command is set in the environment, it does not need to be set again.

```
as_root()
{
    if [ $EUID = 0 ]; then $*
    elif [ -x /usr/bin/sudo ]; then sudo $*
    else
        su -c \\\"$*\\"\\"
    fi
}

export -f as_root
```

First, start a subshell that will exit on error:

```
bash -e
```

Install all of the applications by running the following commands:

```
for package in $(grep -v '^#' ../proto-7.7.md5 | awk '{print $2}')
do
    packagedir=${package%.tar.bz2}
    tar -xf $package
    pushd $packagedir
    ./configure $XORG_CONFIG
    as_root make install
    popd
    rm -r $packagedir
done
```

Finally, exit the shell that was started earlier:

```
exit
```

## Command Explanations

**bash -e**: This command starts a subshell that will exit if any command returns a value other than 0, causing the for loop to exit immediately if an error occurs. This also eliminates the need for the **&&** construct used elsewhere in the book.

## Contents

### Installed Directories:

\$XORG\_PREFIX/include/GL, \$XORG\_PREFIX/include/X11, \$XORG\_PREFIX/lib/pkgconfig, \$XORG\_PREFIX/share/doc/bigreqsproto, \$XORG\_PREFIX/share/doc/compositeproto, \$XORG\_PREFIX/share/doc/damageproto, \$XORG\_PREFIX/share/doc/dri2proto, \$XORG\_PREFIX/share/doc/fixesproto, \$XORG\_PREFIX/share/doc/fontsproto, \$XORG\_PREFIX/share/doc/inputproto, \$XORG\_PREFIX/share/doc/kbproto, \$XORG\_PREFIX/share/doc/randrproto, \$XORG\_PREFIX/share/doc/recordproto, \$XORG\_PREFIX/share/doc/renderproto, \$XORG\_PREFIX/share/doc/resourceproto, \$XORG\_PREFIX/share/doc/scrnsaverproto, \$XORG\_PREFIX/share/doc/videoprotocol, \$XORG\_PREFIX/share/doc/xcmiscproto, \$XORG\_PREFIX/share/doc/xextproto and \$XORG\_PREFIX/share/doc/xproto

# makedepend-1.0.4

## Introduction to makedepend

The makedepend package contains a C-preprocessor like utility to determine build-time dependencies.

This package is known to build and work properly using an LFS-7.3 platform.

## Package Information

- Download (HTTP): <http://xorg.freedesktop.org/releases/individual/util/makedepend-1.0.4.tar.bz2>
- Download (FTP): <ftp://ftp.x.org/pub/individual/util/makedepend-1.0.4.tar.bz2>
- Download MD5 sum: 7acb9a831817fdd11ba7f7aaa3c74fd8
- Download size: 129 KB
- Estimated disk space required: 1.2 MB
- Estimated build time: less than 0.1 SBU

## makedepend Dependencies

### Required

Xorg Protocol Headers and pkg-config-0.28

## Installation of makedepend

Install makedepend by running the following commands:

```
./configure $XORG_CONFIG &&
make
```

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

Now, as the root user:

```
make install
```

## Contents

**Installed Program:** makedepend

## Short Descriptions

**makedepend** creates dependencies in makefiles.

# libXau-1.0.7

## Introduction to libXau

The libXau package contains a library implementing the X11 Authorization Protocol. This is useful for restricting client access to the display.

This package is known to build and work properly using an LFS-7.3 platform.

## Package Information

- Download (HTTP): <http://xorg.freedesktop.org/releases/individual/lib/libXau-1.0.7.tar.bz2>
- Download (FTP): <ftp://ftp.x.org/pub/individual/lib/libXau-1.0.7.tar.bz2>
- Download MD5 sum: 2d241521df40d27034413436d1a1465c
- Download size: 268 KB
- Estimated disk space required: 2.3 MB
- Estimated build time: less than 0.1 SBU

## libXau Dependencies

### Required

Xorg Protocol Headers

## Installation of libXau

Install libXau by running the following commands:

```
./configure $XORG_CONFIG &&
make
```

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

Now, as the root user:

```
make install
```

## Contents

<b>Installed Programs:</b>	None
<b>Installed Library:</b>	libXau.so
<b>Installed Directories:</b>	None

## Short Descriptions

**libXau.so** is the library of X authority database routines.

# libXdmcp-1.1.1

## Introduction to libXdmcp

The libXdmcp package contains a library implementing the X Display Manager Control Protocol. This is useful for allowing clients to interact with the X Display Manager.

This package is known to build and work properly using an LFS-7.3 platform.

## Package Information

- Download (HTTP): <http://xorg.freedesktop.org/releases/individual/lib/libXdmcp-1.1.1.tar.bz2>
- Download (FTP): <ftp://ftp.x.org/pub/individual/lib/libXdmcp-1.1.1.tar.bz2>
- Download MD5 sum: b94af6cef211cf3ee256f7e81f70fc9
- Download size: 304 KB
- Estimated disk space required: 2.6 MB
- Estimated build time: less than 0.1 SBU

## libXdmcp Dependencies

### Required

Xorg Protocol Headers

## Installation of libXdmcp

Install libXdmcp by running the following commands:

```
./configure $XORG_CONFIG &&
make
```

This package does not come with a test suite.

Now, as the root user:

```
make install
```

## Contents

<b>Installed Programs:</b>	None
<b>Installed Library:</b>	libXdmcp.so
<b>Installed Directories:</b>	None

## Short Descriptions

**libXdmcp.so** is the X Display Manager Control Protocol library.

# xcb-proto-1.8

## Introduction to xcb-proto

The xcb-proto package provides the XML-XCB protocol descriptions that libxcb uses to generate the majority of its code and API.

This package is known to build and work properly using an LFS-7.3 platform.

## Package Information

- Download (HTTP): <http://xcb.freedesktop.org/dist/xcb-proto-1.8.tar.bz2>
- 
- Download MD5 sum: a5de3432cc6e43cc6a27f241dbb991b1
- Download size: 124 KB
- Estimated disk space required: 2.0 MB
- Estimated build time: less than 0.1 SBU

## xcb-proto Dependencies

### Required

Python-2.7.5

### Optional (required to run the tests)

libxml2-2.9.1

## Installation of xcb-proto

Install xcb-proto by running the following commands:

```
./configure $XORG_CONFIG
```

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

Now, as the root user:

```
make install
```

## Contents

**Installed Directories:** \$XORG\_PREFIX/share/xcb

# libxcb-1.9

## Introduction to libxcb

The libxcb package provides an interface to the X Window System protocol, which replaces the current Xlib interface. Xlib can also use XCB as a transport layer, allowing software to make requests and receive responses with both.

This package is known to build and work properly using an LFS-7.3 platform.

## Package Information

- Download (HTTP): <http://xcb.freedesktop.org/dist/libxcb-1.9.tar.bz2>
- 
- Download MD5 sum: 2b05856e9d1cb37836aae7406f2f4ce2
- Download size: 380 KB
- Estimated disk space required: 40 MB
- Estimated build time: 0.3 SBU

## libxcb Dependencies

### Required

libXau-1.0.7, libXdmcp-1.1.1, libXslt-1.1.28, and xcb-proto-1.8

### Optional

Doxygen-1.8.4 (to generate API documentation) and Check-0.9.10 (to run tests)

## Installation of libxcb

Install libxcb by running the following commands:

```
sed -e "s/pthread-stubs//" -i configure.ac &&
autoreconf -fi &&
./configure $XORG_CONFIG --enable-xinput --docdir='${datadir}'/doc/libxcb-1.9 &&
make
```

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

Now, as the **root** user:

```
make install
```

## Command Explanations

**sed -e "s/pthread-stubs//"** -i **configure.ac**: This sed removes dependency on libpthread-stubs package which is useless on Linux.

**--enable-xinput**: This switch enables XCB Xinput extension.

**--without-doxygen**: This switch can be used to disable the API documentation if Doxygen-1.8.4 is installed.

## Contents

<b>Installed Programs:</b>	None
<b>Installed Libraries:</b>	libxcb.so and libxcb-* .so
<b>Installed Directories:</b>	\$XORG_PREFIX/include/xcb and \$XORG_PREFIX/share/doc/libxcb-1.9

## Short Descriptions

`libxcb.so` is an interface to the X Window System protocol.

# Xorg Libraries

## Introduction to Xorg Libraries

The Xorg libraries provide library routines that are used within all X Window applications.

This package is known to build and work properly using an LFS-7.3 platform.

### Package Information

- Download (HTTP): <http://xorg.freedesktop.org/releases/individual/lib/>
- Download (FTP): <ftp://ftp.x.org/pub/individual/lib/>
- Download size: 12.1 MB
- Estimated disk space required: 280 MB
- Estimated build time: 3.7 SBU

## Xorg Libraries Dependencies

### Required

Fontconfig-2.10.2, Xorg Protocol Headers, libXdmcp-1.1.1, and libxcb-1.9

### Optional

xmlto-0.0.25 with one or more of the following: fop-1.1, Links-2.7, Lynx-2.8.8dev.15, and w3m-0.5.3 (to generate additional PDF or text documentation for the libXfont package).

## Downloading Xorg Libraries

First, create a list of files to be downloaded. This file will also be used to verify the integrity of the downloads when complete:

```
cat > lib-7.7.md5 << "EOF"
84c66908cf003ad8c272b0eecbdbaee3 xtrans-1.2.7.tar.bz2
78b4b3bab4acbdf0abcfca30a8c70cc6 libX11-1.5.0.tar.bz2
71251a22bc47068d60a95f50ed2ec3cf libXext-1.3.1.tar.bz2
645f83160cf7b562734e2038045106d1 libFS-1.0.4.tar.bz2
471b5ca9f5562ac0d6eac7a0bf650738 libICE-1.0.8.tar.bz2
766de9d1e1ecf8bf74cebe2111d8e2bd libSM-1.2.1.tar.bz2
7a773b16165e39e938650bcc9027c1d5 libXScrnSaver-1.2.2.tar.bz2
a6f137ae100e74ebe3b71eb4a38c40b3 libXt-1.1.3.tar.bz2
a4efff8de85bd45dd3da124285d10c00 libXmu-1.1.1.tar.bz2
7ae7eff7a14d411e84a67bd166bcec1a libXpm-3.5.10.tar.bz2
f39942f2cab379fc9b4c3731bf191b84 libXaw-1.0.11.tar.bz2
678071bd7f9f7467e2fc712d81022318 libXfixes-5.0.tar.bz2
f7a218dcbf6f0848599c6c36fc65c51a libXcomposite-0.4.4.tar.bz2
ee62f4c7f0f16ced4da63308963ccad2 libXrender-0.9.7.tar.bz2
52efa81b7f26c8eda13510a2fba98eea libXcursor-1.1.13.tar.bz2
0cf292de2a9fa2e9a939aefde68fd34f libXdamage-1.1.4.tar.bz2
a2a861f142c3b4367f14fc14239fc1f7 libfontenc-1.1.1.tar.bz2
6851da5dae0a6cf5f7c9b9e2b05dd3b4 libXfont-1.4.5.tar.bz2
78d64dece560c9e8699199f3faa521c0 libXft-2.3.1.tar.bz2
24d71afed1b86c60d4eb361628d7f47b libXi-1.7.1.tar.bz2
cb45d6672c93a608f003b6404f1dd462 libXinerama-1.1.2.tar.bz2
0c843636124cc1494e3d87df16957672 libXrandr-1.4.0.tar.bz2
80d0c6d8522fa7a645e4f522e9a9cd20 libXres-1.0.6.tar.bz2
e8abc5c00c666f551cf26aa53819d592 libXtst-1.2.1.tar.bz2
5e1ac203ccd3ce3e89755ed1fbe75b0b libXv-1.0.7.tar.bz2
3340c99ff556ea2457b4be47f5cb96fa libXvMC-1.0.7.tar.bz2
b7f38465c46e7145782d37dbb9da8c09 libXxf86dga-1.1.3.tar.bz2
ffd93bcedd8b2b5aeabf184e7b91f326 libXxf86vm-1.1.2.tar.bz2
782ced3a9e754dfeb53a8a006a75eb1a libdmx-1.1.2.tar.bz2
399a419ac6a54f0fc07c69c9bdf452dc libpciaccess-0.13.1.tar.bz2
19e6533ae64abba0773816a23f2b9507 libxkbfile-1.0.8.tar.bz2
EOF
```

To download the needed files using wget, use the following commands:

```
mkdir lib &&
cd lib &&
grep -v '^#' ../lib-7.7.md5 | awk '{print $2}' | wget -i- -c \
-B http://xorg.freedesktop.org/releases/individual/lib/ &&
md5sum -c ../lib-7.7.md5
```

## Installation of Xorg Libraries



### Note

When installing multiple packages in a script, the installation needs to be done as the root user. There are three general options that can be used to do this:

1. Run the entire script as the root user (not recommended).
2. Use the **sudo** command from the Sudo-1.8.6p3 package.
3. Use **su -c "command arguments"** (quotes required) which will ask for the root password for every iteration of the loop.

One way to handle this situation is to create a short **bash** function that automatically selects the appropriate method. Once the command is set in the environment, it does not need to be set again.

```
as_root()
{
    if      [ $EUID = 0 ];      then $*
    elif    [ -x /usr/bin/sudo ]; then sudo $*
    else                                su -c \\\"$*\\\""
    fi
}

export -f as_root
```

First, start a subshell that will exit on error:

```
bash -e
```

Install all of the applications by running the following commands:

```
for package in $(grep -v '^#' ..//lib-7.7.md5 | awk '{print $2}')
do
    packagedir=${package%.tar.bz2}
    tar -xf $package
    pushd $packagedir
    case $packagedir in
        libXfont-[0-9]* )
            ./configure $XORG_CONFIG --disable-devel-docs
        ;;
        libXt-[0-9]* )
            ./configure $XORG_CONFIG \
                --with-appdefaultdir=/etc/X11/app-defaults
        ;;
        * )
            ./configure $XORG_CONFIG
        ;;
    esac
    make
    as_root make install
    popd
    rm -r $packagedir
    as_root /sbin/ldconfig
done
```

Finally, exit the shell that was started earlier:

```
exit
```

## Command Explanations

*--with-fop*: Use fop-1.1 to generate PDF documentation (only for the libXfont package).

*--disable-devel-docs*: Disable generation of text documentation in the libXfont package if xmlto-0.0.25 is installed without a text browser. Omit this parameter (or the entire **case** statement) if a text browser is installed.

## Configuration of Xorg Libraries

If you've chosen to install Xorg into `/usr`, then no further configuration is necessary and you can skip the rest of this section. If you've opted for an alternate prefix, you should create three symlinks to satisfy the expected environment of several packages. Execute the following commands as the root user:

```
ln -sv $XORG_PREFIX/lib/X11 /usr/lib/X11 &&
ln -sv $XORG_PREFIX/include/X11 /usr/include/X11
```

## Contents

**Installed Programs:**

cxpm and sxpm

**Installed Libraries:**

libdmx.so, libfontenc.so, libFS.so, libICE.so, libpciaccess.so, libSM.so, libX11.so, libXaw6.so, libXaw7.so, libXaw.so, libXcomposite.so, libXcursor.so, libXdamage.so, libXext.so, libXfixes.so, libXfont.so, libXft.so, libXinerama.so, libXi.so, libxkbfile.so, libXmu.so, libXmuu.so, libXpm.so, libXrandr.so, libXrender.so, libXRes.so, libXss.so, libXt.so, libXtst.so, libXvMC.so, libXvMCW.so, libXv.so, libXxf86dga.so and libXxf86vm.so

**Installed Directories:**

\$XORG\_PREFIX/share/doc/libFS,  
\$XORG\_PREFIX/share/doc/libSM,  
\$XORG\_PREFIX/share/doc/libXaw,  
\$XORG\_PREFIX/share/doc/libXi,  
\$XORG\_PREFIX/share/doc/libXrender,  
\$XORG\_PREFIX/share/doc/libXtst,  
\$XORG\_PREFIX/share/doc/xtrans and \$XORG\_PREFIX/share/X11/locale  
\$XORG\_PREFIX/share/doc/libICE,  
\$XORG\_PREFIX/share/doc/libX11,  
\$XORG\_PREFIX/share/doc/libXext,  
\$XORG\_PREFIX/share/doc/libXmu,  
\$XORG\_PREFIX/share/doc/libXt,  
\$XORG\_PREFIX/share/doc/libXvMC,

## Short Descriptions

**cxpm**

checks the format of an XPM file.

**sxpm**

shows an XPM file and/or converts XPM 1 or 2 files to XPM 3.

**libdmx.so**

is the X Window System DMX (Distributed Multihead X) extension library.

**libfontenc.so**

is the X11 font encoding library.

**libFS.so**

is the library interface to the X Font Server.

**libICE.so**

is the X Inter Client Exchange Library.

**libpciaccess.so**

is the generic PCI Access library for X.

**libSM.so**

is the X Session Management Library.

**libX11.so**

is the Xlib Library.

**libXaw6.so**

is the X Athena Widgets Library, version 6.

**libXaw7.so**

is the X Athena Widgets Library, version 7.

**libXaw.so**

are symbolic links to the current X Athena Widgets Library, version 7.

**libXcomposite.so**

is the X Composite Library.

**libXcursor.so**

is the X Cursor management library.

**libXdamage.so**

is the X Damage Library.

**libXext.so**

is the Misc X Extension Library.

**libXfixes.so**

provides augmented versions of core protocol requests.

**libXfont.so**

is the X font library.

**libXft.so**

is the X FreeType interface library.

**libXinerama.so**

is the Xinerama Library.

**libXi.so**

is the X Input Extension Library.

**libxkbfile.so**

is the Xkbfile Library.

<code>libXmu.so</code>	is the X interface library for miscellaneous utilities not part of the Xlib standard.
<code>libXmuu.so</code>	is the Mini Xm Library.
<code>libXpm.so</code>	is the X Pixmap Library.
<code>libXrandr.so</code>	is the X Resize, Rotate and Reflection extension library.
<code>libXrender.so</code>	is the X Render Library.
<code>libXRes.so</code>	is the X-Resource extension client library.
<code>libXss.so</code>	is the X11 Screen Saver extension client library.
<code>libXt.so</code>	is the X Toolkit Library.
<code>libXtst.so</code>	is the Xtst Library.
<code>libXvMC.so</code>	is the X-Video Motion Compensation Library.
<code>libXvMCW.so</code>	is the XvMC Wrapper including the Nonstandard VLD extension.
<code>libXv.so</code>	is the X Window System video extension library.
<code>libXxf86dga.so</code>	is the client library for the XFree86-DGA extension.
<code>libXxf86vm.so</code>	is the client library for the XFree86-VidMode X extension.

# xcb-util-0.3.9

## Introduction to xcb-util

The xcb-util package provides additional extensions to the XCB library, many that were previously found in Xlib, but are not part of core X protocol.

This package is known to build and work properly using an LFS-7.3 platform.

## Package Information

- Download (HTTP): <http://xcb.freedesktop.org/dist xcb-util-0.3.9.tar.bz2>
- 
- Download MD5 sum: 01dcc7a16d5020530552712710646ea2
- Download size: 284 KB
- Estimated disk space required: 2.5 MB
- Estimated build time: less than 0.1 SBU

## xcb-util Dependencies

### Required

libxcb-1.9

## Installation of xcb-util

Install xcb-util by running the following commands:

```
./configure $XORG_CONFIG &&
make
```

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

Now, as the root user:

```
make install
```

## Contents

**Installed Libraries:** libxcb-util.so

## Short Descriptions

**libxcb-util.so** Provides utility functions for other XCB utilities.

# xcb-util-image-0.3.9

## Introduction to xcb-util-image

The xcb-util-image package provides additional extensions to the XCB library.

This package is known to build and work properly using an LFS-7.3 platform.

## Package Information

- Download (HTTP): <http://xcb.freedesktop.org/dist/xcb-util-image-0.3.9.tar.bz2>
- 
- Download MD5 sum: fabb80b36490b00fc91289e2c7f66770
- Download size: 311 KB
- Estimated disk space required: 2.8 MB
- Estimated build time: less than 0.1 SBU

## xcb-util-image Dependencies

### Required

xcb-util-0.3.9

## Installation of xcb-util-image

Install xcb-util-image by running the following commands:

```
./configure $XORG_CONFIG &&
make
```

To test the results, issue: **LD\_LIBRARY\_PATH=\$XORG\_PREFIX/lib make check**.

Now, as the root user:

```
make install
```

## Contents

**Installed Libraries:** libxcb-image.so

## Short Descriptions

**libxcb-image.so** Is a port of Xlib's XImage and XShmImage functions.

# xcb-util-renderutil-0.3.8

## Introduction to xcb-util-renderutil

The xcb-util-renderutil package provides additional extensions to the XCB library.

This package is known to build and work properly using an LFS-7.3 platform.

## Package Information

- Download (HTTP): <http://xcb.freedesktop.org/dist/xcb-util-renderutil-0.3.8.tar.bz2>
- 
- Download MD5 sum: b346ff598ee093c141f836fbc0f8f721
- Download size: 258 KB
- Estimated disk space required: 2.0 MB
- Estimated build time: less than 0.1 SBU

## xcb-util-renderutil Dependencies

### Required

libxcb-1.9

## Installation of xcb-util-renderutil

Install xcb-util-renderutil by running the following commands:

```
./configure $XORG_CONFIG &&
make
```

This package does not come with a test suite.

Now, as the root user:

```
make install
```

## Contents

**Installed Libraries:** libxcb-render-util.so

## Short Descriptions

**libxcb-render-util.so** Provides convenience functions for the Render extension.

# MesaLib-9.1.3

## Introduction to MesaLib

Mesa is an OpenGL compatible 3D graphics library.

This package is known to build and work properly using an LFS-7.3 platform.

## Package Information

- Download (FTP): <ftp://ftp.freedesktop.org/pub/mesa/9.1.3/MesaLib-9.1.3.tar.bz2>
- Download MD5 sum: 952ccd03547ed72333b64e1746cf8ada
- Download size: 5.9 MB
- Estimated disk space required: 340 MB
- Estimated build time: 5.5 SBU

## Additional Downloads

- GLU Download (FTP): <ftp://ftp.freedesktop.org/pub/mesa/glu/glu-9.0.0.tar.bz2>
- GLU Download MD5 sum: be9249132ff49275461cf92039083030
- GLU Download size: 484 KB
- Estimated GLU disk space required: 13 MB
- Estimated GLU build time: 0.2 SBU

## Additional Patches

- Recommended patch: [http://www.linuxfromscratch.org/patches/blfs/svn/MesaLib-9.1.3-add\\_xdemos-1.patch](http://www.linuxfromscratch.org/patches/blfs/svn/MesaLib-9.1.3-add_xdemos-1.patch)  
(Needed if testing the Xorg installation per BLFS instructions).

## MesaLib Dependencies

### Required

expat-2.1.0, libdrm-2.4.45, libxml2-2.9.1, makedepend-1.0.4 and Xorg Libraries

### Recommended

LLVM-3.2



### Warning

The instructions below assume that LLVM is installed. You will need to modify the instructions if you choose not to install it. Please note that LLVM is *required* for Radeon 3D drivers.



### Note

The libxml2 Python module must have been built during the installation of libxml2 or else MesaLib build will fail.

## Installation of MesaLib



### Note

Unlike other packages, the MesaLib-9.1.3.tar.bz2 archive will extract to the Mesa-9.1.3 directory.

If you have downloaded the recommended patch, apply it by running the following command:

```
patch -Np1 -i ../MesaLib-9.1.3-add_xdemos-1.patch
```

Install MesaLib by running the following commands:

```
autoreconf -fi &&
./configure CFLAGS="-O2" CXXFLAGS="-O2" \
    --prefix=/usr \
    --sysconfdir=/etc \
    --enable-texture-float \
    --enable-gles1 \
    --enable-gles2 \
    --enable-openvg \
    --enable-osmesa \
    --enable-xa \
    --enable-gbm \
    --enable-gallium-egl \
    --enable-gallium-gbm \
    --enable-glx-tls \
    --with-llvm-shared-libs \
    --with-egl-platforms="drm,x11" \
    --with-gallium-drivers="nouveau,r300,r600,radeonsi,svga,swrast" &&
make
```

If you have applied the recommended patch, build the demo programs by running the following command:

```
make -C xdemos DEMOS_PREFIX=/usr
```

This package does not come with a test suite.

Now, as the `root` user:

```
make install
```

If you have built the demo programs, install them by running the following command as the `root` user:

```
make -C xdemos DEMOS_PREFIX=/usr install
```

If desired, install the optional documentation by running the following commands as the `root` user:

```
install -v -dm755 /usr/share/doc/MesaLib-9.1.3 &&
cp -rfv docs/* /usr/share/doc/MesaLib-9.1.3
```

## Installation of GLU

Install GLU by running the following commands:

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

This package does not come with a test suite.

Now, as the root user:

```
make install
```

## Command Explanations

**CFLAGS="-O2" CXXFLAGS="-O2":** By default, Autoconf sets CFLAGS and CXXFLAGS to "-g -O2". That results in binaries and libraries being built with debugging symbols which make them bigger. Override the default flags to omit -g compiler flag so the final libraries are smaller.

**--enable-texture-float:** This switch enables floating-point textures and render buffers. Please consult docs/patents.txt to see if there are any legal issues if you use this feature.

**--enable-gles1:** This switch enables support for OpenGL ES 1.x API.

**--enable-gles2:** This switch enables support for OpenGL ES 2.x API.

**--enable-openvg:** This switch enables support for OpenVG API.

**--enable-osmesa:** This switch enables building of the libOSMesa library.

**--enable-xa:** This switch enables building of the XA X Acceleration API (Required for VMware 3D Driver).

**--enable-gbm:** This switch enables building of the Mesa Graphics Buffer Manager library.

**--enable-gallium-egl:** This switch enables optional EGL state tracker for Gallium.

**--enable-gallium-gbm:** This switch enables optional GBM state tracker for Gallium.

**--enable-glx-tls:** This switch enables TLS (Thread Local Storage) support in GLX.

**--with-llvm-shared-libs:** This switch is used so Gallium drivers will link against shared LLVM libraries instead of the static ones. Remove if you did not install LLVM-3.2.

**--with-egl-platforms=" . . . ":** This parameter controls for which platforms EGL should be built. Available platforms are drm, x11 and wayland.

**--with-gallium-drivers=" . . . ":** This parameter controls which Gallium drivers should be built. Available drivers are: i915, nouveau, r300, r600, radeonsi, svga and swrast. You will need to remove r300, r600 and radeonsi from the list if you did not install LLVM-3.2.

**--disable-static:** This switch prevents installation of static versions of the libraries.

**--enable-r600-llvm-compiler:** Use this switch to enable experimental LLVM backend for graphics shaders which claims to speed up the driver.

## Contents

<b>Optionally Installed Programs:</b>	glxgears and glxinfo
<b>Installed Libraries:</b>	libdricore9.1.3.so, libEGL.so, libgbm.so, libglapi.so, libGLESv1_CM.so, libGLESv2.so, libGL.so, libGLU.so, libllvmradeon9.1.3.so, libOpenVG.so, libOSMesa.so and libxatracker.so
<b>Installed Directories:</b>	/usr/include/EGL, /usr/include/GL, /usr/include/GLES, /usr/include/GLES2, /usr/include/GLES3, /usr/include/KHR, /usr/include/VG, /usr/lib/dri, /usr/lib/egl, /usr/lib/gallium-pipe and /usr/lib/gbm

## Short Descriptions

<b>glxgears</b>	is a GL demo useful for troubleshooting graphics problems.
<b>glxinfo</b>	is a diagnostic program that displays information about the graphics hardware and installed GL libraries.
<b>libdricore9.1.3.so</b>	contains common DRI routines used by Mesa DRI drivers.
<b>libEGL.so</b>	provides a native platform graphics interface as defined by the EGL-1.4 specification.
<b>libgbm.so</b>	is the Mesa Graphics Buffer Manager library.
<b>libGLESv1_CM.so</b>	is the Mesa OpenGL ES 1.1 library.
<b>libGLES2.so</b>	is the Mesa OpenGL ES 2.0 library.
<b>libGL.so</b>	is the main Mesa OpenGL library.
<b>libGLU.so</b>	is the Mesa OpenGL Utility library.
<b>libOpenVG.so</b>	is the Mesa OpenVG 1.0 library.
<b>libOSMesa.so</b>	is the Mesa Off-screen Rendering library.
<b>libxatracker.so</b>	is the Xorg Gallium3D acceleration library.

# xbitmaps-1.1.1

## Introduction to xbitmaps

The xbitmaps package contains bitmap images used by multiple applications built in Xorg chapter.

This package is known to build and work properly using an LFS-7.3 platform.

### Package Information

- Download (HTTP): <http://xorg.freedesktop.org/releases/individual/data/xbitmaps-1.1.1.tar.bz2>
- Download (FTP): <ftp://ftp.x.org/pub/individual/data/xbitmaps-1.1.1.tar.bz2>
- Download MD5 sum: 7444bbbd999b53bec6a60608a5301f4c
- Download size: 116 KB
- Estimated disk space required: 855 KB
- Estimated build time: less than 0.1 SBU

## Installation of xbitmaps

Install xbitmaps by running the following commands:

```
./configure $XORG_CONFIG
```

This package does not come with a test suite.

Now, as the root user:

```
make install
```

## Contents

**Installed Directory:** \$XORG\_PREFIX/include/X11/bitmaps

# Xorg Applications

## Introduction to Xorg Applications

The Xorg applications provide the expected applications available in previous X Window implementations.

This package is known to build and work properly using an LFS-7.3 platform.

### Package Information

- Download (HTTP): <http://xorg.freedesktop.org/releases/individual/app/>
- Download (FTP): <ftp://ftp.x.org/pub/individual/app/>
- Download size: 4.8 MB
- Estimated disk space required: 39.2 MB
- Estimated build time: 1.5 SBU

## Xorg Applications Dependencies

### Required

libpng-1.6.2, MesaLib-9.1.3 (required for OpenGL support), xbitmaps-1.1.1, xcb-util-0.3.9, and Xorg Libraries

### Optional

Linux-PAM-1.1.6

## Downloading Xorg Applications

First, create a list of files to be downloaded. This file will also be used to verify the integrity of the downloads when complete:

```
cat > app-7.7.md5 << "EOF"
96a648a332160a7482885800f7a506fa bdfktopcf-1.0.4.tar.bz2
08e3f6b523da8b0af179f22f339508b2 iceauth-1.0.5.tar.bz2
c4a3664e08e5a47c120ff9263ee2f20c luit-1.1.1.tar.bz2
18c429148c96c2079edda922a2b67632 mkfontdir-1.0.7.tar.bz2
414fc053418fb1418e3a39f4a37e0f7 mkfontscale-1.1.0.tar.bz2
f548e389ff68424947b87785df6a321b sessreg-1.0.8.tar.bz2
1001771344608e120e943a396317c33a setxkbmap-1.3.0.tar.bz2
edce41bd7562dcdfb813e05dbeede8ac smproxy-1.0.5.tar.bz2
5c3c7431a38775caaea6051312a49bc9 x11perf-1.5.4.tar.bz2
cbc8f2156a53b609800bec4c6b6c0e xauth-1.0.7.tar.bz2
c9891d6a3f3129d56cede72daa0ba26c xbacklight-1.1.2.tar.bz2
5812be48cbbec1068e7b718eec801766 xcmsdb-1.0.4.tar.bz2
09f56978a62854534deacc8aa8ff3031 xcursorgen-1.0.5.tar.bz2
1ef08f4c8d0e669c2edd49e4a1bf650d xdpyinfo-1.3.0.tar.bz2
3d3cad4d754e10e325438193433d59fd xdriinfo-1.0.4.tar.bz2
5b0a0b6f589441d546da21739fa75634 xev-1.2.1.tar.bz2
c06067f572bc4a5298f324f27340da95 xgamma-1.0.5.tar.bz2
a0fc02cb6ddd9f378944cc6f4f83cd7c xhost-1.0.5.tar.bz2
d2459d35b4e0b41ded26a1d1159b7ac6 xinput-1.6.0.tar.bz2
a0fc1ac3fc4fe479ade09674347c5aa0 xkbcoll-1.2.4.tar.bz2
37ed71525c63a9acd42e7cde211dcc5b xkbevd-1.1.3.tar.bz2
502b14843f610af977dff6cbf2102d5 xkbutils-1.0.4.tar.bz2
e7f0d57b6ba49c384e9cf8c9ff3243c1 xkill-1.0.3.tar.bz2
9d0e16d116d1c89e6b668c1b2672eb57 xlsatoms-1.1.1.tar.bz2
760099f0af112401735801e3b9aa8595 xlsclients-1.1.2.tar.bz2
d9b65f6881afe0d6d9863b30e1081bde xmodmap-1.0.7.tar.bz2
6101f04731ffd40803df80eca274ec4b xpr-1.0.4.tar.bz2
d5529dc8d811efabd136ca2d8e857deb xprop-1.2.1.tar.bz2
4d68317238bb14a33c0e419233d57d87 xrandr-1.4.0.tar.bz2
ed2e48cf33584455d74615ad4bbe4246 xrdb-1.0.9.tar.bz2
2f63f88ad0dcecd33c8cf000f38e9250 xrefresh-1.0.4.tar.bz2
d44e0057d6722b25d5a314e82e0b7e7c xset-1.2.2.tar.bz2
7211b31ec70631829ebae9460999aa0b xsetroot-1.1.1.tar.bz2
1fdbd65e81323a8c0a4b5e24db0058405 xvinfo-1.1.2.tar.bz2
2113126f9ac9c02bb8547c112c5d037e xwd-1.0.5.tar.bz2
9e8b58c8aa6172e87ab4f9cf3612fedd xwininfo-1.1.2.tar.bz2
3025b152b4f13fdffd0c46d0be587be6 xwud-1.0.4.tar.bz2
EOF
```

To download the needed files using wget, use the following commands:

```
mkdir app &&
cd app &&
grep -v '^#' ../app-7.7.md5 | awk '{print $2}' | wget -i- -c \
-B http://xorg.freedesktop.org/releases/individual/app/ &&
md5sum -c ../app-7.7.md5
```

## Installation of Xorg Applications



### Note

When installing multiple packages in a script, the installation needs to be done as the root user. There are three general options that can be used to do this:

1. Run the entire script as the root user (not recommended).
2. Use the **sudo** command from the Sudo-1.8.6p3 package.
3. Use **su -c "command arguments"** (quotes required) which will ask for the root password for every iteration of the loop.

One way to handle this situation is to create a short **bash** function that automatically selects the appropriate method. Once the command is set in the environment, it does not need to be set again.

```
as_root()
{
    if [ $EUID = 0 ]; then $*
    elif [ -x /usr/bin/sudo ]; then sudo $*
    else
        su -c \"\$*\"
    fi
}

export -f as_root
```

First, start a subshell that will exit on error:

```
bash -e
```

Install all of the applications by running the following commands:

```
for package in $(grep -v '^#' ../app-7.7.md5 | awk '{print $2}')
do
    packagedir=${package%.tar.bz2}
    tar -xf $package
    pushd $packagedir
    case $packagedir in
        xmodmap-[0-9]* )
            sed -e 's@#include <X11/Xos.h>@#ifdef HAVE_CONFIG_H\n# include "config.h"\n#endif@' \
                  -i {exec,pf,xmodmap}.c
        ;;
        luit-[0-9]* )
            sed -e 's@#ifdef HAVE_CONFIG_H@#ifdef __XOPEN_SOURCE\n#define __XOPEN_SOURCE@' \
                  -i sys.c
        ;;
    esac
    ./configure $XORG_CONFIG
    make
    as_root make install
    popd
    rm -r $packagedir
done
```

Finally, exit the shell that was started earlier:

```
exit
```

## Contents

<b>Installed Programs:</b>	bdftopcf, iceauth, luit, mkfontdir,mkfontscale, sessreg, setxkbmap, smproxy, x11perf, x11perfcomp, xauth, xcmsdb, xcursorgen, xdpr, xdpinfo, xdriinfo, xev, xgamma, xhost, xkbbell, xkbcomp, xkevd, xkbvleds, xkbwatch, xkill, xlsatoms, xlsclients, xmodmap, xpr, xprop, xrandr, xrdb, xrefresh, xset, xsetroot, xvinfo, xwd, xwininfo, and xwud
<b>Installed Libraries:</b>	None
<b>Installed Directories:</b>	None

## Short Descriptions

<b>appres</b>	lists the X application resource database.
<b>bdftopcf</b>	converts an X font from Bitmap Distribution Format to Portable Compiled Format.
<b>iceauth</b>	is the ICE authority file utility.
<b>luit</b>	provides locale and ISO 2022 support for Unicode terminals.
<b>mkfontdir</b>	creates an index of X font files in a directory.
<b>mkfontscale</b>	creates an index of scalable font files for X.
<b>sessreg</b>	manages utmp/wtmp entries for non-init clients.

<b>setxkbmap</b>	sets the keyboard using the X Keyboard Extension.
<b>smp proxy</b>	is the Session Manager Proxy.
<b>x11perf</b>	is an X11 server performance test program.
<b>x11perfcomp</b>	is an X11 server performance comparison program.
<b>xauth</b>	is the X authority file utility.
<b>xcmsdb</b>	is the Device Color Characterization utility for the X Color Management System.
<b>xcursorgen</b>	creates an X cursor file from a collection of PNG images.
<b>xdpr</b>	dumps an X window directly to a printer.
<b>xdpyinfo</b>	is a display information utility for X.
<b>xdriinfo</b>	queries configuration information of DRI drivers.
<b>xev</b>	prints contents of X events.
<b>xgamma</b>	alters a monitor's gamma correction through the X server.
<b>xhost</b>	is a server access control program for X.
<b>xkbell</b>	is an XKB utility program that raises a bell event.
<b>xkbcomp</b>	compiles an XKB keyboard description.
<b>xkbevd</b>	is the XKB event daemon.
<b>xkbvleds</b>	shows the XKB status of keyboard LEDs.
<b>xkbwatch</b>	monitors modifier keys and LEDs.
<b>xkill</b>	kills a client by its X resource.
<b>xlsatoms</b>	lists interned atoms defined on the server.
<b>xlsclients</b>	lists client applications running on a display.
<b>xmodmap</b>	is a utility for modifying keymaps and pointer button mappings in X.
<b>xpr</b>	prints an X window dump.
<b>xprop</b>	is a property displayer for X.
<b>xrandr</b>	is a primitive command line interface to RandR extension.
<b>xrdb</b>	is the X server resource database utility.
<b>xrefresh</b>	refreshes all or part of an X screen.
<b>xset</b>	is the user preference utility for X.
<b>xsetroot</b>	is the root window parameter setting utility for X.
<b>xvinfo</b>	prints out X-Video extension adaptor information.
<b>xwd</b>	dumps an image of an X window.
<b>xwininfo</b>	is a window information utility for X.
<b>xwud</b>	is an image displayer for X.

# xcursor-themes-1.0.3

## Introduction to xcursor-themes

The xcursor-themes package contains the redglass and whiteglass animated cursor themes.

This package is known to build and work properly using an LFS-7.3 platform.

## Package Information

- Download (HTTP): <http://xorg.freedesktop.org/releases/individual/data/xcursor-themes-1.0.3.tar.bz2>
- Download (FTP): <ftp://ftp.x.org/pub/individual/data/xcursor-themes-1.0.3.tar.bz2>
- Download MD5 sum: ba21aad0b353f1881f5069e423a44587
- Download size: 2.2 MB
- Estimated disk space required: 12.3 MB
- Estimated build time: less than 0.1 SBU

## xcursor-themes Dependencies

### Required

Xorg Applications

## Installation of xcursor-themes

Install xcursor-themes by running the following commands:

```
./configure $XORG_CONFIG &&
make
```

This package does not come with a test suite.

Now, as the root user:

```
make install
```

## Contents

**Installed Directories:** \$XORG\_PREFIX/share/icons/handhelds, \$XORG\_PREFIX/share/icons/redglass and \$XORG\_PREFIX/share/icons/whiteglass

# Xorg Fonts

## Introduction to Xorg Fonts

The Xorg font packages provide needed fonts to the Xorg applications.

This package is known to build and work properly using an LFS-7.3 platform.

### Package Information

- Download (HTTP): <http://xorg.freedesktop.org/releases/individual/font/>
- Download (FTP): <ftp://ftp.x.org/pub/individual/font/>
- Download size: 15.0 MB
- Estimated disk space required: 278 MB
- Estimated build time: 2.3 SBU

### Required

Xorg Applications and xcursor-themes-1.0.3

## Downloading Xorg Fonts

First, create a list of files to be downloaded. This file will also be used to verify the integrity of the downloads when complete:

```
cat > font-7.7.md5 << "EOF"
ddfc8a89d597651408369d940d03d06b  font-util-1.3.0.tar.bz2
0f2d6546d514c5cc4ecf78a60657a5c1  encodings-1.0.4.tar.bz2
1347c3031b74c9e91dc4dfa53b12f143  font-adobe-100dpi-1.0.3.tar.bz2
6c9f26c92393c0756f3e8d614713495b  font-adobe-75dpi-1.0.3.tar.bz2
66fb6de561648a6dce2755621d6aea17  font-adobe-utopia-100dpi-1.0.4.tar.bz2
e99276db3e7cef6dcc8a57bc68aeba7  font-adobe-utopia-75dpi-1.0.4.tar.bz2
fcf24554c348df3c689b91596d7f9971  font-adobe-utopia-type1-1.0.4.tar.bz2
6d25f64796fef34b53b439c2e9efa562  font-alias-1.0.3.tar.bz2
cc0726e4a277d6ed93b8e09c1f195470  font-arabic-misc-1.0.3.tar.bz2
9f11ade089d689b9d59e0f47d26f39cd  font-bh-100dpi-1.0.3.tar.bz2
565494fc3b6ac08010201d79c677a7a7  font-bh-75dpi-1.0.3.tar.bz2
c8b73a53dcefe3e8d3907d3500e484a9  font-bh-lucidatypewriter-100dpi-1.0.3.tar.bz2
f6d65758ac9eb576ae49ab24c5e9019a  font-bh-lucidatypewriter-75dpi-1.0.3.tar.bz2
e8ca58ea0d3726b94fe9f2c17344be60  font-bh-ttf-1.0.3.tar.bz2
53ed9a42388b7ebb689bdfc374f96a22  font-bh-type1-1.0.3.tar.bz2
6b223a54b15ecbd5a1bc52312ad790d8  font-bitstream-100dpi-1.0.3.tar.bz2
d7c0588c26fac055c0dd683fdd65ac34  font-bitstream-75dpi-1.0.3.tar.bz2
5e0c9895d69d2632e2170114f8283c11  font-bitstream-type1-1.0.3.tar.bz2
e452b94b59b9cf49110bb49b6267fba  font-cronyx-cyrillic-1.0.3.tar.bz2
3e0069d4f178a399cfffe56daa95c2b63  font-cursor-misc-1.0.3.tar.bz2
0571bf77f8fab465a5454569d9989506  font-daewoo-misc-1.0.3.tar.bz2
6e7c5108f1b16d7a1c7b2c9760edd6e5  font-dec-misc-1.0.3.tar.bz2
bfb2593d2102585f45daa960f43cb3c4  font-ibm-type1-1.0.3.tar.bz2
a2401caccbdcf5698e001784dbd43f1a  font-isas-misc-1.0.3.tar.bz2
cb7b57d7800fd9e28ec35d85761ed278  font-jis-misc-1.0.3.tar.bz2
143c228286fe9c920ab60e47c1b60b67  font-micro-misc-1.0.3.tar.bz2
96109d0890ad2b6b0e948525ebb0aba8  font-misc-cyrillic-1.0.3.tar.bz2
6306c808f7d7e7d660dfb3859f9091d2  font-misc-ethiopic-1.0.3.tar.bz2
e3e7b0fda650adc7eb6964ff3c486b1c  font-misc-meltho-1.0.3.tar.bz2
c88eb44b3b903d79fb44b860a213e623  font-misc-misc-1.1.2.tar.bz2
56b0296e8862fc1df5cdbb4efe604e86  font-mutt-misc-1.0.3.tar.bz2
e805feb7c4f20e6bfb1118d19d972219  font-schumacher-misc-1.1.2.tar.bz2
6f3fdcf2454bf08128a651914b7948ca  font-screen-cyrillic-1.0.4.tar.bz2
beef61a9b0762aba8af7b736bb961f86  font-sony-misc-1.0.3.tar.bz2
948f2e07810b4f31195185921470f68d  font-sun-misc-1.0.3.tar.bz2
829a3159389b7f96f629e5388bfee67b  font-winitzki-cyrillic-1.0.3.tar.bz2
3eeb3fb44690b477d510bbd8f86cf5aa  font-xfree86-type1-1.0.4.tar.bz2
EOF
```

To download the needed files using wget, use the following commands:

```
mkdir font &&
cd font &&
grep -v '^#' ../font-7.7.md5 | awk '{print $2}' | wget -i- -c \
-B http://xorg.freedesktop.org/releases/individual/font/ &&
md5sum -c ../font-7.7.md5
```

## Installation of Xorg Fonts



### Note

When installing multiple packages in a script, the installation needs to be done as the root user. There are three general options that can be used to do this:

1. Run the entire script as the root user (not recommended).
2. Use the **sudo** command from the Sudo-1.8.6p3 package.
3. Use **su -c "command arguments"** (quotes required) which will ask for the root password for every iteration of the loop.

One way to handle this situation is to create a short **bash** function that automatically selects the appropriate method. Once the command is set in the environment, it does not need to be set again.

```
as_root()
{
    if [ $EUID = 0 ]; then $*
    elif [ -x /usr/bin/sudo ]; then sudo $*
    else su -c \"\$*\"
    fi
}

export -f as_root
```

First, start a subshell that will exit on error:

```
bash -e
```

Install all of the applications by running the following commands:

```
for package in $(grep -v '^#' ../font-7.7.md5 | awk '{print $2}')
do
    packagedir=${package%.tar.bz2}
    tar -xf $package
    pushd $packagedir
    ./configure $XORG_CONFIG
    make
    as_root make install
    popd
    rm -r $packagedir
done
```

Finally, exit the shell that was started earlier:

```
exit
```

When all of the fonts have been installed, the system must be configured so that Fontconfig can find the TrueType fonts since they are outside of the default search path of `/usr/share/fonts`. Make symlinks to the Xorg TrueType font directories by running the following commands as the `root` user:

```
install -v -d -m755 /usr/share/fonts &&
ln -svfn $XORG_PREFIX/share/fonts/X11/OTF /usr/share/fonts/X11-OTF &&
ln -svfn $XORG_PREFIX/share/fonts/X11/TTF /usr/share/fonts/X11-TTF
```

## Contents

<b>Installed Programs:</b>	bdftruncate and ucs2any
<b>Installed Libraries:</b>	None
<b>Installed Directories:</b>	<code>\$XORG_PREFIX/share/fonts</code>

## Short Descriptions

<b>bdftruncate</b>	generates a truncated BDF font from an ISO 10646-1 encoded BDF font.
<b>ucs2any</b>	generates BDF fonts in any encoding from an ISO 10646-1 encoded BDF font.

# XKeyboardConfig-2.8

## Introduction to XKeyboardConfig

The XKeyboardConfig package contains the keyboard configuration database for the X Window System.

This package is known to build and work properly using an LFS-7.3 platform.

### Package Information

- Download (HTTP): <http://xorg.freedesktop.org/releases/individual/data/xkeyboard-config/xkeyboard-config-2.8.tar.bz2>
- Download (FTP): <ftp://ftp.x.org/pub/individual/data/xkeyboard-config/xkeyboard-config-2.8.tar.bz2>
- Download MD5 sum: e66d567d85a954d589c5723fb0e1f3dd
- Download size: 844 KB
- Estimated disk space required: 18 MB
- Estimated build time: less than 0.1 SBU

## XKeyboardConfig Dependencies

### Required

Intltool-0.50.2 and Xorg Applications

## Installation of XKeyboardConfig

Install XKeyboardConfig by running the following commands:

```
./configure $XORG_CONFIG --with-xkb-rules-symlink=xorg &&
make
```

This package does not come with a test suite.

Now, as the root user:

```
make install
```

## Command Explanations

`--with-xkb-rules-symlink=xorg`: By default, the XKB rules installed are named "base". This creates symlinks named "xorg" to those rules, which is the default name used by Xorg.

## Contents

**Installed Directory:** \$XORG\_PREFIX/share/X11/xkb

# Xorg-Server-1.14.1

## Introduction to Xorg Server

The Xorg Server is the core of the X Window system.

This package is known to build and work properly using an LFS-7.3 platform.

### Package Information

- Download (HTTP): <http://xorg.freedesktop.org/releases/individual/xserver/xorg-server-1.14.1.tar.bz2>
- Download (FTP): <ftp://ftp.x.org/pub/individual/xserver/xorg-server-1.14.1.tar.bz2>
- Download MD5 sum: 6a0f1a1639ada4b9da7e9582bc79252a
- Download size: 5.3 MB
- Estimated disk space required: 550 MB
- Estimated build time: 2.0 SBU

### Additional Downloads

- Optional patch: [http://www.linuxfromscratch.org/patches/blfs/svn/xorg-server-1.14.1-add\\_prime\\_support-1.patch](http://www.linuxfromscratch.org/patches/blfs/svn/xorg-server-1.14.1-add_prime_support-1.patch)

## Xorg Server Dependencies

### Required

MesaLib-9.1.3, OpenSSL-1.0.1e, Pixman-0.30.0, Xorg Fonts and xkeyboard-config-2.8

### Optional

Doxygen-1.8.4 (to build API documentation), fop-1.1, (to build documentation), ghostscript-9.06 (to build documentation) and xmlto-0.0.25, (to build documentation)

## Installation of Xorg Server

If you have downloaded the optional patch, apply it by running the following command:

```
patch -Np1 -i ../xorg-server-1.14.1-add_prime_support-1.patch
```

Install the server by running the following commands:

```
./configure $XORG_CONFIG \
    --with-xkb-output=/var/lib/xkb \
    --enable-install-setuid &&
make
```

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

Now as the root user:

```
make install &&
mkdir -pv /etc/X11/xorg.conf.d &&
cat >> /etc/sysconfig/createtfiles << "EOF"
/tmp/.ICE-unix dir 1777 root root
/tmp/.X11-unix dir 1777 root root
EOF
```

## Command Explanations

**--enable-install-setuid:** The Xorg binary must run as the root user. This switch ensures that the binary is installed setuid when **make** is run by an unprivileged user.

**cat >> /etc/sysconfig/createtfiles...:** This command creates the `/tmp/.ICE-unix` and `/tmp/.X11-unix` directories at startup, and ensures that the permissions and ownership are correct as required by the server.

## Contents

<b>Installed Programs:</b>	cvt, dmxaddininput, dmxaddscreen, dmxinfo, dmxreconfig, dmxresize, dmxrminput, dmxrmscreen, dmxtodmx, dmxwininfo, gtf, vdltodmx, X, Xdmx, xdmxconfig, Xnest, Xorg and Xvfb
<b>Installed Libraries:</b>	None
<b>Installed Directories:</b>	<code>\$XORG_PREFIX/include/xorg</code> , <code>\$XORG_PREFIX/lib/xorg</code> , <code>\$XORG_PREFIX/share/X11/xorg.conf.d</code> and <code>/var/lib/xkb</code>

## Short Descriptions

<b>cvt</b>	calculates VESA CVT mode lines.
<b>dmx*</b>	are various tools used for manipulating the dmx server.
<b>gtf</b>	calculates VESA GTF mode lines.
<b>vdltodmx</b>	is a tool used to convert VDL config files to DMX config files.
<b>X</b>	is a symbolic link to Xorg.
<b>Xnest</b>	is a nested X server.
<b>Xorg</b>	is the X11R7 X Server.
<b>Xvfb</b>	is the virtual framebuffer X server for X Version 11.
<b>xdmxconfig</b>	is a graphical configuration utility for the dmx server.

# Xorg Drivers

## Introduction to Xorg Drivers

The Xorg Drivers page contains the instructions for building Xorg drivers that are necessary in order for Xorg Server to take the advantage of the hardware that it is running on. At least one input and one video driver is required for Xorg Server to start.



### Note

If you are unsure which video hardware you have, you can use **lspci** from pciutils-3.2.0 to find out which video hardware you have and then look at the descriptions of the packages in order to find out which driver you need.

## Xorg Modules

- Glamor EGL-0.5.0

## Xorg Input Drivers

- Xorg Evdev Driver-2.8.0
- Xorg Synaptics Driver-1.7.1
- Xorg VMMouse Driver-13.0.0
- Xorg Wacom Driver-0.20.0

## Xorg Video Drivers

- Xorg ATI Driver-7.1.0
- Xorg Cirrus Driver-1.5.2
- Xorg Fbdev Driver-0.4.3
- Xorg Intel Driver-2.21.7
- Xorg Mach64 Driver-6.9.4
- Xorg MGA Driver-1.6.2
- Xorg Nouveau Driver-1.0.7
- Xorg OpenChrome Driver-0.3.2
- Xorg R128 Driver-6.9.1
- Xorg Savage Driver-2.3.6
- Xorg SiS Driver-0.10.7
- Xorg 3Dfx Driver-1.4.5
- Xorg VESA Driver-2.3.2
- Xorg VMware Driver-13.0.1

## Glamor EGL-0.5.0

### Introduction to Glamor EGL

The Glamor EGL package contains a GL-based rendering acceleration library for X server.

This package is known to build and work properly using an LFS-7.2 platform.

## Package Information

- Download (HTTP): <http://anduin.linuxfromscratch.org/sources/other/glamor-egl-0.5.0.tar.xz>
- Download (FTP): <ftp://anduin.linuxfromscratch.org/other/glamor-egl-0.5.0.tar.xz>
- Download MD5 sum: 8b8c3ca4d502313df8e62c01c000e10d
- Download size: 100 KB
- Estimated disk space required: 13 MB
- Estimated build time: 0.1 SBU

## Additional Downloads

- Required patch: <http://www.linuxfromscratch.org/patches/blfs/svn/glamor-egl-0.5.0-fixes-1.patch>

## Glamor EGL Dependencies

### Required

Xorg-Server-1.14.1

## Installation of Glamor EGL

Install Glamor EGL by running the following commands:

```
patch -Np1 -i ../glamor-egl-0.5.0-fixes-1.patch &&
autoreconf -fi &&
./configure $XORG_CONFIG --enable-glx-tls &&
make
```

This package does not come with a test suite.

Now, as the root user:

```
make install
```

## Command Explanations

`--enable-glx-tls`: This switch enables TLS support in GLX.

## Contents

<b>Installed Library:</b>	libglamor.so
<b>Installed Xorg Module:</b>	libglamoregl.so

## Short Descriptions

libglamoregl.so	contains functions to create and initialize OpenGL/EGL context.
libglamor.so	contains the Glamor rendering functions.

## Xorg Evdev Driver-2.8.0

### Introduction to Xorg Evdev Driver

The Xorg Evdev Driver package contains Generic Linux input driver for the Xorg X server. It handles keyboard, mouse, touchpads and wacom devices, though for touchpad and wacom advanced handling, additional drivers are required.

This package is known to build and work properly using an LFS-7.3 platform.

## Package Information

- Download (HTTP): <http://xorg.freedesktop.org/releases/individual/driver/xf86-input-evdev-2.8.0.tar.bz2>
- Download (FTP): <ftp://ftp.x.org/pub/individual/driver/xf86-input-evdev-2.8.0.tar.bz2>
- Download MD5 sum: e9bef0779d364cb588aa93a0ee6736c8
- Download size: 360 KB
- Estimated disk space required: 4.0 MB
- Estimated build time: less than 0.1 SBU

## Xorg Evdev Driver Dependencies

### Required

Xorg-Server-1.14.1

### Recommended

mtdev-1.1.3

## Kernel Configuration

Enable the following options in the kernel configuration and recompile the kernel if necessary:

```
Device Drivers    --->
  Input device support  --->
    Event interface: Y or M
```

## Installation of Xorg Evdev Driver

Install Xorg Evdev Driver by running the following commands:

```
./configure $XORG_CONFIG &&
make
```

This package does not come with a test suite.

Now, as the root user:

```
make install
```

## Contents

**Installed Xorg Driver:** evdev\_drv.so

## Short Descriptions

evdev\_drv.so is an Xorg input driver for Linux generic event devices.

## Xorg Synaptics Driver-1.7.1

### Introduction to Xorg Synaptics Driver

The Xorg Synaptics Driver package contains the X.Org Input Driver, support programs and SDK for Synaptics touchpads. Even though the evdev driver can handle touchpads very well, this driver is required if you want to use advanced features like multi tapping, scrolling with touchpad, turning the touchpad off while typing, etc.

This package is known to build and work properly using an LFS-7.2 platform.

### Package Information

- Download (HTTP): <http://xorg.freedesktop.org/releases/individual/driver/xf86-input-synaptics-1.7.1.tar.bz2>
- Download (FTP): <ftp://ftp.x.org/pub/individual/driver/xf86-input-synaptics-1.7.1.tar.bz2>
- Download MD5 sum: 6505de717972b6a24b8eb13e69eb996c
- Download size: 432 KB
- Estimated disk space required: 5.6 MB
- Estimated build time: less than 0.1 SBU

### Xorg Synaptics Driver Dependencies

#### Required

mtdev-1.1.3 and Xorg-Server-1.14.1

### Installation of Xorg Synaptics Driver

Install Xorg Synaptics Driver by running the following commands:

```
./configure $XORG_CONFIG &&
make
```

This package does not come with a test suite.

Now, as the `root` user:

```
make install
```

### Contents

- |                               |                         |
|-------------------------------|-------------------------|
| <b>Installed Programs:</b>    | synclient and syndaemon |
| <b>Installed Xorg Driver:</b> | synaptics_drv.so        |

### Short Descriptions

- |                         |   |
|-------------------------|---|
| <b>synclient</b>        | is a command line utility used to query and modify Synaptics driver options.                            |
| <b>syndaemon</b>        | is a program that monitors keyboard activity and disables the touchpad when the keyboard is being used. |
| <b>synaptics_drv.so</b> | is an Xorg input driver for touchpads.  |

## Xorg VMMouse Driver-13.0.0

### Introduction to Xorg VMMouse Driver

The Xorg VMMouse Driver package contains the VMMouse input driver for the Xorg X server. The VMMouse driver enables support for the special VMMouse protocol that is provided by VMware virtual machines to give absolute pointer positioning.

This package is known to build and work properly using an LFS-7.2 platform.

### Package Information

- Download (HTTP): <http://xorg.freedesktop.org/releases/individual/driver/xf86-input-vmmouse-13.0.0.tar.bz2>

- Download (FTP): <ftp://ftp.x.org/pub/individual/driver/xf86-input-vmmouse-13.0.0.tar.bz2>
- Download MD5 sum: 34f9f64ee6a1a51fc8266a9af24e1e07
- Download size: 308 KB
- Estimated disk space required: 2.9 MB
- Estimated build time: less than 0.1 SBU

## Xorg VMMouse Driver Dependencies

### Required

Xorg-Server-1.14.1

## Installation of Xorg VMMouse Driver

Install Xorg VMMouse Driver by running the following commands:

```
./configure $XORG_CONFIG \
    --with-udev-rules-dir=/lib/udev/rules.d \
    --without-hal-callouts-dir \
    --without-hal-fdi-dir &&
make
```

This package does not come with a test suite.

Now, as the root user:

```
make install
```

## Command Explanations

`--with-udev-rules-dir=/lib/udev/rules.d`: This switch specifies where udev rules should be installed.

`--without-hal-*-dir`: These switches disable installation of the HAL components which are not needed on Linux.

## Contents

**Installed Program:** vmmouse\_detect

**Installed Xorg Drivers:** vmmouse\_drv.so

## Short Descriptions

**vmmouse\_detect** is a tool for detecting if running in a VMware environment where vmmouse is used.

**vmmouse\_drv.so** is an Xorg input driver for VMware Mouse.

## Xorg Wacom Driver-0.20.0

### Introduction to Xorg Wacom Driver

The Xorg Wacom Driver package contains the X.Org X11 driver and SDK for Wacom and Wacom-like tablets. It is not required to use a Wacom tablet, the xf86-input-evdev driver can handle these devices without problems.

This package is known to build using an LFS 7.2 platform but has not been tested.

## Package Information

- Download (HTTP): <http://downloads.sourceforge.net/linuxwacom/xf86-input-wacom-0.20.0.tar.bz2>
- 
- Download MD5 sum: a726649cb05c98cb1b18a3b7a4f079ed
- Download size: 528 KB
- Estimated disk space required: 7.8 MB
- Estimated build time: less than 0.1 SBU

## Xorg Wacom Drivers Dependencies

### Required

Xorg-Server-1.14.1

### Optional

Doxygen-1.8.4

## Kernel Configuration

To use a Wacom tablet, enable the following options in your kernel configuration and recompile:

```
Device Drivers    --->
  Input device support    --->
    [*] Tablets    --->
      Wacom Intuos/Graphire tablet support (USB): Y or M
```

## Installation of Xorg Wacom Driver

Install Xorg Wacom Driver by running the following commands:

```
./configure $XORG_CONFIG &&
make
```

This package does not come with a test suite.

Now, as the root user:

```
make install
```

## Contents

<b>Installed Programs:</b>	isdv4-serial-debugger and xsetwacom
<b>Installed Xorg Driver:</b>	wacom_drv.so

## Short Descriptions

**xsetwacom** is an commandline utility used to query and modify wacom driver settings.

**wacom\_drv.so** is an Xorg input driver for Wacom devices.

# Xorg ATI Driver-7.1.0

## Introduction to Xorg ATI Driver

The Xorg ATI Driver package contains the X.Org Video Driver for ATI Radeon video cards including all chipsets ranging from R100 to R900 and the newer RAxx chipsets.

This package is known to build and work properly using an LFS-7.2 platform.



### Note

For Direct Rendering to work with newer Radeon Cards (r300 and later chipsets), you will need to enable building of r300, r600 and radeonsi Gallium drivers in MesaLib-9.1.3 instructions. Also, some cards will require Firmware to be available when kernel driver is loaded. Firmware can be obtained from [Linux Firmware Repository](#).

## Package Information

- Download (HTTP): <http://xorg.freedesktop.org/releases/individual/driver/xf86-video-ati-7.1.0.tar.bz2>
- Download (FTP): <ftp://ftp.x.org/pub/individual/driver/xf86-video-ati-7.1.0.tar.bz2>
- Download MD5 sum: a799371aa8a64ac8f9535963d5135e9a
- Download size: 788 KB
- Estimated disk space required: 18 MB
- Estimated build time: 0.2 SBU

## Xorg ATI Driver Dependencies

### Required

Glamor EGL-0.5.0

## Kernel Configuration

Enable the following options in the kernel configuration and recompile the kernel if necessary:

```
Device Drivers --->
  Graphics support --->
    ATI Radeon: Y or M
```

## Installation of Xorg ATI Driver

Install Xorg ATI Driver by running the following commands:

```
./configure $XORG_CONFIG --enable-glamor &&
make
```

This package does not come with a test suite.

Now, as the root user:

```
make install
```

## Command Explanations

`--enable-glamor`: This switch enables new GL-based acceleration.

## Glamor Acceleration

Glamor is an acceleration library which uses cards' 3D capabilities to accelerate 2D rendering. Glamor acceleration is required for Radeon "South Islands" GPUs which use "radeonsi" Gallium3D driver from MesaLib-9.1.3. To see which cards fall under "South Islands" category, read the *Decoder ring for engineering vs marketing names*. Please note that Glamor acceleration can be used with other chips as well, but it has not been tested recently.

Glamor acceleration is not enabled by default. You have to use a `xorg.conf` file to enable it. To enable Glamor, create the following `/etc/X11/xorg.conf` as the root user:

```
cat >> /etc/X11/xorg.conf << "EOF"
Section "Module"
    Load "dri2"
    Load "glamoregl"
EndSection

Section "Device"
    Identifier "radeon"
    Driver "radeon"
    Option "AccelMethod" "glamor"
EndSection
EOF
```

## Contents

**Installed Xorg Drivers:** ati\_drv.so and radeon\_drv.so

### Short Descriptions

<code>ati_drv.so</code>	is a wrapper driver for ATI video cards that autodetects ATI video hardware and loads radeon, mach64 or r128 driver.
<code>radeon_drv.so</code>	is an Xorg video driver for ATI Radeon based video cards.

## Xorg Cirrus Driver-1.5.2

### Introduction to Xorg Cirrus Driver

The Xorg Cirrus Driver package contains the X.Org Video Driver for Cirrus Logic video chips. Qemu uses this driver for its virtual GPU.

This package is known to build using an LFS 7.3 platform but has not been tested.

### Package Information

- Download (HTTP): <http://xorg.freedesktop.org/releases/individual/driver/xf86-video-cirrus-1.5.2.tar.bz2>
- Download (FTP): <ftp://ftp.x.org/pub/individual/driver/xf86-video-cirrus-1.5.2.tar.bz2>
- Download MD5 sum: 91fd6b677d62027cd3001debb587a6a6
- Download size: 320 KB

- Estimated disk space required: 4.3 MB
- Estimated build time: 0.1 SBU

## Xorg Cirrus Driver Dependencies

### Required

Xorg-Server-1.14.1

## Kernel Configuration

Enable the following options in the kernel configuration and recompile the kernel if necessary:

```
Device Drivers    --->
  Graphics support    --->
    Cirrus driver for QEMU emulated device: Y or M
```

## Installation of Xorg Cirrus Driver

Install Xorg Cirrus Driver by running the following commands:

```
./configure $XORG_CONFIG &&
make
```

This package does not come with a test suite.

Now, as the root user:

```
make install
```

## Contents

**Installed Xorg Driver:** cirrus\_drv.so

### Short Descriptions

cirrus\_drv.so is an Xorg video driver for Cirrus Logic graphics chipsets.

## Xorg Fbdev Driver-0.4.3

### Introduction to Xorg Fbdev Driver

The Xorg Fbdev Driver package contains the X.Org Video Driver for framebuffer devices. This driver is often used as fallback driver if the hardware specific and VESA drivers fail to load or are not present. If this driver is not installed, Xorg Server will print a warning on startup, but it can be safely ignored if hardware specific driver works well.

This package is known to build and work properly using an LFS-7.2 platform.

### Package Information

- Download (HTTP): <http://xorg.freedesktop.org/releases/individual/driver/xf86-video-fbdev-0.4.3.tar.bz2>
- Download (FTP): <ftp://ftp.x.org/pub/individual/driver/xf86-video-fbdev-0.4.3.tar.bz2>
- Download MD5 sum: 1d99f1dfb3f0fea077b6b61caa3dc85a
- Download size: 284 KB

- Estimated disk space required: 2.3 MB
- Estimated build time: less than 0.1 SBU

## Xorg Fbdev Driver Dependencies

### Required

Xorg-Server-1.14.1

## Installation of Xorg Fbdev Driver

Install Xorg Fbdev Driver by running the following commands:

```
sed -e "/mibstore.h/d" -e "/miInitializeBackingStore/d" \
      -i src/fbdev.c &&
./configure $XORG_CONFIG &&
make
```

This package does not come with a test suite.

Now, as the root user:

```
make install
```

## Command Explanations

**sed -e "/mibstore.h/d" ...:** Fixes building with Xorg Server 1.14.0.

## Contents

**Installed Xorg Driver:** fbdev\_drv.so

### Short Descriptions

**fbdev\_drv.so** is an Xorg video driver for framebuffer devices.

## Xorg Intel Driver-2.21.7

### Introduction to Xorg Intel Driver

The Xorg Intel Driver package contains the X.Org Video Driver for Intel integrated video cards including 8xx, 9xx, Gxx, Qxx and HD graphics processors (SandyBridge, IvyBridge and Haswell).

This package is known to build and work properly using an LFS-7.2 platform.

### Package Information

- Download (HTTP): <http://xorg.freedesktop.org/releases/individual/driver/xf86-video-intel-2.21.7.tar.bz2>
- Download (FTP): <ftp://ftp.x.org/pub/individual/driver/xf86-video-intel-2.21.7.tar.bz2>
- Download MD5 sum: c3a8b542fc4787ad17a5f0567a3429fd
- Download size: 1.7 MB
- Estimated disk space required: 70 MB
- Estimated build time: 0.6 SBU

## Xorg Intel Driver Dependencies

### Required

xcb-util-0.3.9 and Xorg-Server-1.14.1

## Kernel Configuration

Enable the following options in the kernel configuration and recompile the kernel if necessary:

```
Device Drivers    --->
  Graphics support --->
    Intel I810: Y or M
    Intel 8xx/9xx/G3x/G4x/HD Graphics: Y or M
      Enable modesetting on intel by default: Y
```

## Installation of Xorg Intel Driver

Install Xorg Intel Driver by running the following commands:

```
./configure $XORG_CONFIG &&
make
```

This package does not come with a test suite.

Now, as the root user:

```
make install
```

## SandyBridge New Acceleration

The SandyBridge New Acceleration (SNA) stands for new 2D acceleration architecture developed by Intel developers that can outperform the standard UXA 2D acceleration architecture. It has been actively developed for the last year and it is in great shape. While the name mentions SandyBridge, it can work with older hardware without any problems.

The SNA is not enabled by default. You have to use xorg.conf to enable it at runtime. To enable SNA, create the following /etc/X11/xorg.conf as the root user:

```
cat >> /etc/X11/xorg.conf << "EOF"
Section "Device"
    Identifier "intel"
    Driver "intel"
    Option "AccelMethod" "sna"
EndSection
EOF
```

## Contents

<b>Installed Libraries:</b>	libI810XvMC.so and libIntelXvMC.so
<b>Installed Xorg Driver:</b>	intel_drv.so

## Short Descriptions

intel\_drv.so is an Xorg video driver for Intel integrated graphics chipsets.

## Xorg Mach64 Driver-6.9.4

### Introduction to Xorg Mach64 Driver

The Xorg Mach64 Driver package contains the X.Org Video Driver for ATI video adapters based on the Mach64 chipsets.

This package is known to build and work properly using an LFS-7.2 platform.

### Package Information

- Download (HTTP): <http://xorg.freedesktop.org/releases/individual/driver/xf86-video-mach64-6.9.4.tar.bz2>
- Download (FTP): <ftp://ftp.x.org/pub/individual/driver/xf86-video-mach64-6.9.4.tar.bz2>
- Download MD5 sum: d645197cbf238ac0427c3904eafde2f
- Download size: 508 KB
- Estimated disk space required: 13 MB
- Estimated build time: 0.1 SBU

### Xorg Mach64 Driver Dependencies

#### Required

Xorg-Server-1.14.1

### Installation of Xorg Mach64 Driver

Install Xorg Mach64 Driver by running the following commands:

```
./configure $XORG_CONFIG &&
make
```

This package does not come with a test suite.

Now, as the `root` user:

```
make install
```

### Contents

**Installed Xorg Driver:**      mach64\_drv.so

### Short Descriptions

`mach64_drv.so` is an Xorg video driver for ATI Mach64 graphics chipsets.

## Xorg MGA Driver-1.6.2

### Introduction to Xorg MGA Driver

The Xorg MGA Driver package contains the X.Org Video Driver for Matrox video cards including Millenium G2xx, G4xx, G5xx, Millenium II and Mystique G200 chipsets.

This package is known to build and work properly using an LFS-7.2 platform.

### Package Information

- Download (HTTP): <http://xorg.freedesktop.org/releases/individual/driver/xf86-video-mga-1.6.2.tar.bz2>

- Download (FTP): <ftp://ftp.x.org/pub/individual/driver/xf86-video-mga-1.6.2.tar.bz2>
- Download MD5 sum: f543877db4e260d8b43c7da3095605ed
- Download size: 440 KB
- Estimated disk space required: 7.5 MB
- Estimated build time: 0.1 SBU

## Xorg MGA Driver Dependencies

### Required

Xorg-Server-1.14.1

## Kernel Configuration

Enable the following options in the kernel configuration and recompile the kernel if necessary:

```
Device Drivers --->
  Graphics support --->
    Matrox g200/g400: Y or M
```

## Installation of Xorg MGA Driver

Install Xorg MGA Driver by running the following commands:

```
./configure $XORG_CONFIG &&
make
```

This package does not come with a test suite.

Now, as the root user:

```
make install
```

## Contents

**Installed Xorg Driver:**      mga\_drv.so

### Short Descriptions

mga\_drv.so is an Xorg video driver for Matrox video cards.

## Xorg Nouveau Driver-1.0.7

### Introduction to Xorg Nouveau Driver

The Xorg Nouveau Driver package contains the X.Org Video Driver for NVidia Cards including RIVA TNT, RIVA TNT2, GeForce 256, QUADRO, GeForce2, QUADRO2, GeForce3, QUADRO DDC, nForce, nForce2, GeForce4, QUADRO4, GeForce FX, QUADRO FX, GeForce 6XXX and GeForce 7xxx chipsets.

This package is known to build and work properly using an LFS-7.3 platform.

### Package Information

- Download (HTTP): <http://xorg.freedesktop.org/releases/individual/driver/xf86-video-nouveau-1.0.7.tar.bz2>
- Download (FTP): <ftp://ftp.x.org/pub/individual/driver/xf86-video-nouveau-1.0.7.tar.bz2>

- Download MD5 sum: 383e398283e7bae30d6ce1617ccbd3a4
- Download size: 552 KB
- Estimated disk space required: 13 MB
- Estimated build time: 0.2 SBU

## Xorg Nouveau Drivers Dependencies

### Required

Xorg-Server-1.14.1

## Kernel Configuration

Enable the following options in the kernel configuration and recompile the kernel if necessary:

```
Device Drivers    --->
  Graphics support --->
    Nouveau (nVidia) cards: Y or M
      Support for backlight control: Y
```

## Installation of Xorg Nouveau Driver

Install Xorg Nouveau Driver by running the following commands:

```
./configure $XORG_CONFIG &&
make
```

This package does not come with a test suite.

Now, as the root user:

```
make install
```

## Contents

**Installed Xorg Driver:** nouveau\_drv.so

## Short Descriptions

nouveau\_drv.so is an Xorg video driver for nVidia video cards.

## Xorg OpenChrome Driver-0.3.2

### Introduction to Xorg OpenChrome Driver

The Xorg OpenChrome Driver package contains the X.Org Video Driver for Via integrated video cards including Unichrome, Unichrome Pro and Chrome9 series.

This package is known to build and work properly using an LFS-7.2 platform.

### Package Information

- Download (HTTP): <http://xorg.freedesktop.org/releases/individual/driver/xf86-video-openchrome-0.3.2.tar.bz2>
- Download (FTP): <ftp://ftp.x.org/pub/individual/driver/xf86-video-openchrome-0.3.2.tar.bz2>
- Download MD5 sum: 172509a5a7ab5c89ff09501d733cf5f6

- Download size: 508 KB
- Estimated disk space required: 14 MB
- Estimated build time: 0.2 SBU

## Xorg OpenChrome Driver Dependencies

### Required

Xorg-Server-1.14.1

## Kernel Configuration

Enable the following options in the kernel configuration and recompile the kernel if necessary:

```
Device Drivers    --->
  Graphics support    --->
    Via unichrome video cards: Y or M
```

## Installation of Xorg OpenChrome Driver

Install Xorg OpenChrome Driver by running the following commands:

```
./configure $XORG_CONFIG &&
make
```

This package does not come with a test suite.

Now, as the root user:

```
make install
```

## Contents

<b>Installed Libraries:</b>	libchromeXvMCPro.so and libchromeXvMC.so
<b>Installed Xorg Driver:</b>	openchrome_drv.so

## Short Descriptions

`openchrome_drv.so` is an Xorg video driver for VIA integrated graphics chipsets.

## Xorg R128 Driver-6.9.1

### Introduction to Xorg R128 Driver

The Xorg R128 Driver package contains the X.Org Video Driver for ATI Rage 128 based video cards.

This package is known to build and work properly using an LFS-7.2 platform.

### Package Information

- Download (HTTP): <http://xorg.freedesktop.org/releases/individual/driver/xf86-video-r128-6.9.1.tar.bz2>
- Download (FTP): <ftp://ftp.x.org/pub/individual/driver/xf86-video-r128-6.9.1.tar.bz2>
- Download MD5 sum: 99299cbf45abfd86e21b34eb4217d6f5
- Download size: 460 KB
- Estimated disk space required: 5.5 MB

- Estimated build time: less than 0.1 SBU

## Xorg R128 Driver Dependencies

### Required

Xorg-Server-1.14.1

## Kernel Configuration

Enable the following options in the kernel configuration and recompile the kernel if necessary:

```
Device Drivers    --->
  Graphics support --->
    ATI Rage 128: Y or M
```

## Installation of Xorg R128 Driver

Install Xorg R128 Driver by running the following commands:

```
./configure $XORG_CONFIG &&
make
```

This package does not come with a test suite.

Now, as the root user:

```
make install
```

## Contents

**Installed Xorg Driver:** r128\_drv.so

### Short Descriptions

r128\_drv.so is an Xorg video driver for ATI Rage 128 based video cards.

## Xorg Savage Driver-2.3.6

### Introduction to Xorg Savage Driver

The Xorg Savage Driver package contains the X.Org Video Driver for the S3 Savage family video accelerator chips including Savage3D, Savage4, Savage/MX, Savage/IX, SuperSavage/MX, SuperSavage/IX, ProSavage PM133, ProSavage KM133, Twister, TwisterK, ProSavage DDR and ProSavage DDR-K series.

This package is known to build and work properly using an LFS-7.2 platform.

### Package Information

- Download (HTTP): <http://xorg.freedesktop.org/releases/individual/driver/xf86-video-savage-2.3.6.tar.bz2>
- Download (FTP): <ftp://ftp.x.org/pub/individual/driver/xf86-video-savage-2.3.6.tar.bz2>
- Download MD5 sum: b57424a84c92aa3c6e97f6678d8d4a3e
- Download size: 396 KB
- Estimated disk space required: 6.3 MB
- Estimated build time: less than 0.1 SBU

## Xorg Savage Driver Dependencies

### Required

Xorg-Server-1.14.1

## Kernel Configuration

Enable the following options in the kernel configuration and recompile the kernel if necessary:

```
Device Drivers    --->
  Graphics support    --->
    Savage video cards: Y or M
```

## Installation of Xorg Savage Driver

Install Xorg Savage Driver by running the following commands:

```
./configure $XORG_CONFIG &&
make
```

This package does not come with a test suite.

Now, as the root user:

```
make install
```

## Contents

**Installed Xorg Driver:** savage\_drv.so

### Short Descriptions

savage\_drv.so is an Xorg video driver for S3 Savage video cards.

## Xorg SiS Driver-0.10.7

### Introduction to Xorg SiS Driver

The Xorg SiS Driver package contains the X.Org Video Driver for SiS (Silicon Integrated Systems) and XGI video cards including SiS5597/5598, SiS530/620, SiS6326/AGP/DVD, SiS300/305, SiS540, SiS630/730, SiS315/E/H/PRO, SiS550/551/552, SiS650/651/661/741, SiS330 (Xabre), SiS760/761, XGI Volari V3/V5/V8 and XGI Volari Z7 chipsets.

This package is known to build and work properly using an LFS-7.2 platform.

### Package Information

- Download (HTTP): <http://xorg.freedesktop.org/releases/individual/driver/xf86-video-sis-0.10.7.tar.bz2>
- Download (FTP): <ftp://ftp.x.org/pub/individual/driver/xf86-video-sis-0.10.7.tar.bz2>
- Download MD5 sum: f01e5e20e37342acf1983d269886171b
- Download size: 684 KB
- Estimated disk space required: 16 MB
- Estimated build time: 0.2 SBU

## Additional Downloads

- Required patch: [http://www.linuxfromscratch.org/patches/blfs/svn/xf86-video-sis-0.10.7-upstream\\_fixes-1.patch](http://www.linuxfromscratch.org/patches/blfs/svn/xf86-video-sis-0.10.7-upstream_fixes-1.patch)

## Xorg SiS Driver Dependencies

### Required

Xorg-Server-1.14.1

## Kernel Configuration

Enable the following options in the kernel configuration and recompile the kernel if necessary:

```
Device Drivers    --->
  Graphics support    --->
    SiS video cards: Y or M
```

## Installation of Xorg SiS Driver

Install Xorg SiS Driver by running the following commands:

```
patch -Npl -i ../../xf86-video-sis-0.10.7-upstream_fixes-1.patch &&
./configure $XORG_CONFIG &&
make
```

This package does not come with a test suite.

Now, as the root user:

```
make install
```

## Contents

**Installed Xorg Driver:** sis\_drv.so

### Short Descriptions

`sis_drv.so` is an Xorg video driver for SiS and XGI video cards.

## Xorg 3Dfx Driver-1.4.5

### Introduction to Xorg 3Dfx Driver

The Xorg 3Dfx Driver package contains the X.Org Video Driver for 3Dfx video cards including Voodoo Banshee, Voodoo3, Voodoo4 and Voodoo5 chipsets.

This package is known to build and work properly using an LFS-7.2 platform.

### Package Information

- Download (HTTP): <http://xorg.freedesktop.org/releases/individual/driver/xf86-video-tdfx-1.4.5.tar.bz2>
- Download (FTP): <ftp://ftp.x.org/pub/individual/driver/xf86-video-tdfx-1.4.5.tar.bz2>
- Download MD5 sum: 1b4a7815a604b3764900b520336a75ea
- Download size: 332 KB
- Estimated disk space required: 4.5 MB

- Estimated build time: less than 0.1 SBU

## Xorg 3Dfx Driver Dependencies

### Required

Xorg-Server-1.14.1

## Kernel Configuration

Enable the following options in the kernel configuration and recompile the kernel if necessary:

```
Device Drivers    --->
  Graphics support    --->
    3dfx Banshee/Voodoo3+: Y or M
```

## Installation of Xorg 3Dfx Driver

Install Xorg 3Dfx Driver by running the following commands:

```
sed -e "/mibstore.h/d" -e "/miInitializeBackingStore/d" \
  -i src/tdfx_driver.c &&
./configure $XORG_CONFIG &&
make
```

This package does not come with a test suite.

Now, as the root user:

```
make install
```

## Command Explanations

**sed -e "/mibstore.h/d" ...:** Fixes building with Xorg Server 1.14.0.

## Contents

**Installed Xorg Driver:** tdfx\_drv.so

### Short Descriptions

**tdfx\_drv.so** is an Xorg video driver for 3Dfx video cards.

## Xorg VESA Driver-2.3.2

### Introduction to Xorg VESA Driver

The Xorg VESA Driver contains the Generic VESA video driver for the Xorg X server. This driver is often used as fallback driver if the hardware specific driver fails to load or is not present. If this driver is not installed, Xorg Server will print a warning on startup, but it can be safely ignored if hardware specific driver works well.

This package is known to build and work properly using an LFS-7.3 platform.

### Package Information

- Download (HTTP): [http://xorg.freedesktop.org/releases/individual driver/xf86-video-vesa-2.3.2.tar.bz2](http://xorg.freedesktop.org/releases/individual	driver/xf86-video-vesa-2.3.2.tar.bz2)

- Download (FTP): <ftp://ftp.x.org/pub/individual/driver/xf86-video-vesa-2.3.2.tar.bz2>
- Download MD5 sum: 3eddd393fba79550e012d717499d58ad
- Download size: 292 KB
- Estimated disk space required: 2.5 MB
- Estimated build time: less than 0.1 SBU

## Xorg VESA Driver Dependencies

### Required

Xorg-Server-1.14.1

## Kernel Configuration

Enable the following options in the kernel configuration and recompile the kernel if necessary:

```
Device Drivers    --->
  Graphics support   --->
    -- Support for frame buffer devices   --->
      VESA VGA graphics support: Y
```

## Installation of Xorg VESA Driver

Install Xorg VESA Driver by running the following commands:

```
sed -e "/mibstore.h/d" -e "/miInitializeBackingStore/d" \
  -e "s/MODE_QUERY < 0/function < MODE_QUERY/g" \
  -i src/vesa.c &&
./configure $XORG_CONFIG &&
make
```

This package does not come with a test suite.

Now, as the root user:

```
make install
```

## Command Explanations

`sed -e "/mibstore.h/d" ...`: Fixes building with Xorg Server 1.14.0.

## Contents

**Installed Xorg Driver:** vesa\_drv.so

## Short Descriptions

`vesa_drv.so` is an Xorg video driver for generic VESA video cards.

## Xorg VMware Driver-13.0.1

### Introduction to Xorg VMware Driver

The Xorg VMware Driver package contains the X.Org Video Driver for VMware SVGA virtual video cards.

This package is known to build and work properly using an LFS-7.2 platform.

## Package Information

- Download (HTTP): <http://xorg.freedesktop.org/releases/individual/driver/xf86-video-vmware-13.0.1.tar.bz2>
- Download (FTP): <ftp://ftp.x.org/pub/individual/driver/xf86-video-vmware-13.0.1.tar.bz2>
- Download MD5 sum: b08e0195ebf3f88a82129322cb93da08
- Download size: 424 KB
- Estimated disk space required: 11 MB
- Estimated build time: 0.1 SBU

## Xorg VMware Driver Dependencies

### Required

Xorg-Server-1.14.1

## Kernel Configuration

Enable the following options in the kernel configuration and recompile the kernel if necessary:

```
Device Drivers --->
  Graphics support --->
    DRM driver for VMware Virtual GPU: Y or M
    Enable framebuffer console under vmwgfx by default: Y
```

## Installation of Xorg VMware Driver

Install Xorg VMware Driver by running the following commands:

```
./configure $XORG_CONFIG &&
make
```

This package does not come with a test suite.

Now, as the `root` user:

```
make install
```

## Contents

**Installed Xorg Driver:**      `vmware_drv.so`

## Short Descriptions

`vmware_drv.so` is an Xorg video driver for VMware SVGA virtual video card.

# printproto-1.0.5

## Introduction to printproto

The printproto package provides the protocol headers for the libXp-1.0.1 package.

This package is not a part of the Xorg katamari and is provided only as a dependency to other packages or for testing the completed Xorg installation.

This package is known to build and work properly using an LFS-7.3 platform.

## Package Information

- Download (HTTP): <http://xorg.freedesktop.org/releases/individual/proto/printproto-1.0.5.tar.bz2>
- Download (FTP): <ftp://ftp.x.org/pub/individual/proto/printproto-1.0.5.tar.bz2>
- Download MD5 sum: 99d0e25feea2fead7d8325b7000b41c3
- Download size: 224 KB
- Estimated disk space required: 2.6 MB
- Estimated build time: less than 0.1 SBU

## Installation of printproto

Install printproto by running the following commands:

```
./configure $XORG_CONFIG
```

This package does not come with a test suite.

Now, as the root user:

```
make install
```

## Contents

<b>Installed Programs:</b>	None
<b>Installed Libraries:</b>	None
<b>Installed Directory:</b>	None

# libXp-1.0.1

## Introduction to libXp

The libXp package contains a library implementing the X Print Protocol.

This package is not a part of the Xorg katamari and is provided only as a dependency to other packages or for testing the completed Xorg installation.

This package is known to build and work properly using an LFS-7.3 platform.

## Package Information

- Download (HTTP): <http://xorg.freedesktop.org/releases/individual/lib/libXp-1.0.1.tar.bz2>
- Download (FTP): <ftp://ftp.x.org/pub/individual/lib/libXp-1.0.1.tar.bz2>
- Download MD5 sum: 7ae1d63748e79086bd51a633da1ff1a9
- Download size: 300 KB
- Estimated disk space required: 6.3 MB
- Estimated build time: less than 0.1 SBU

## libXp Dependencies

### Required

printproto-1.0.5

## Installation of libXp

Install libXp by running the following commands:

```
./configure $XORG_CONFIG &&
make
```

This package does not come with a test suite.

Now, as the root user:

```
make install
```

## Contents

<b>Installed Programs:</b>	None
<b>Installed Library:</b>	libXp.so
<b>Installed Directories:</b>	None

## Short Descriptions

**libXp.so** is the library of X authority database routines.

# twm-1.0.7

## Introduction to twm

The twm package contains a very minimal window manager.

This package is not a part of the Xorg katamari and is provided only as a dependency to other packages or for testing the completed Xorg installation.

This package is known to build and work properly using an LFS-7.3 platform.

## Package Information

- Download (HTTP): <http://xorg.freedesktop.org/releases/individual/app/twm-1.0.7.tar.bz2>
- Download (FTP): <ftp://ftp.x.org/pub/individual/app/twm-1.0.7.tar.bz2>
- Download MD5 sum: c1c124ff16255d6525a53a0d5cec8bf9
- Download size: 272 KB
- Estimated disk space required: 3.7 MB
- Estimated build time: less than 0.1 SBU

## twm Dependencies

### Required

Xorg-Server-1.14.1

## Installation of twm

Install twm by running the following commands:

```
sed -i -e '/^rcdir =/s,^(rcdir = \").*,\1/etc/X11/app-defaults,' \
src/Makefile.in &&
./configure $XORG_CONFIG &&
make
```

This package does not come with a test suite.

Now, as the root user:

```
make install
```

## Command Explanations

**sed -i -e '/^rcdir =/s...:** This command ensures the twm configuration file gets installed in the proper location.

## Contents

<b>Installed Programs:</b>	twm
<b>Installed Libraries:</b>	None
<b>Installed Directory:</b>	/etc/X11/app-defaults

## Short Descriptions

**twm** is the Tab Window Manager for the X Window System.

# xterm-291

## Introduction to xterm

xterm is a terminal emulator for the X Window System.

This package is not a part of the Xorg katamari and is provided only as a dependency to other packages or for testing the completed Xorg installation.

This package is known to build and work properly using an LFS-7.3 platform.

## Package Information

- 
- Download (FTP): <ftp://invisible-island.net/xterm/xterm-291.tgz>
- Download MD5 sum: 9925cd564c84746442e640f0e32f0493
- Download size: 1 MB
- Estimated disk space required: 14 MB
- Estimated build time: 0.2 SBU

## xterm Dependencies

### Required

Xorg Applications

## Installation of xterm

Install xterm by running the following commands:

```
sed -i '/v0/,+1s/new:/new:kb=^?:/' termcap &&
echo -e '\tkbs=\177,' >>terminfo &&
TERMINFO=/usr/share/terminfo ./configure $XORG_CONFIG \
--enable-luit --enable-wide-chars \
--with-app-defaults=/etc/X11/app-defaults &&
make
```

This package does not come with a test suite.

Now, as the root user:

```
make install &&
make install-ti
```

## Command Explanations

**sed -i ... termcap, echo ... >>terminfo:** These commands modify the terminal description, so that the Backspace key is expected to send the character with ASCII code 127, for consistency with the Linux console.

**TERMINFO=/usr/share/terminfo:** This ensures that the **xterm** terminfo files are installed to the system terminfo database when the installation prefix is not /usr.

**--with-app-defaults=...:** Sets the location for the **app-defaults** directory.

--enable-luit: Enables the luit filter for translation between Unicode (used by xterm internally in the configuration below) and the locale encoding. If **luit** is not found in the PATH, the default of /usr/X11R6/bin/luit will be used.

--enable-wide-chars: Adds support for wide characters.

**make install-ti:** This command installs corrected terminfo description files for use with xterm.

## Configuring xterm

There are two ways to configure xterm. You can add X resource definitions to the user's ~/.Xresources file, or add them to the system-wide \$XORG\_PREFIX/share/X11/app-defaults/Xterm file.

In order for xterm to follow the locale settings in the environment, use TrueType fonts, and follow the Linux convention about the code sent by the Backspace key, add the following definitions as the **root** user:

```
cat >> /etc/X11/app-defaults/XTerm << "EOF"
*VT100*locale: true
*VT100*faceName: Monospace
*VT100*faceSize: 10
*backarrowKeyIsErase: true
*ptyInitialErase: true
EOF
```

## Contents

<b>Installed Programs:</b>	koi8rxterm, resize, uxterm, and xterm
<b>Installed Libraries:</b>	None
<b>Installed Directories:</b>	None

## Short Descriptions

<b>koi8rxterm</b>	is a wrapper script to set up xterm with a KOI8-R locale.
<b>resize</b>	prints a shell command for setting the TERM and TERMCAP environment variables to indicate the current size of xterm window.
<b>uxterm</b>	is a wrapper script that modifies the current locale to use UTF-8 and starts xterm with the proper settings.
<b>xterm</b>	is a terminal emulator for the X Window System.

# xclock-1.0.6

## Introduction to xclock

The xclock package contains a simple clock application which is used in the default xinit configuration.

This package is not a part of the Xorg katamari and is provided only as a dependency to other packages or for testing the completed Xorg installation.

This package is known to build and work properly using an LFS-7.3 platform.

## Package Information

- Download (HTTP): <http://xorg.freedesktop.org/releases/individual/app/xclock-1.0.6.tar.bz2>
- Download (FTP): <ftp://ftp.x.org/pub/individual/app/xclock-1.0.6.tar.bz2>
- Download MD5 sum: 773782f20d5fb3232384889deca00754
- Download size: 160 KB
- Estimated disk space required: 1.5 MB
- Estimated build time: less than 0.1 SBU

## xclock Dependencies

### Required

Xorg Libraries

## Installation of xclock

Install xclock by running the following commands:

```
./configure $XORG_CONFIG &&
make
```

This package does not come with a test suite.

Now, as the root user:

```
make install
```

## Contents

<b>Installed Programs:</b>	xclock
<b>Installed Libraries:</b>	None
<b>Installed Directory:</b>	None

## Short Descriptions

**xclock** is an analog/digital clock for X.

# xinit-1.3.2

## Introduction to xinit

The xinit package contains a usable script to start the xserver.

This package is not a part of the Xorg katamari and is provided only as a dependency to other packages or for testing the completed Xorg installation.

This package is known to build and work properly using an LFS-7.3 platform.

## Package Information

- Download (HTTP): <http://xorg.freedesktop.org/releases/individual/app/xinit-1.3.2.tar.bz2>
- Download (FTP): <ftp://ftp.x.org/pub/individual/app/xinit-1.3.2.tar.bz2>
- Download MD5 sum: 9c0943cbd83e489ad1b05221b97efd44
- Download size: 152 KB
- Estimated disk space required: 1.3 MB
- Estimated build time: less than 0.1 SBU

## xinit Dependencies

### Required (runtime only)

xclock-1.0.6 and xterm-291

## Installation of xinit

Install xinit by running the following commands:

```
./configure $XORG_CONFIG \
            --with-xinitedir=/etc/X11/app-defaults &&
make
```

This package does not come with a test suite.

Now, as the root user:

```
make install
```

## Contents

<b>Installed Programs:</b>	xinit and startx
<b>Installed Libraries:</b>	None
<b>Installed Directory:</b>	None

## Short Descriptions

<b>startx</b>	initializes an X session.
<b>xinit</b>	is the X Window System initializer.

# Xorg-7.7 Testing and Configuration

## Testing Xorg

To test the Xorg installation, issue **startx**. This command brings up a rudimentary window manager called *twm* with three xterm windows and one xclock window. The xterm window in the upper left is a login terminal and running *exit* from this terminal will exit the X Window session. The third xterm window may be obscured on your system by the other two xterms.

Generally, there is no specific configuration required for Xorg, but customization is possible. For details see the section called “Setting up Xorg Devices” below.

## Checking the 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 (using MesaLib) if you have a supported video card.

To check if DRI drivers are installed properly, check the log file `/var/log/Xorg.0.log` for statements such as:

```
(II) intel(0): direct rendering: DRI2 Enabled
```

or

```
(II) NOUVEAU(0): Loaded DRI module
```

### Note

DRI configuration may differ if you are using alternate drivers, such as those from *NVIDIA* or *ATI*.

Although all users can use software acceleration, any hardware acceleration (DRI2) is only available to `root` and members of the `video` group.

If your driver is supported, add any users that might use X to that group:

```
usermod -a -G video <username>
```

Another way to determine if DRI is working properly is to use one of the two optionally installed OpenGL demo programs in MesaLib-9.1.3. From an X terminal, run **glxinfo** and look for the phrase:

```
name of display: :0
display: :0 screen: 0
direct rendering: Yes
```

If direct rendering is enabled, you can add verbosity by running **LIGBL\_DEBUG=verbose glxinfo**. This will show the drivers, device nodes and files used by the DRI system.

To confirm that DRI2 hardware acceleration is working, you can (still in the X terminal) run the command **glxinfo | egrep "(OpenGL vendor|OpenGL renderer|OpenGL version)"**. If that reports something *other than* Software Rasterizer then you have working acceleration for the user who ran the command.

If your hardware does not have any DRI2 driver available, it will use a Software Rasterizer for Direct Rendering. In such cases, you can use a new, LLVM-accelerated, Software Rasterizer called LLVMPipe. In order to build LLVMPipe just make sure that LLVM-3.2 is present at MesaLib build time. Note that all decoding is done on the

CPU instead of the GPU, so the display will run slower than with hardware acceleration. To check if you are using LLVMpipe, review the output of the `glxinfo` command above. An example of the output using the Software Rasterizer is shown below:

```
OpenGL vendor string: VMware, Inc.
OpenGL renderer string: Gallium 0.4 on llvmpipe (LLVM 3.2, 256 bits)
OpenGL version string: 2.1 Mesa 9.1-devel (git-cb3b172)
```

You can also force LLVMPipe by exporting the `LIBGL_ALWAYS_SOFTWARE=1` environment variable when starting Xorg.

Again, if you have built the Mesa OpenGL demos, you can also run the test program `glxgears`. This program brings up a window with three gears turning. The X terminal will display how many frames were drawn every five seconds, so this will give a rough benchmark. The window is scalable, and the frames drawn per second is highly dependent on the size of the window. On some hardware, `glxgears` will run synchronized with the vertical refresh signal and the frame rate will be approximately the same as the monitor refresh rate.

## Hybrid Graphics

Hybrid Graphics is still in experimental state for Linux. Xorg Developers have developed a technology called PRIME that can be used for switching between integrated and muxless discrete GPU at will. Automatic switching is not possible at the moment.

In order to use PRIME for GPU switching, make sure that you are using Linux Kernel 3.4 or later (recommended). You will need latest DRI and DDX drivers for your hardware and Xorg Server 1.13 or later with an optional patch applied.

Xorg Server should load both GPU drivers automatically. In order to run a GLX application on a discrete GPU, you will need to export the `DRI_PRIME=1` environment variable. For example,

```
DRI_PRIME=1 glxinfo | egrep "(OpenGL vendor|OpenGL renderer|OpenGL version)"
```

will show OpenGL vendor, renderer and version for the discrete GPU.

If the last command reports same OpenGL renderer with and without `DRI_PRIME=1`, you will need to check your installation.

## Xft Font Protocol

Xft provides antialiased font rendering through Freetype, and fonts are controlled from the client side using Fontconfig. The default search path is `/usr/share/fonts` and `~/.fonts`. Fontconfig searches directories in its path recursively and maintains a cache of the font characteristics in `fonts.cache-1` files in each directory. If the cache appears to be out of date, it is ignored, and information is (slowly) fetched from the fonts themselves. This cache can be regenerated using the `fc-cache` command at any time. You can see the list of fonts known by Fontconfig by running the command `fc-list`.

If you've installed Xorg in any prefix other than `/usr`, the X fonts were not installed in a location known to Fontconfig. This prevents Fontconfig from using the poorly rendered Type 1 fonts or the non-scalable bitmapped fonts. Symlinks were created from the OTF and TTF X font directories to `/usr/share/fonts/X11-{OTF,TTF}`. This allows Fontconfig to use the OpenType and TrueType fonts provided by X (which are scalable and of higher quality).

Fontconfig uses names such as "Monospace 12" to define fonts. Applications generally use generic font names such as "Monospace", "Sans" and "Serif". Fontconfig resolves these names to a font that has all characters that cover the orthography of the language indicated by the locale settings. Knowledge of these font names is included in `/etc/fonts/fonts.conf`. Fonts that are not listed in this file are still usable by Fontconfig, but they will not be accessible by the generic family names.

Standard scalable fonts that come with X provide very poor Unicode coverage. You may notice in applications that use Xft that some characters appear as a box with four binary digits inside. In this case, a font set with the available glyphs has not been found. Other times, applications that don't use other font families by default and don't accept substitutions from Fontconfig will display blank lines when the default font doesn't cover the orthography of the user's language. This happens, e.g., with Fluxbox in the `ru_RU.KOI8-R` locale.

In order to provide greater Unicode coverage, it is recommended that you install these fonts:

- *DejaVu fonts* - These fonts are replacements for the Bitstream Vera fonts and provide Latin-based scripts with accents and Cyrillic glyphs.
- *FreeFont* - This set of fonts covers nearly every non-CJK character, but is not visually pleasing. Fontconfig will use it as a last resort to substitute generic font family names.
- *Microsoft Core fonts* - These fonts provide slightly worse Unicode coverage than FreeFont, but are better hinted. Be sure to read the license before using them. These fonts are listed in the aliases in the `/etc/fonts/conf.d` directory by default.
- *Firefly New Sung font* - This font provides Chinese coverage. This font is listed in the aliases in the `/etc/fonts/conf.d` directory by default.
- *Arphic fonts* - A similar set of Chinese fonts to the Firefly New Sung font. These fonts are listed in the aliases in the `/etc/fonts/conf.d` directory by default.
- *Kochi fonts* - These provide Japanese characters, and are listed in the aliases in the `/etc/fonts/conf.d` directory by default.
- *Baekmuk fonts* - These fonts provide Korean coverage, and are listed in the aliases in the `/etc/fonts/conf.d` directory by default.
- *Cantarell fonts* - The Cantarell typeface family provides a contemporary Humanist sans serif. It is particularly optimised for legibility at small sizes and is the preferred font family for the GNOME-3 user interface.

The list above will not provide complete Unicode coverage. For more information, please visit the *Unicode Font Guide*.

Rendered examples of many of the above fonts can be found at this *font analysis* site.

As a font installation example, consider the installation of the DejaVu fonts. From the unpacked source directory, run the following commands as the `root` user:

```
install -v -d -m755 /usr/share/fonts/dejavu &&
install -v -m644 *.ttf /usr/share/fonts/dejavu &&
fc-cache -v /usr/share/fonts/dejavu
```

## Setting up Xorg Devices

For most hardware configurations, modern Xorg will automatically get the server configuration correct without any user intervention. There are, however, some cases where auto-configuration will be incorrect. Following are some example manual configuration items that may be of use in these instances.

## Setting up X Input Devices

For most input devices, no additional configuration will be necessary. This section is provided for informational purposes only.

A sample default XKB setup could look like the following (executed as the `root` user):

```
cat > /etc/X11/xorg.conf.d/xkb-defaults.conf << "EOF"
Section "InputClass"
    Identifier "XKB Defaults"
    MatchIsKeyboard "yes"
    Option "XkbOptions" "terminate:ctrl_alt_bksp"
EndSection
EOF
```

## Fine Tuning Display Settings

Again, with modern Xorg, little or no additional configuration is necessary. If you should need extra options passed to your video driver, for instance, you could use something like the following (again, executed as the `root` user):

```
cat > /etc/X11/xorg.conf.d/videocard-0.conf << "EOF"
Section "Device"
    Identifier "Videocard0"
    Driver      "radeon"
    VendorName  "Videocard vendor"
    BoardName   "ATI Radeon 7500"
    Option      "NoAccel" "true"
EndSection
EOF
```

Another common setup is having multiple server layouts for use in different environments. Though the server will automatically detect the presence of another monitor, it may get the order incorrect:

```
cat > /etc/X11/xorg.conf.d/server-layout.conf << "EOF"
Section "ServerLayout"
    Identifier      "DefaultLayout"
    Screen          0  "Screen0"  0  0
    Screen          1  "Screen1"  LeftOf "Screen0"
    Option          "Xinerama"
EndSection
EOF
```

## Chapter 25. 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.

# agg-2.5

## Introduction to agg

The Anti-Grain Geometry (AGG) package contains a general purpose C++ graphical toolkit. It can be used in many areas of computer programming where high quality 2D graphics is an essential part of the project.

This package is known to build and work properly using an LFS-7.3 platform.

## Package Information

- Download (HTTP): <http://www.antigrain.com/agg-2.5.tar.gz>
- 
- Download MD5 sum: 0229a488bc47be10a2fee6cf0b2febd6
- Download size: 552 KB
- Estimated disk space required: 122 MB
- Estimated build time: 1.2 SBU

## agg Dependencies

### Required

pkg-config-0.28, SDL-1.2.15 and Xorg Libraries

## Installation of agg

Install agg by running the following commands:

```
sed -i 's: -L@x_libraries@:::' src/platform/X11/Makefile.am &&
sed -i '/^AM_C_PROTOTYPES/d' configure.in &&
bash autogen.sh --prefix=/usr --disable-static &&
make
```

This package does not come with a test suite.

Now, as the root user:

```
make install
```

## Command Explanations

**sed -i 's: -L@x\_libraries@:::' src/platform/X11/Makefile.am:** This fixes compiling with the current Xorg Libraries.

**sed -i '/^AM\_C\_PROTOTYPES/d' configure.in:** this fixes reconfiguring with the current version of **automake**.

**bash autogen.sh:** This script uses autotools to create the configure script, then it runs configure with the given arguments.

**--disable-static:** This switch prevents installation of static versions of the libraries.

## Contents

**Installed Libraries:** libagg.so, libagffreetype.so, libaggplatformsdl.so and libaggplatformX11.so.

**Installed Directory:** /usr/include/agg2.

## Short Descriptions

libagg.so	contains the AGG API functions.
libaggfontfreetype.so	contains the AGG freetype font API functions.
libaggplatformsdl.so	contains the AGG SDL API functions that.
libaggplatformx11.so	contains the AGG LibX11 API functions.

# ATK-2.6.0

## Introduction to ATK

ATK provides the set of accessibility interfaces that are implemented by other toolkits and applications. Using the ATK interfaces, accessibility tools have full access to view and control running applications.

This package is known to build and work properly using an LFS-7.3 platform.

### Package Information

- Download (HTTP): <http://ftp.gnome.org/pub/gnome/sources/atk/2.6/atk-2.6.0.tar.xz>
- Download (FTP): <ftp://ftp.gnome.org/pub/gnome/sources/atk/2.6/atk-2.6.0.tar.xz>
- Download MD5 sum: 6b34e2a63dda4429b5692be7ca3aa5bf
- Download size: 596 KB
- Estimated disk space required: 14 MB
- Estimated build time: 0.1 SBU

## ATK Dependencies

### Required

GLib-2.34.3

### Optional (Required if building GNOME)

gobject-introspection-1.34.2

### Optional

GTK-Doc-1.18

## Installation of ATK

Install ATK by running the following commands:

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

This package does not come with a testsuite.

Now, as the root user:

```
make install
```

## Command Explanations

--enable-gtk-doc: Use this parameter if GTK-Doc is installed and you wish to rebuild and install the API documentation.

## Contents

**Installed Library:** libatk-1.0.so

**Installed Directories:** /usr/include/atk-1.0 and /usr/share/gtk-doc/html/atk

## Short Descriptions

`libatk-1.0.so` contains functions that are used by assistive technologies to interact with the desktop applications.

# Atkmm-2.22.6

## Introduction to Atkmm

Atkmm is the official C++ interface for the ATK accessibility toolkit library.

This package is known to build and work properly using an LFS-7.2 platform.

## Package Information

- Download (HTTP): <http://ftp.gnome.org/pub/gnome/sources/atkmm/2.22/atkmm-2.22.6.tar.xz>
- Download (FTP): <ftp://ftp.gnome.org/pub/gnome/sources/atkmm/2.22/atkmm-2.22.6.tar.xz>
- Download MD5 sum: 30f8e34c92b14f17ba3029937b2f218a
- Download size: 556 KB
- Estimated disk space required: 14 MB
- Estimated build time: 0.2 SBU

## Atkmm Dependencies

### Required

ATK-2.6.0 and GLibmm-2.34.1

## Installation of Atkmm

Install Atkmm by running the following commands:

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

This package does not come with a testsuite.

Now, as the root user:

```
make install
```

## Contents

**Installed Library:** libatkmm-1.6.so

**Installed Directories:** /usr/include/atkmm-1.6, /usr/lib/atkmm-1.6, /usr/share/devhelp/books/atkmm-1.6 and /usr/share/doc/atkmm-1.6

## Short Descriptions

libatkmm-1.6.so contains the ATK API classes.

# at-spi2-core-2.6.3

## Introduction to At-Spi2 Core

The At-Spi2 Core package is a part of the GNOME Accessibility Project. It provides a Service Provider Interface for the Assistive Technologies available on the GNOME platform and a library against which applications can be linked.

This package is known to build and work properly using an LFS-7.3 platform.

## Package Information

- Download (HTTP): <http://ftp.gnome.org/pub/gnome/sources/at-spi2-core/2.6/at-spi2-core-2.6.3.tar.xz>
- Download (FTP): <ftp://ftp.gnome.org/pub/gnome/sources/at-spi2-core/2.6/at-spi2-core-2.6.3.tar.xz>
- Download MD5 sum: eb1d3ca3332af8862791d3ff7dcfd20a
- Download size: 456 KB
- Estimated disk space required: 13 MB
- Estimated build time: less than 0.1 SBU

## At-Spi2 Core Dependencies

### Required

D-Bus-1.6.10, GLib-2.34.3, Intltool-0.50.2 and Xorg Libraries

### Optional (Required if building GNOME)

gobject-introspection-1.34.2

### Optional

GTK-Doc-1.18

## Installation of At-Spi2 Core

Install At-Spi2 Core by running the following commands:

```
./configure --prefix=/usr \
            --sysconfdir=/etc \
            --libexecdir=/usr/lib/at-spi2-core &&
make
```

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

Now, as the root user:

```
make install
```

## Command Explanations

--enable-gtk-doc: Use this parameter if GTK-Doc is installed and you wish to rebuild and install the API documentation.

## Contents

<b>Installed Programs:</b>	at-spi-bus-launcher and at-spi2-registryd
<b>Installed Library:</b>	libatspi.so
<b>Installed Directories:</b>	/etc/at-spi2, /usr/include/at-spi-2.0, /usr/lib/at-spi2-core and /usr/share/gtk-doc/html/libatspi

## Short Descriptions

<b>at-spi2-registryd</b>	is the At-Spi2 registry daemon.
<b>libatspi.so</b>	contains the At-Spi2 API functions.

# at-spi2-atk-2.6.2

## Introduction to At-Spi2 Atk

The At-Spi2 Atk package contains a library that bridges ATK to At-Spi2 D-Bus service.

This package is known to build and work properly using an LFS-7.3 platform.

### Package Information

- Download (HTTP): <http://ftp.gnome.org/pub/gnome/sources/at-spi2-atk/2.6/at-spi2-atk-2.6.2.tar.xz>
- Download (FTP): <ftp://ftp.gnome.org/pub/gnome/sources/at-spi2-atk/2.6/at-spi2-atk-2.6.2.tar.xz>
- Download MD5 sum: 7e43d24b64d156119b2b0879393cc94d
- Download size: 272 KB
- Estimated disk space required: 7.0 MB
- Estimated build time: less than 0.1 SBU

### At-Spi2 Atk Dependencies

#### Required

at-spi2-core-2.6.3 and ATK-2.6.0

### Installation of At-Spi2 Atk

Install At-Spi2 Atk by running the following commands:

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

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

Now, as the root user:

```
make install
```



#### Note

If you installed the package to your system using a “DESTDIR” method, /usr/share/glib-2.0/schemas/gschemas.compiled was not updated/created. Create (or update) the file using the following command as the root user:

```
glib-compile-schemas /usr/share/glib-2.0/schemas
```

## Contents

<b>Installed Libraries:</b>	libatk-bridge.so and libatk-bridge-2.0.so
<b>Installed Directory:</b>	/usr/include/at-spi2-atk

### Short Descriptions

**libatk-bridge.so** is the Accessibility Toolkit GTK+ module.

`libatk-bridge-2.0.so` Contains the common functions used by GTK+ Accessibility Toolkit Bridge.

# Cairo-1.12.14

## Introduction to Cairo

Cairo is a 2D graphics library with support for multiple output devices. Currently supported output targets include the X Window System, win32, image buffers, PostScript, PDF and SVG. Experimental backends include OpenGL, Quartz and XCB file output. Cairo is designed to produce consistent output on all output media while taking advantage of display hardware acceleration when available (e.g., through the X Render Extension). The Cairo API provides operations similar to the drawing operators of PostScript and PDF. Operations in Cairo include stroking and filling cubic Bézier splines, transforming and compositing translucent images, and antialiased text rendering. All drawing operations can be transformed by any *affine transformation* (scale, rotation, shear, etc.).

This package is known to build and work properly using an LFS-7.3 platform.

## Package Information

- Download (HTTP): <http://cairographics.org/releases/cairo-1.12.14.tar.xz>
- 
- Download MD5 sum: 27b634113d0f52152d60ae8e2ec7daa7
- Download size: 41 MB
- Estimated disk space required: 180 MB
- Estimated build time: 1.1 SBU

## Cairo Dependencies

### Required

libpng-1.6.2, GLib-2.34.3 and Pixman-0.30.0

### Recommended

Fontconfig-2.10.2 and Xorg Libraries

### Optional

Cogl-1.12.2, DirectFB, GTK-Doc-1.18, libdrm-2.4.45, MesaLib-9.1.3, Qt-4.8.4, Skia and Valgrind

## Installation of Cairo

Install Cairo by running the following commands:

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

This package does not have a working testsuite.

Now, as the root user:

```
make install
```

## Command Explanations

*--disable-static*: This switch prevents installation of static versions of the libraries.

--enable-gl: This switch enables Cairo's experimental OpenGL surface which is required for Wayland compositor and some other packages that are not part of BLFS.

--enable-gtk-doc: Use this parameter if GTK-Doc is installed and you wish to rebuild and install the API documentation.

## Contents

**Installed Programs:**

cairo-sphinx and cairo-trace

**Installed Libraries:**

libcairo.so, libcairo-gobject.so and libcairo-script-interpreter.so

**Installed Directories:**

/usr/include/cairo, /usr/lib/cairo and /usr/share/gtk-doc/html/cairo

## Short Descriptions

**cairo-trace**

generates a log of all calls made by an application to Cairo.

**libcairo.so**

contains the 2D graphics functions required for rendering to the various output targets.

**libcairo-gobject.so**

contains functions that integrate Cairo with GLib-2.34.3's GObject type system.

**libcairo-script-interpreter.so**

contains the script interpreter functions for executing and manipulating Cairo execution traces.

# Caiomm-1.10.0

## Introduction to Caiomm

The Caiomm package provides a C++ interface to Cairo.

This package is known to build and work properly using an LFS-7.2 platform.

## Package Information

- Download (HTTP): <http://cairographics.org/releases/caiomm-1.10.0.tar.gz>
- 
- Download MD5 sum: 9c63fb1c04c8ecd3c5e6473075b8c39f
- Download size: 1.1 MB
- Estimated disk space required: 13 MB
- Estimated build time: 0.1 SBU

## Caiomm Dependencies

### Required

Cairo-1.12.14 and libsigc++-2.2.11

### Optional

Boost-1.53.0 and Doxygen-1.8.4

## Installation of Caiomm

Install Caiomm 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

<b>Installed Library:</b>	libcaiomm-1.0.so
<b>Installed Directories:</b>	/usr/include/caiomm-1.0, /usr/lib/caiomm-1.0, /usr/share/devhelp/books/caiomm-1.0 and /usr/share/doc/caiomm-1.0

## Short Descriptions

**libcaiomm-1.0.so** contains the Cairo API classes.

# Cogl-1.12.2

## Introduction to Cogl

Cogl is a modern 3D graphics API with associated utility APIs designed to expose the features of 3D graphics hardware using a direct state access API design, as opposed to the state-machine style of OpenGL.

This package is known to build and work properly using an LFS-7.2 platform.

### Package Information

- Download (HTTP): <http://ftp.gnome.org/pub/gnome/sources/cogl/1.12/cogl-1.12.2.tar.xz>
- Download (FTP): <ftp://ftp.gnome.org/pub/gnome/sources/cogl/1.12/cogl-1.12.2.tar.xz>
- Download MD5 sum: 439fd7aa2195d76b5cd8ee393f0112b4
- Download size: 1.3 MB
- Estimated disk space required: 50 MB
- Estimated build time: 0.5 SBU

## Cogl Dependencies

### Required

gdk-pixbuf-2.26.5, MesaLib-9.1.3 and Pango-1.32.5

### Recommended

gobject-introspection-1.34.2

### Optional

GTK-Doc-1.18

## Installation of Cogl

Install Cogl 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**: Use this parameter if GTK-Doc is installed and you wish to rebuild and install the API documentation.

## Contents

**Installed Libraries:** libcogl-pango.so and libcogl.so

**Installed Directories:** /usr/include/cogl and /usr/share/cogl

## Short Descriptions

`libcogl-pango.so` is the Pango integration library for Cogl.

`libcogl.so` is an object oriented GL/GLES Abstraction/Utility Layer library.

# Clutter-1.12.2

## Introduction to Clutter

The Clutter package contains an open source software library used for creating fast, visually rich and animated graphical user interfaces.

This package is known to build and work properly using an LFS-7.2 platform.



### Note

Anything built with this toolkit needs hardware 3D acceleration from the graphics driver at runtime. This is provided by MesaLib (or by proprietary graphics drivers), but is not available for every graphics card nor for all virtual machines. You may wish to review Checking the DRI installation.

## Package Information

- Download (HTTP): <http://ftp.gnome.org/pub/gnome/sources/clutter/1.12/clutter-1.12.2.tar.xz>
- Download (FTP): <ftp://ftp.gnome.org/pub/gnome/sources/clutter/1.12/clutter-1.12.2.tar.xz>
- Download MD5 sum: dce7b3bf85b39ca822d068470e5f5abb
- Download size: 4.8 MB
- Estimated disk space required: 95 MB
- Estimated build time: 1.0 SBU (additional 0.8 SBU for the testsuite)

## Clutter Dependencies

### Required

ATK-2.6.0, Cogl-1.12.2 and JSON-GLib-0.16.0

### Recommended

gobject-introspection-1.34.2

### Optional

GTK-Doc-1.18

### Optional (to build the application developers manual)

DocBook-utils-0.6.14, xmlto-0.0.25 and either Links-2.7, Lynx-2.8.8dev.15 or w3m-0.5.3

## Installation of Clutter

Install Clutter by running the following commands:

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

To test the results, issue: **make check** (you must be in an xterm or similar to do this, because it launches some windows).

Now, as the root user:

```
make install
```

## Command Explanations

--enable-manual: Use this parameter if DocBook-utils, xmlto, JadeTeX, and either Links, Lynx, or W3m are installed and you wish to build the application developers manual.

--enable-gtk-doc: Use this parameter if GTK-Doc is installed and you wish to rebuild and install the API documentation.

## Contents

**Installed Library:** libclutter-1.0.so

**Installed Directories:** /usr/include/clutter-1.0, /usr/share/gtk-doc/html/cally and /usr/share/gtk-doc/html/clutter

## Short Descriptions

**libclutter-1.0.so** contains the Clutter API functions.

# clutter-gst-2.0.2

## Introduction to Clutter Gst

The Clutter Gst is an integration library for using GStreamer with Clutter. Its purpose is to implement the ClutterMedia interface using GStreamer.

This package is known to build and work properly using an LFS-7.2 platform.

## Package Information

- Download (HTTP): <http://ftp.gnome.org/pub/gnome/sources/clutter-gst/2.0/clutter-gst-2.0.2.tar.xz>
- Download (FTP): <ftp://ftp.gnome.org/pub/gnome/sources/clutter-gst/2.0/clutter-gst-2.0.2.tar.xz>
- Download MD5 sum: 318195c75721b65ec568e479b4a9858c
- Download size: 344 KB
- Estimated disk space required: 7.0 MB
- Estimated build time: 0.1 SBU

## Clutter Gst Dependencies

### Required

Clutter-1.12.2 and gst-plugins-base-1.0.7

### Recommended

gobject-introspection-1.34.2

### Optional

GTK-Doc-1.18

## Installation of Clutter Gst

Install Clutter Gst by running the following commands:

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

This package does not come with a testsuite.

Now, as the root user:

```
make install
```

## Contents

**Installed Library:**

libclutter-gst-2.0.so

**Installed Directories:**

/usr/include/clutter-gst-2.0 and /usr/share/gtk-doc/html/clutter-gst

## Short Descriptions

**libclutter-gst-2.0.so** contains the Clutter Gst API functions.

# clutter-gtk-1.4.2

## Introduction to Clutter Gtk

The Clutter Gtk package is a library providing facilities to integrate Clutter into GTK+ applications.

This package is known to build and work properly using an LFS-7.2 platform.

### Package Information

- Download (HTTP): <http://ftp.gnome.org/pub/gnome/sources/clutter-gtk/1.4/clutter-gtk-1.4.2.tar.xz>
- Download (FTP): <ftp://ftp.gnome.org/pub/gnome/sources/clutter-gtk/1.4/clutter-gtk-1.4.2.tar.xz>
- Download MD5 sum: 842601b584daf4447a46799a4ba88df6
- Download size: 304 KB
- Estimated disk space required: 7.0 MB
- Estimated build time: 0.1 SBU

## Clutter Gtk Dependencies

### Required

Clutter-1.12.2 and GTK+-3.6.4

### Recommended

gobject-introspection-1.34.2

### Optional

GTK-Doc-1.18

## Installation of Clutter Gtk

Install Clutter Gtk 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: Use this parameter if GTK-Doc is installed and you wish to rebuild and install the API documentation.

## Contents

**Installed Library:** libclutter-gtk-1.0.so

**Installed Directories:** /usr/include/clutter-gtk-1.0 and /usr/share/gtk-doc/html/clutter-gtk-1.0

## Short Descriptions

`libclutter-gtk-1.0.so` contains the Clutter Gtk API functions.

# colord-gtk-0.1.25

## Introduction to Colord GTK

The Colord GTK package contains GTK+ bindings for Colord.

This package is known to build and work properly using an LFS-7.2 platform.

### Package Information

- Download (HTTP): <http://www.freedesktop.org/software/colord/releases/colord-gtk-0.1.25.tar.xz>
- 
- Download MD5 sum: f3ad262c060fc50c10805b744be7479d
- Download size: 268 KB
- Estimated disk space required: 4.0 MB
- Estimated build time: less than 0.1 SBU

## Colord GTK Dependencies

### Required

Colord-1.0.0 and GTK+-3.6.4

### Recommended

gobject-introspection-1.34.2 and Vala-0.18.1

### Optional

GTK-Doc-1.18

## Installation of Colord GTK

Install Colord GTK by running the following commands:

```
./configure --prefix=/usr \
            --enable-vala \
            --disable-static &&
make
```

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

Now, as the root user:

```
make install
```

## Command Explanations

**--enable-vala**: This switch enables building of the Vala bindings. Remove if you don't have Vala-0.18.1 installed.

**--disable-static**: This switch prevents installation of static versions of the libraries.

--enable-gtk-doc: Use this parameter if GTK-Doc is installed and you wish to rebuild and install the API documentation.

## Contents

<b>Installed Library:</b>	libcolord-gtk.so
<b>Installed Directory:</b>	/usr/include/colord-1/colord-gtk

## Short Descriptions

`libcolord-gtk.so` contains the Colord GTK+ bindings.

# Freeglut-2.8.1

## 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.

This package is known to build and work properly using an LFS-7.3 platform.

## Package Information

- Download (HTTP): <http://downloads.sourceforge.net/freeglut/freeglut-2.8.1.tar.gz>
- 
- Download MD5 sum: 918ffbddcffbac83c218bc52355b6d5a
- Download size: 984 KB
- Estimated disk space required: 11 MB
- Estimated build time: 0.1 SBU

## Freeglut Dependencies

### Required

MesaLib-9.1.3

## Installation of Freeglut

Install Freeglut by running the following commands:

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

This package does not come with a test suite.

Now, as the root user:

```
make install
```

## Command Explanations

`--disable-static`: This switch prevents installation of static versions of the libraries.

## Contents

<b>Installed Programs:</b>	None
<b>Installed Library:</b>	libglut.so
<b>Installed Directories:</b>	None

## Short Descriptions

`libglut.so` contains functions that implement the OpenGL Utility Toolkit.

# gdk-pixbuf-2.26.5

## Introduction to Gdk Pixbuf

The Gdk Pixbuf is a toolkit for image loading and pixel buffer manipulation. It is used by GTK+ 2 and GTK+ 3 to load and manipulate images. In the past it was distributed as part of GTK+ 2 but it was split off into a separate package in preparation for the change to GTK+ 3.

This package is known to build and work properly using an LFS-7.3 platform.

## Package Information

- Download (HTTP): <http://ftp.gnome.org/pub/gnome/sources/gdk-pixbuf/2.26/gdk-pixbuf-2.26.5.tar.xz>
- Download (FTP): <ftp://ftp.gnome.org/pub/gnome/sources/gdk-pixbuf/2.26/gdk-pixbuf-2.26.5.tar.xz>
- Download MD5 sum: 339329e6d619ee3e1cb93979111b04c0
- Download size: 1.2 MB
- Estimated disk space required: 25 MB
- Estimated build time: 0.2 SBU

## Gdk Pixbuf Dependencies

### Required

GLib-2.34.3, libjpeg-turbo-1.2.1, libpng-1.6.2 and LibTIFF-4.0.3

### Recommended

Xorg Libraries (*Many* GTK+ applications *require* gdk-pixbuf-xlib).

### Optional (Required if building GNOME)

gobject-introspection-1.34.2

### Optional

JasPer-1.900.1 and GTK-Doc-1.18

## Installation of Gdk Pixbuf

Install Gdk Pixbuf by running the following commands:

```
sed -e "s@<stdlib.h>@&\n#include <string.h>@g" \
      -i gdk-pixbuf/io-png.c &&
./configure --prefix=/usr --with-x11 &&
make
```

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

Now, as the root user:

```
make install
```



## Note

If you installed the package on to your system using a “DESTDIR” method, an important file was not installed and should be copied and/or generated. Generate it using the following command as the `root` user:

```
gdk-pixbuf-query-loaders --update-cache
```

## Command Explanations

**sed -e "s@<stdlib.h>@&\n#include <string.h>@g"** ..: This **sed** silences compiler warnings when using GCC 4.8.

**--with-x11**: This switch enables building of the Gdk Pixbuf X11 library which is needed for *many* packages.

**--with-libjasper**: If you've installed JasPer-1.900.1 and you want Gdk Pixbuf to use it to compile a JPEG2000 image loader, pass this switch to configure.

**--enable-gtk-doc**: Use this parameter if GTK-Doc is installed and you wish to rebuild and install the API documentation.

## Contents

**Installed Programs:** gdk-pixbuf-csource, gdk-pixbuf-pixdata and gdk-pixbuf-query-loaders  
**Installed Libraries:** libgdk\_pixbuf-2.0.so and libgdk\_pixbuf\_xlib-2.0.so  
**Installed Directories:** /usr/include/gdk-pixbuf-2.0, /usr/lib/gdk-pixbuf-2.0 and /usr/share/gtk-doc/html/gdk-pixbuf

## Short Descriptions

<b>gdk-pixbuf-csource</b>	is a small utility that generates C code containing images, used for compiling images directly into programs.
<b>gdk-pixbuf-query-loaders</b>	collects information about loadable modules for Gdk Pixbuf and writes it to the default cache file location, or to stdout.
<b>libgdk_pixbuf-2.0.so</b>	contains functions used to load and render images.
<b>libgdk_pixbuf_xlib-2.0.so</b>	contains functions used to manipulate images and interfaces with Xlib.

# GOffice-0.8.17

## Introduction to GOffice

The GOffice package contains a library of GLib/GTK document centric objects and utilities. This is useful for performing common operations for document centric applications that are conceptually simple, but complex to implement fully. Some of the operations provided by the GOffice library include support for plugins, load/save routines for application documents and undo/redo functions.

This package is known to build and work properly using an LFS-7.2 platform.

## Package Information

- Download (HTTP): <http://ftp.gnome.org/pub/gnome/sources/goffice/0.8/goffice-0.8.17.tar.bz2>
- Download (FTP): <ftp://ftp.gnome.org/pub/gnome/sources/goffice/0.8/goffice-0.8.17.tar.bz2>
- Download MD5 sum: b4c924457163e02daf8a8d2428f51d10
- Download size: 2.2 MB
- Estimated disk space required: 86 MB
- Estimated build time: 1.2 SBU

## GOffice Dependencies

### Required

GConf-3.2.6, GTK+-2.24.17, Intltool-0.50.2, libgsf-1.14.26 and which-2.20

### Optional

GTK-Doc-1.18

## Installation of GOffice

Install GOffice by running the following commands:

```
sed -i 's#info (r, NULL#full&, 0#' goffice/utils/regutf8.c &&
./configure --prefix=/usr --disable-static &&
make
```

If you wish to run the tests, issue: **make check**.

Now, as the root user:

```
make install
```

## Command Explanations

**--disable-static**: This switch prevents the static libraries in this package being built and installed.

**sed -i 's#info (r, NULL#full&, 0#' goffice/utils/regutf8.c**: This sed removes a reference to pcre\_info, a deprecated function that was removed from PCRE-8.30.

**--enable-gtk-doc**: Use this parameter if GTK-Doc is installed and you wish to rebuild and install the API documentation.

## Contents

- Installed Libraries:** libgoffice-08.so and numerous support plugins.  
**Installed Directories:** /usr/include/libgoffice-0.8, /usr/lib/goffice, /usr/share/gtk-doc/html/goffice-0.8 and /usr/share/pixmaps/goffice.

## Short Descriptions

`libgoffice-0.8.so` contains API functions to provide support for document centric objects and utilities.

# GOffice-0.10.2

## Introduction to GOffice

The GOffice package contains a library of GLib/GTK document centric objects and utilities. This is useful for performing common operations for document centric applications that are conceptually simple, but complex to implement fully. Some of the operations provided by the GOffice library include support for plugins, load/save routines for application documents and undo/redo functions.

This package is known to build and work properly using an LFS-7.3 platform.

## Package Information

- Download (HTTP): <http://ftp.gnome.org/pub/gnome/sources/goffice/0.10/goffice-0.10.2.tar.xz>
- Download (FTP): <ftp://ftp.gnome.org/pub/gnome/sources/goffice/0.10/goffice-0.10.2.tar.xz>
- Download MD5 sum: 74c20974c2cbbf60375c8a787e2b38c4
- Download size: 2.1 MB
- Estimated disk space required: 91 MB
- Estimated build time: 1.2 SBU

## GOffice Dependencies

### Required

GTK+-3.6.4, libgsf-1.14.26, librsvg-2.36.4 and which-2.20

### Optional

*Lasem, libspectre, ghostscript-9.06, gobject-introspection-1.34.2 and GTK-Doc-1.18*

## Installation of GOffice

Install GOffice by running the following commands:

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

If you wish to run the tests, issue: **make check**.

Now, as the root user:

```
make install
```

## Command Explanations

--enable-gtk-doc: Use this parameter if GTK-Doc is installed and you wish to rebuild and install the API documentation.

## Contents

<b>Installed Programs:</b>	None
<b>Installed Libraries:</b>	libgoffice-0.10.so
<b>Installed Directories:</b>	/usr/include/libgoffice-0.10, /usr/lib/goffice and /usr/share/gtk-doc/html/goffice-0.10

## Short Descriptions

`libgoffice-0.10.so` contains API functions to provide support for document centric objects and utilities.

# GTK+2.24.17

## Introduction to GTK+ 2

The GTK+ 2 package contains libraries used for creating graphical user interfaces for applications.

This package is known to build and work properly using an LFS-7.3 platform.

### Package Information

- Download (HTTP): <http://ftp.gnome.org/pub/gnome/sources/gtk+/2.24/gtk+-2.24.17.tar.xz>
- Download (FTP): <ftp://ftp.gnome.org/pub/gnome/sources/gtk+/2.24/gtk+-2.24.17.tar.xz>
- Download MD5 sum: a10cc43fad8d64f8893d779b1f8322ff
- Download size: 13 MB
- Estimated disk space required: 380 MB
- Estimated build time: 2.7 SBU

## GTK+ 2 Dependencies

### Required

ATK-2.6.0, gdk-pixbuf-2.26.5 and Pango-1.32.5

### Recommended

hicolor-icon-theme-0.12

### Optional

Cups-1.6.2, DocBook-utils-0.6.14, gobject-introspection-1.34.2 and GTK-Doc-1.18

## Installation of GTK+ 2

Install GTK+ 2 by running the following commands:

```
sed -i 's#1 \(\gtk-.*\).sgml#& -o \1#' docs/{faq,tutorial}/Makefile.in &&
sed -i 's#@man_#man #' docs/reference/gtk/Makefile.in &&
./configure --prefix=/usr --sysconfdir=/etc &&
make
```

To test the results, issue: **make check**. Note that you must run the tests from a session with X Window Display capability (i.e., not a text-based terminal/console) as the tests attempt to open an X window, and the tests can take an excessively long time. Using an X Window, the tests should take less than 0.3 SBUs

Now, as the **root** user:

```
make install
```



### Note

If you installed the package on to your system using a “DESTDIR” method, an important file was not installed and must be copied and/or generated. Generate it using the following command as the **root** user:

```
gtk-query-immodules-2.0 > /etc/gtk-2.0/gtk.immodules
```

## Command Explanations

**sed -i 's#^ \(\(gtk-\)\).sgml#\& -o \1#' docs/{faq,tutorial}/Makefile.in:** If you have DocBook-utils-0.6.14 installed (specifically, if configure finds **db2html**) then it will try to use it to rebuild some of its HTML documentation and fail due to bugs in some of the Makefiles. This **sed** fixes the Makefiles.

**sed -i 's#.\*@man\_#man\_#' docs/reference/gtk/Makefile.in:** This **sed** fixes one of the Makefiles so it installs the man pages for **gtk-builder-convert**, **gtk-query-immodules-2.0**, and **gtk-update-icon-cache**.

**--enable-gtk-doc:** Use this parameter if GTK-Doc is installed and you wish to rebuild and install the API documentation.

## Configuring GTK+ 2

### Config Files

~/.gtkrc-2.0 and /etc/gtk-2.0/gtkrc

### Configuration Information

GTK+ 2 themes change the way a GTK+ 2 application looks. A GTK+ 2 icon theme can be used to change the icons that appear on the application's toolbar. If you have installed a GTK+ 2 theme (such as *gnome-themes* (requires GTK Engines-2.20.2)) or a GTK+ 2 icon theme (such as *gnome-icon-theme-3.6.2*) you can set your preferences in ~/.gtkrc-2.0:

```
cat > ~/.gtkrc-2.0 << "EOF"
include "/usr/share/themes/Glider/gtk-2.0/gtkrc"
gtk-icon-theme-name = "hicolor"
EOF
```

There are many more themes available at *Gnome-Look.org* and other places.

Once you've settled on themes you like, you can (as the **root** user) make them the default system wide:

```
cat > /etc/gtk-2.0/gtkrc << "EOF"
include "/usr/share/themes/Clearlooks/gtk-2.0/gtkrc"
gtk-icon-theme-name = "elementary"
EOF
```

*LXAppearance* is a GTK+ 2 application that can help you choose the themes you like.

## Contents

<b>Installed Programs:</b>	gtk-builder-convert, gtk-demo, gtk-query-immodules-2.0 and gtk-update-icon-cache
<b>Installed Libraries:</b>	libgailutil.so, lib gdk-x11-2.0.so and lib gtk-x11-2.0.so
<b>Installed Directories:</b>	/etc/gtk-2.0, /usr/include/gail-1.0, /usr/include/gtk-2.0, /usr/include/gtk-unix-print-2.0, /usr/lib/gtk-2.0, /usr/share/gtk-doc/html/gail-libgail-util, /usr/share/gtk-doc/html/gtk, /usr/share/themes/Default, /usr/share/themes/Emacs and /usr/share/themes/Raleigh

## Short Descriptions

<b>gtk-builder-convert</b>	converts glade files into XML files which can be loaded with GtkBuilder.
----------------------------	--

**gtk-demo**

demonstrates GTK+ 2 functionality and provides code for the examples.

**gtk-query-immodules-2.0**

collects information about loadable input method modules for GTK+ 2 and writes it to standard output.

**gtk-update-icon-cache**

creates mmap()able cache files for icon themes.

**libgdk-x11-2.0.so**

contains functions that act as a wrapper around the low-level drawing and windowing functions provided by the underlying graphics system.

**libgtk-x11-2.0.so**

contains functions that provide an API to implement graphical user interfaces.

# GTK+-3.6.4

## Introduction to GTK+ 3

The GTK+ 3 package contains the libraries used for creating graphical user interfaces for applications.

This package is known to build and work properly using an LFS-7.3 platform.

### Package Information

- Download (HTTP): <http://ftp.gnome.org/pub/gnome/sources/gtk+/3.6/gtk+-3.6.4.tar.xz>
- Download (FTP): <ftp://ftp.gnome.org/pub/gnome/sources/gtk+/3.6/gtk+-3.6.4.tar.xz>
- Download MD5 sum: 123d3dc6fc659539a308017934235b3e
- Download size: 13 MB
- Estimated disk space required: 390 MB
- Estimated build time: 2.8 SBU

## GTK+ 3 Dependencies

### Required

at-spi2-atk-2.6.2, gdk-pixbuf-2.26.5 and Pango-1.32.5

### Optional (Required if building GNOME)

gobject-introspection-1.34.2

### Optional

Colord-1.0.0, Cups-1.6.2, DocBook-utils-0.6.14 and GTK-Doc-1.18

## Installation of GTK+ 3



### Note

GTK+ 3 will overwrite **gtk-update-icon-cache** from GTK+-2.24.17 if it is installed. There is nothing wrong about that assuming that both programs provide same functionality. If you wish to keep one from GTK+ 2 you can add `--enable-gtk2-dependency` to the **configure** command.

Install GTK+ 3 by running the following commands:

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

To test the results:

```
rm tests/ally/pickers.ui &&
make check
```

Now, as the root user:

```
make install
```



### Note

If you installed the package on to your system using a “DESTDIR” method, an important file was not installed and must be copied and/or generated. Generate it using the following command as the `root` user:

```
gtk-query-immodules-3.0 --update-cache
```



### Note

If you installed the package to your system using a “DESTDIR” method, `/usr/share/glib-2.0/schemas/gschemas.compiled` was not updated/created. Create (or update) the file using the following command as the `root` user:

```
glib-compile-schemas /usr/share/glib-2.0/schemas
```

## Command Explanations

`--disable-packagekit`: switch disables use of PackageKit which isn't needed for BLFS.

`rm tests/all/y/pickers.ui`: This prevents test being run as it is known to fail.

## Configuring GTK+ 3

### Config Files

`~/.config/gtk-3.0/settings.ini` and `/etc/gtk-3.0/settings.ini`

### Configuration Information

GTK+ 3 themes change the way a GTK+ 3 application looks. An icon theme can be used to change the icons that appear on the application's toolbar. If you have installed a GTK+ 3 theme (eg `gnome-themes-standard-3.6.5` or an icon theme (such as `gnome-icon-theme-3.6.2`) you can set your preferences in `~/.config/gtk-3.0/settings.ini`. Eg:

```
mkdir -p ~/.config/gtk-3.0 &&
cat > ~/.config/gtk-3.0/settings.ini << "EOF"
[Settings]
gtk-theme-name = Adwaita
gtk-fallback-icon-theme = gnome
EOF
```

There are many more themes available at <http://gnome-look.org/> and other places.

Once you've settled on themes you like, you can (as the `root` user) make them the default system wide:

```
cat > /etc/gtk-3.0/settings.ini << "EOF"
[Settings]
gtk-theme-name = Clearwaita
gtk-fallback-icon-theme = elementary
EOF
```

## Contents

**Installed Programs:**

gtk3-demo, gtk3-demo-application, gtk-launch, gtk-query-immodules-3.0 and gtk-update-icon-cache

**Installed Libraries:**

libgailutil.so, libgdk-3.so and libgtk-3.so

**Installed Directories:**

/etc/gtk-3.0, /usr/include/gail-3.0, /usr/include/gtk-3.0, /usr/lib/gtk-3.0, /usr/share/gtk-3.0, /usr/share/gtk-doc/html/gail-libgail-util3, /usr/share/gtk-doc/html/gdk3 and /usr/share/gtk-doc/html/gtk3

## Short Descriptions

**gtk3-demo**

is a simple program that demonstrates some of the things that can be done with GTK+ 3

**gtk-launch**

launches an application using the given name. The name should match application desktop file name, as residing in /usr/share/application, with or without the '.desktop' suffix.

**gtk-query-immodules-3.0**

collects information about loadable input method modules for GTK+ 3 and writes it to the default cache file location, or to standard output.

**gtk-update-icon-cache**

is an icon theme caching utility that creates mmap()able cache files for icon themes.

**libgailutil-3.so**

contains functions that implements the accessibility interfaces defined by the GNOME Accessibility Toolkit.

**libgdk-3.so**

contains functions that act as a wrapper around the low-level drawing and windowing functions provided by the underlying graphics system.

**libgtk-3.so**

contains functions that provide an API to implement graphical user interfaces.

# GTK Engines-2.20.2

## Introduction to GTK Engines

The GTK Engines package contains eight themes/engines and two additional engines for GTK2.

This package is known to build and work properly using an LFS-7.3 platform.

## Package Information

- Download (HTTP): <http://ftp.gnome.org/pub/gnome/sources/gtk-engines/2.20/gtk-engines-2.20.2.tar.bz2>
- Download (FTP): <http://ftp.gnome.org/pub/gnome/sources/gtk-engines/2.20/gtk-engines-2.20.2.tar.bz2>
- Download MD5 sum: 5deb287bc6075dc21812130604c7dc4f
- Download size: 676 KB
- Estimated disk space required: 19 MB
- Estimated build time: 0.4 SBU

## GTK Engines Dependencies

### Required

GTK+-2.24.17 and Intltool-0.50.2

### Optional

which-2.20 (Required for test suite)

## Installation of GTK Engines

Install GTK Engines by running the following commands:

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

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

Now, as the **root** user:

```
make install
```

## Contents

<b>Installed Libraries:</b>	libclearlooks.so, libcrux-engine.so, libglide.so, libhcengine.so, libindustrial.so, libmist.so, libredmond95.so and libthinice.so (GTK-2 engines libraries)
<b>Installed Directories:</b>	/usr/lib/gtk-2.0/2.10.0/engines, /usr/share/gtk-engines, /usr/share/themes/Clearlooks, /usr/share/themes/Crux, /usr/share/themes/Industrial, /usr/share/themes/Mist, /usr/share/themes/Redmond and /usr/share/themes/ThinIce
<b>Installed Themes:</b>	Clearlooks, Crux, Industrial, Mist, Redmond and ThinIce

## Short Descriptions

engine libraries are manager systems for specific themes.

# Gtkmm-2.24.2

## Introduction to Gtkmm

The Gtkmm package provides a C++ interface to GTK+ 2. It can be installed alongside Gtkmm-3.6.0 (the GTK+ 3 version) with no namespace conflicts.

This package is known to build and work properly using an LFS-7.2 platform.

## Package Information

- Download (HTTP): <http://ftp.gnome.org/pub/gnome/sources/gtkmm/2.24/gtkmm-2.24.2.tar.xz>
- Download (FTP): <ftp://ftp.gnome.org/pub/gnome/sources/gtkmm/2.24/gtkmm-2.24.2.tar.xz>
- Download MD5 sum: 388a63ffc40cc8e208df9a1732a67d2d
- Download size: 11 MB
- Estimated disk space required: 255 MB
- Estimated build time: 2.8 SBU

## Gtkmm Dependencies

### Required

Atkmm-2.22.6, GTK+-2.24.17 and Pangomm-2.28.4

## Installation of Gtkmm

Install Gtkmm by running the following commands:

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

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

Now, as the root user:

```
make install
```

## Contents

<b>Installed Libraries:</b>	libgdkmm-2.4.so and libgtkmm-2.4.so
<b>Installed Directories:</b>	/usr/include/gdkmm-2.4, /usr/include/gtkmm-2.4, /usr/lib/gdkmm-2.4, /usr/lib/gtkmm-2.4, /usr/share/devhelp/books/gtkmm-2.4 and /usr/share/doc/gtkmm-2.4

## Short Descriptions

**libgdkmm-2.4.so** contains the GDK API classes.

**libgtkmm-2.4.so** contains the GTK+ API classes.

# Gtkmm-3.6.0

## Introduction to Gtkmm

The Gtkmm package provides a C++ interface to GTK+ 3.

This package is known to build and work properly using an LFS-7.2 platform.

## Package Information

- Download (HTTP): <http://ftp.gnome.org/pub/gnome/sources/gtkmm/3.6/gtkmm-3.6.0.tar.xz>
- Download (FTP): <ftp://ftp.gnome.org/pub/gnome/sources/gtkmm/3.6/gtkmm-3.6.0.tar.xz>
- Download MD5 sum: 1e7828bc13dc69d03b294d5bf4d8af67
- Download size: 9.7 MB
- Estimated disk space required: 395 MB
- Estimated build time: 3.0 SBU

## Gtkmm Dependencies

### Required

Atkmm-2.22.6, GTK+-3.6.4 and Pangomm-2.28.4

## Installation of Gtkmm

Install Gtkmm by running the following commands:

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

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

Now, as the root user:

```
make install
```

## Contents

<b>Installed Libraries:</b>	libgdkmm-3.0.so and libgtkmm-3.0.so
<b>Installed Directories:</b>	/usr/include/gdkmm-3.0, /usr/include/gtkmm-3.0, /usr/lib/gdkmm-3.0, /usr/lib/gtkmm-3.0, /usr/share/devhelp/books/gtkmm-3.0 and /usr/share/doc/gtkmm-3.0

## Short Descriptions

**libgdkmm-3.0.so** contains the GDK API classes.

**libgtkmm-3.0.so** contains the GTK+ 3 API classes.

# gtk-vnc-0.5.2

## Introduction to Gtk VNC

The Gtk VNC package contains a VNC viewer widget for GTK+. It is built using coroutines allowing it to be completely asynchronous while remaining single threaded.

This package is known to build and work properly using an LFS-7.2 platform.

## Package Information

- Download (HTTP): <http://ftp.gnome.org/pub/gnome/sources/gtk-vnc/0.5/gtk-vnc-0.5.2.tar.xz>
- Download (FTP): <ftp://ftp.gnome.org/pub/gnome/sources/gtk-vnc/0.5/gtk-vnc-0.5.2.tar.xz>
- Download MD5 sum: 591f5c0efff931336cba5b56e0c64e0d
- Download size: 380 KB
- Estimated disk space required: 10 MB
- Estimated build time: 0.2 SBU

## Gtk VNC Dependencies

### Required

GTK+-3.6.4, GnuTLS-3.2.0 and Intltool-0.50.2

### Recommended

gobject-introspection-1.34.2 and Vala-0.18.1

### Optional

Cyrus SASL-2.1.26, NSPR-4.9.6, PulseAudio-3.0 and Xulrunner-21.0

## Installation of Gtk VNC

Install Gtk VNC by running the following commands:

```
./configure --prefix=/usr \
            --with-gtk=3.0 \
            --enable-vala \
            --without-sasl &&
make
```

This package does not come with a testsuite.

Now, as the root user:

```
make install
```

## Command Explanations

--with-gtk=3.0: This switch enables building of the GTK+ 3 library instead of the GTK+ 2 one.

--enable-vala: This switch enables building of the Vala bindings. Remove if you don't have Vala-0.18.1 installed.

--without-sasl: This switch disables the use of Cyrus SASL for authentication. Remove it if you have installed Cyrus SASL and wish to enable it for authentication.

--enable-plugin: This switch enables building of the browser plugin.

## Contents

**Installed Program:**

gvnccapture

**Installed Libraries:**

libgtk-vnc-2.0.so, libgvnc-1.0.so and libgvncpulse-1.0.so

**Installed Directories:**

/usr/include/gtk-vnc-2.0, /usr/include/gvnc-1.0 and /usr/include/gvncpulse-1.0

## Short Descriptions

**gvnccapture**

is used to capture image from VNC server.

**libgtk-vnc-2.0.so**

contains the GTK+ 3 bindings for Gtk VNC.

**libgvnc-1.0.so**

contains the GObject bindings for Gtk VNC.

**libgvncpulse-1.0.so**

is the PulseAudio bridge for Gtk VNC.

# hicolor-icon-theme-0.12

## Introduction to hicolor-icon-theme

The hicolor-icon-theme package contains a default fallback theme for implementations of the icon theme specification.

This package is known to build and work properly using an LFS-7.3 platform.

## Package Information

- Download (HTTP): <http://icon-theme.freedesktop.org/releases/hicolor-icon-theme-0.12.tar.gz>
- Download (FTP): <ftp://mirror.ovh.net/gentoo-distfiles/distfiles/hicolor-icon-theme-0.12.tar.gz>
- Download MD5 sum: 55cafbcf8bcf7107f6d502149eb4d87
- Download size: 38 KB
- Estimated disk space required: 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
```

This package does not come with a test suite.

Now, as the root user:

```
make install
```

## Contents

<b>Installed Programs:</b>	None
<b>Installed Libraries:</b>	None
<b>Installed Directory:</b>	/usr/share/icons/hicolor

## Short Descriptions

/usr/share/icons/hicolor/*	contains icon definitions used as defaults.
----------------------------	---

# libnotify-0.7.5

## Introduction to libnotify

The libnotify library is used to send desktop notifications to a notification daemon, as defined in the Desktop Notifications spec. These notifications can be used to inform the user about an event or display some form of information without getting in the user's way.

This package is known to build and work properly using an LFS-7.3 platform.

## Package Information

- Download (HTTP): <http://ftp.gnome.org/pub/gnome/sources/libnotify/0.7/libnotify-0.7.5.tar.xz>
- Download (FTP): <ftp://ftp.gnome.org/pub/gnome/sources/libnotify/0.7/libnotify-0.7.5.tar.xz>
- Download MD5 sum: 8e9f8bd26517bc197ab1df748df289a9
- Download size: 269 KB
- Estimated disk space required: 5.5 MB
- Estimated build time: 0.1 SBU

## libnotify Dependencies

### Required

GTK+-3.6.4

### Optional (Required if building GNOME)

gobject-introspection-1.34.2

### Optional

GTK-Doc-1.18

## Installation of libnotify

Install libnotify by running the following commands:

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

This package does not come with a test suite.

Now, as the root user:

```
make install
```

## Command Explanations

**--disable-static**: This switch prevents installation of static versions of the libraries.

**--enable-gtk-doc**: Use this parameter if GTK-Doc is installed and you wish to rebuild and install the API documentation.

## Contents

**Installed Program:** notify-send  
**Installed Library:** libnotify.so  
**Installed Directories:** /usr/include/libnotify and /usr/share/gtk-doc/html/libnotify

## Short Descriptions

**notify-send** is a command used to send notifications.

**libnotify.so** contains the libnotify API functions.

# libxklavier-5.3

## Introduction to libxklavier

The libxklavier package contains a utility library for X keyboard.

This package is known to build and work properly using an LFS-7.2 platform.

## Package Information

- Download (HTTP): <http://ftp.gnome.org/pub/gnome/sources/libxklavier/5.3/libxklavier-5.3.tar.xz>
- Download (FTP): <ftp://ftp.gnome.org/pub/gnome/sources/libxklavier/5.3/libxklavier-5.3.tar.xz>
- Download MD5 sum: 290ea2a8abc40f78a3a16bdae6f02808
- Download size: 312 KB
- Estimated disk space required: 5.5 MB
- Estimated build time: less than 0.1 SBU

## libxklavier Dependencies

### Required

GLib-2.34.3, ISO Codes-3.42, libxml2-2.9.1 and Xorg Libraries

### Recommended

gobject-introspection-1.34.2

### Optional

GTK-Doc-1.18

## Installation of libxklavier

Install libxklavier by running the following commands:

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

This package does not come with a test suite.

Now, as the root user:

```
make install
```

## Command Explanations

`--with-xkb-base=$XORG_PREFIX/share/X11/xkb`: Use this switch if the \$XORG\_PREFIX is anything other than /usr.

`--disable-static`: This switch prevents installation of static versions of the libraries.

`--enable-gtk-doc`: Use this parameter if GTK-Doc is installed and you wish to rebuild and install the API documentation.

## Contents

**Installed Library:**

libxklavier.so

**Installed Directories:**

/usr/include/libxklavier and /usr/share/gtk-doc/html/libxklavier

## Short Descriptions

`libxklavier.so` contains XKB utility functions.

# notification-daemon-0.7.6

## Introduction to Notification Daemon

The Notification Daemon package contains a daemon that displays passive pop-up notifications.

This package is known to build and work properly using an LFS-7.2 platform.

## Package Information

- Download (HTTP): <http://ftp.gnome.org/pub/gnome/sources/notification-daemon/0.7/notification-daemon-0.7.6.tar.xz>
- Download (FTP): <ftp://ftp.gnome.org/pub/gnome/sources/notification-daemon/0.7/notification-daemon-0.7.6.tar.xz>
- Download MD5 sum: 08c9a6d18ead0aa62d933fc5a4135d38
- Download size: 276 KB
- Estimated disk space required: 4.8 MB
- Estimated build time: less than 0.1 SBU

## Notification Daemon Dependencies

### Required

GTK+-3.6.4, Intltool-0.50.2 and libcanberra-0.30 (Built with GTK+-3.6.4 support).

## Installation of Notification Daemon

Install Notification Daemon by running the following commands:

```
./configure --prefix=/usr \
            --sysconfdir=/etc \
            --libexecdir=/usr/lib/notification-daemon &&
make
```

This package does not come with a testsuite.

Now, as the root user:

```
make install
```

## Contents

<b>Installed Program:</b>	notification-daemon
<b>Installed Directory:</b>	/usr/lib/notification-daemon

## Short Descriptions

**notification-daemon** is the Notification Daemon itself.

# Pango-1.32.5

## Introduction to Pango

Pango is a library for laying out and rendering of text, with an emphasis on internationalization. It can be used anywhere that text layout is needed, though most of the work on Pango so far has been done in the context of the GTK+ widget toolkit.

This package is known to build and work properly using an LFS-7.3 platform.

## Package Information

- Download (HTTP): <http://ftp.gnome.org/pub/gnome/sources/pango/1.32/pango-1.32.5.tar.xz>
- Download (FTP): <ftp://ftp.gnome.org/pub/gnome/sources/pango/1.32/pango-1.32.5.tar.xz>
- Download MD5 sum: 8e846804d6e219bc795a26a4a39b5bfd
- Download size: 976 KB
- Estimated disk space required: 26 MB
- Estimated build time: 0.2 SBU

## Additional Downloads

- Download (HTTP): <http://ftp.gnome.org/pub/gnome/sources/pangox-compat/0.0/pangox-compat-0.0.2.tar.xz>
- Download (FTP): <ftp://ftp.gnome.org/pub/gnome/sources/pangox-compat/0.0/pangox-compat-0.0.2.tar.xz>
- Download MD5 sum: 7bcbd0187f03e1e27af9a81e07249c33
- Download size: 264 KB
- Estimated disk space required: 3.2 MB
- Estimated build time: less than 0.1 SBU

## Pango Dependencies

### Required

Cairo-1.12.14, Harfbuzz-0.9.16 and Xorg Libraries

### Optional (Required if building GNOME)

gobject-introspection-1.34.2

### Optional

GTK-Doc-1.18

## Installation of Pango

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
```



## Note

If you installed the package on to your system using a “DESTDIR” method, an important file was not installed and must be copied and/or generated. Generate it using the following command as the `root` user:

```
pango-querymodules --update-cache
```

## Installation of Pangox Compat

Install Pangox Compat by running the following commands:

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

This package does not come with a testsuite.

Now, as the `root` user:

```
make install
```

## Command Explanations

`--disable-static`: This switch prevents installation of static versions of the libraries.

`--enable-gtk-doc`: Use this parameter if GTK-Doc is installed and you wish to rebuild and install the API documentation.

## 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

<b>Installed Programs:</b>	pango-querymodules and pango-view
<b>Installed Libraries:</b>	<code>libpango-1.0.so</code> , <code>libpangocairo-1.0.so</code> , <code>libpangoft2-1.0.so</code> , <code>libpangox-1.0.so</code> and <code>libpangoft-1.0.so</code>
<b>Installed Directories:</b>	<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

<b>pango-querymodules</b>	is a module registration utility that collects information about Pango loadable modules.
<b>pango-view</b>	renders a given file through Pango for viewing purposes.

libpango-1.0.so

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.

# Pangomm-2.28.4

## Introduction to Pangomm

The Pangomm package provides a C++ interface to Pango.

This package is known to build and work properly using an LFS-7.2 platform.

## Package Information

- Download (HTTP): <http://ftp.gnome.org/pub/gnome/sources/pangomm/2.28/pangomm-2.28.4.tar.xz>
- Download (FTP): <ftp://ftp.gnome.org/pub/gnome/sources/pangomm/2.28/pangomm-2.28.4.tar.xz>
- Download MD5 sum: f4fe0905ee56e1ff0205005e61d2a66f
- Download size: 778 KB
- Estimated disk space required: 18 MB
- Estimated build time: 0.2 SBU

## Pangomm Dependencies

### Required

Cairomm-1.10.0, GLibmm-2.34.1 and Pango-1.32.5

## Installation of Pangomm

Install Pangomm 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 Library:** libpangomm-1.4.so

**Installed Directories:** /usr/include/pangomm-1.4, /usr/lib/pangomm-1.4, /usr/share/devhelp/books/pangomm-1.4 and /usr/share/doc/pangomm-1.4

## Short Descriptions

libpangomm-1.4.so contains the Pango API classes.

## Qt-4.8.4

### Introduction to Qt

Qt is a cross-platform application framework that is widely used for developing application software with a graphical user interface (GUI) (in which cases Qt is classified as a widget toolkit), and also used for developing non-GUI programs such as command-line tools and consoles for servers. One of the major users of Qt is KDE.

This package is known to build and work properly using an LFS-7.3 platform.

### Package Information

- Download (HTTP): <http://releases.qt-project.org/qt4/source/qt-everywhere-opensource-src-4.8.4.tar.gz>
- 
- Download MD5 sum: 89c5ecba180cae74c66260ac732dc5cb
- Download size: 237 MB
- Estimated disk space required: 1.8 GB (full), 619 (essential)
- Estimated build time: 69 SBU (full), 54 SBU (essential)

### Qt Dependencies

#### Required

X Window System

#### Recommended

D-Bus-1.6.10, libjpeg-turbo-1.2.1, libmng-1.0.10, LibTIFF-4.0.3, and pkg-config-0.28 (needed to use D-Bus, GLib, GTK and PulseAudio)

#### Optional

gst-plugins-base-0.10.36, PulseAudio-3.0, GLib-2.34.3, GTK+-2.24.17, OpenSSL-1.0.1e, Cups-1.6.2, MySQL-5.6.11, PostgreSQL-9.2.4, unixODBC-2.3.1 and SQLite-3.7.16.2

### 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 appropriate `lib/pkgconfig/Qt*.pc` files which must be modified if relocating the package. These files are 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.

The advantage of installing in `/usr` is that no updates to the `/etc/ld.so.conf` or `/etc/man_db.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.



#### Caution

If Qt is being reinstalled and the `/usr` directory is used as the prefix, 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.



## Note

The build time and space required for the full Qt is quite long. The instructions below do not build the tutorials and examples. Removing the `-nomake` lines will create a complete build.

The method recommended by the Qt developers does not use the `/usr` directory prefix. 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 the procedure below puts the files in `/opt/qt-4.8.4/` and then creates a symbolic link to `/opt/qt/`.

Configure Qt by running the following commands:

```
./configure -prefix /opt/qt-4.8.4 \
            -release \
            -nomake examples \
            -nomake demos \
            -system-sqlite \
            -no-nis \
            -opensource \
            -confirm-license &&
make
```



## Phonon

If KDE is intended to be installed, add `-no-phonon` to the `./configure` command above. While installing KDE, a separate version of the Phonon libraries will be installed which better matches the needs of the KDE desktop.

This package does not come with a test suite.

Now, as the `root` user:

```
make install
```

If you installed Qt in the `/opt` directory, again as the `root` user issue:

```
ln -svfn qt-4.8.4 /opt/qt
```

## Command Explanations

`-release`: This switch disables building with debugging symbols.

`-nomake examples, -nomake demos`: These switches disable building programs that are only of interest to a Qt developer.

`-system-sqlite`: Use the system version of SQLite.

`-no-nis`: Disable support for Network Information Service (NIS).

*-opensource*: Install the opensource version of Qt.

*-confirm-license*: Accept license without prompting user during configuration.

*-plugin-sql-<driver>* or *-qt-sql-<driver>*: These switches build SQL support into the Qt libraries.



### Note

To check if mysql is autodetected properly, examine the output of **./configure -qt-sql-mysql -help**. Other database support will require similar **configure** parameters.

There are several optional directories that can be specified in the **./configure** line. These include **-bindir**, **-libdir**, **-docdir**, and **-headerdir**. For a complete list, run **./configure -help**.

## Configuring Qt

### Configuration Information

If you installed Qt in /usr, create an environment variable needed by certain packages. As the **root** user:

```
cat > /etc/profile.d/qt.sh << EOF
# Begin /etc/profile.d/qt.sh

QTDIR=/usr

export QTDIR

# End /etc/profile.d/qt.sh
EOF
```

If you installed Qt in a location other than /usr, you need to update the following configuration files so that Qt is correctly found by other packages and system processes.

As the **root** user, update the **/etc/ld.so.conf** file and the dynamic linker's run-time cache file:

```
cat >> /etc/ld.so.conf << EOF
# Begin Qt addition

/opt/qt/lib

# End Qt addition
EOF
ldconfig
```

As the root user, create the /etc/profile.d/qt.sh file:

```
cat > /etc/profile.d/qt.sh << EOF
# Begin /etc/profile.d/qt.sh

QTDIR=/opt/qt

pathappend /opt/qt/bin PATH
pathappend /opt/qt/lib/pkgconfig PKG_CONFIG_PATH

export QTDIR

# End /etc/profile.d/qt.sh
EOF
```

## Contents

<b>Installed Programs:</b>	assistant, designer, lconvert, linguist, lrelease, lupdate, moc, pixeltool, qcollectiongenerator, qdbus, qdbuscpp2xml, qdbusviewer, qdbusxml2cpp, qdoc3, qhelpconverter, qhelpgenerator, qmake, qmlplugindump, qmlviewer, qt3to4, qtconfig, qtracereplay, rcc, uic, uic3, xmlpatterns and xmlpatternsvalidator
<b>Installed Libraries:</b>	libphonon.so, libQt3Support.so, libQtCLucene.so, libQtCore.so, libQtDBus.so, libQtDeclarative.so, libQtDesigner.so, libQtDesignerComponents.so, libQtGui.so, libQtHelp.so, libQtMultimedia, libQtNetwork.so, libQtOpenGL.so, libQtScript.so, libQtScriptTools.so, libQtSql.so, libQtSvg.so, libQtTest.so, libQtUiTools.a, libQtWebKit.so, libQtXml.so, libQtXmlPatterns.so and numerous plugin modules installed in /opt/qt/plugins
<b>Installed Directories:</b>	/opt/qt-4.8.4

## Short Descriptions

<b>assistant</b>	is a tool for presenting on-line documentation.
<b>designer</b>	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.
<b>linguist</b>	provides support for translating applications into local languages.
<b>lrelease</b>	is a simple command line tool. It reads a Qt project file and produces message files used by the application.
<b>lupdate</b>	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.
<b>moc</b>	generates Qt meta object support code.
<b>pixeltool</b>	is a desktop magnifier and as you move your mouse around the screen it will show the magnified contents in its window.
<b>qmake</b>	qmake uses information stored in project files to determine what should go in the makefiles it generates.
<b>qt3to4</b>	qt3to4 is a tool to help update Qt3 code to Qt4.
<b>qtconfig</b>	is used to customize the appearance of Qt applications.

- rcc** is a resource compiler used in conjunction with designer.
- uic** is a Qt user interface compiler.
- uic3** is a tool to generate Qt4 code out of user interface files generated by the Qt3 version of designer.

# shared-mime-info-1.1

## 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.

This package is known to build and work properly using an LFS-7.2 platform.

## Package Information

- Download (HTTP): <http://freedesktop.org/~hadess/shared-mime-info-1.1.tar.xz>
- 
- Download MD5 sum: 12ba00bf1cb2e69bfba73127e708e833
- Download size: 496 KB
- Estimated disk space required: 17 MB
- Estimated build time: 0.1 SBU

## Shared Mime Info Dependencies

### Required

GLib-2.34.3, Intltool-0.50.2, and libxml2-2.9.1

## Installation of Shared Mime Info

Install Shared Mime Info by running the following commands:

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

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

Now, as the root user:

```
make install
```

## Contents

<b>Installed Program:</b>	update-mime-database
<b>Installed Directory:</b>	/usr/share/mime

## Short Descriptions

<b>update-mime-database</b>	assists in adding MIME data to the database.
-----------------------------	--

# startup-notification-0.12

## 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.

This package is known to build and work properly using an LFS-7.3 platform.

### Package Information

- Download (HTTP): <http://www.freedesktop.org/software/startup-notification/releases/startup-notification-0.12.tar.gz>
- 
- Download MD5 sum: 2cd77326d4dcaed9a5a23a1232fb38e9
- Download size: 347 KB
- Estimated disk space required: 4 MB
- Estimated build time: less than 0.1 SBU

## startup-notification Dependencies

### Required

Xorg Libraries and xcb-util-0.3.9

## Installation of startup-notification

Install startup-notification 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 -m644 -D doc/startup-notification.txt \
/usr/share/doc/startup-notification-0.12/startup-notification.txt
```

## Command Explanations

--disable-static: This switch prevents the static libraries being installed.

## Contents

<b>Installed Programs:</b>	None
<b>Installed Library:</b>	libstartup-notification-1.{so,a}
<b>Installed Directories:</b>	/usr/{include/startup-notification-1.0/libsn, share/doc/startup-notification-0.12}

## 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.

# WebKitGTK+-1.10.2

## Introduction to WebKitGTK+

The WebKitGTK+ package is the port of the portable web rendering engine WebKit to the GTK+ platform. This package is known to build and work properly using an LFS-7.3 platform.

### Package Information

- Download (HTTP): <http://webkitgtk.org/releases/webkitgtk-1.10.2.tar.xz>
- 
- Download MD5 sum: 7b1a652af1eb11bee5bf7209e9ff67e6
- Download size: 8.3 MB
- Estimated disk space required: 800 MB (650 MB for GTK+2 version)
- Estimated build time: 55 SBU

### Additional Downloads

- Required patch: [http://www.linuxfromscratch.org/patches/blfs/svn/webkitgtk-1.10.2-fix\\_librt\\_linking-1.patch](http://www.linuxfromscratch.org/patches/blfs/svn/webkitgtk-1.10.2-fix_librt_linking-1.patch)

### WebKitGTK+ Dependencies

#### Required

Gperf-3.0.4, gst-plugins-base-1.0.7 or gst-plugins-base-0.10.36, GTK+-3.6.4 or GTK+-2.24.17, ICU-51.1, libxslt-1.1.28, libsoup-2.40.3, MesaLib-9.1.3, Ruby-1.9.3-p429, SQLite-3.7.16.2 and which-2.20

#### Recommended

GeoClue-0.12.0 and gobject-introspection-1.34.2

#### Optional

cURL-7.30.0, enchant-1.6.0, GTK-Doc-1.18 and *MathML*

## Installation of WebKitGTK+

### Warning

If you are building WebKitGTK+ with **make** 3.82, make sure that you have built it with the following *patch* applied or WebKitGTK+ build will fail.

If you have not installed GTK-Doc-1.18, fix a bug that will cause **make install** to fail:

```
sed -i '/generate-gtkdoc --rebase/s:^:# :' GNUmakefile.in
```

Install WebKitGTK+ by running the following commands:

```
patch -Np1 -i ../webkitgtk-1.10.2-fix_librt_linking-1.patch &&
./configure --prefix=/usr \
            --libexecdir=/usr/lib/WebKitGTK \
            --with-gstreamer=1.0 \
            --enable-introspection &&
make
```

This package does not have a working testsuite.

Now, as the root user:

```
make install
```

## Command Explanations

--enable-introspection: This switch enables support for Gobject Introspection and is required for a GNOME Desktop. Remove if you don't have Gobject Introspection installed or you don't want to install GNOME.

--with-gstreamer=1.0: This switch forces use of GStreamer 1.0 series which GNOME 3.6 uses. Remove if you don't want to install GStreamer 1.0 or you don't want to install GNOME.

--disable-geolocation: Use this option if you did not install GeoClue-0.12.0 or **configure** will fail.

--with-gtk=2.0 --disable-webkit2: These parameters force WebKitGTK+ to compile against GTK+ 2, even if GTK+ 3 is also installed. With GTK+ 2, everything WebKitGTK+ installs is suffixed with 1.0. When it is compiled against GTK+ 3 everything it installs is suffixed with 3.0. Both versions can be installed alongside one another with no namespace conflicts.

--enable-gtk-doc: Use this parameter if GTK-Doc is installed and you wish to rebuild and install the API documentation.

## Contents

<b>Installed Program:</b>	jsc-1 or jsc-3
<b>Installed Library:</b>	libjavascriptcoregtk-1.0.so and libwebkit-1.0.so or libjavascriptcoregtk-3.0.so, libwebkit2gtk-3.0.so and libwebkit-3.0.so
<b>Installed Directories:</b>	/usr/include/webkit-1.0 and /usr/share/webkit-1.0 or /usr/include/webkit-3.0, /usr/lib/WebKit and /usr/share/webkit-3.0

## Short Descriptions

<b>jsc-1 or jsc-3</b>	is a command-line utility that allows you to run JavaScript programs outside of the context of a web browser.
libjavascriptcoregtk-1.0.so	contains core JavaScript API functions used by <b>jsc-1</b> and <b>libwebkitgtk-1.0.so</b> .
libwebkitgtk-1.0.so	contains the WebKitGTK+ API functions for GTK+ 2.
libjavascriptcoregtk-3.0.so	contains core JavaScript API functions used by <b>jsc-3</b> and <b>libwebkitgtk-3.0.so</b> .
libwebkitgtk-3.0.so	contains the WebKitGTK+ API functions for GTK+ 3.
libwebkit2gtk-3.0.so	contains the WebKit2 API functions.

# Xulrunner-21.0

## Introduction to Xulrunner

Xulrunner is a runtime environment for XUL applications, and forms the major part of the Mozilla codebase. In particular, it provides the Gecko engine together with pkgconfig files so that other applications can find and use it.

This package is known to build and work properly using an LFS-7.3 platform.

## Package Information

- Download (HTTP): <http://releases.mozilla.org/pub.mozilla.org/firefox/releases/21.0/source/firefox-21.0.source.tar.bz2>
- Download (FTP): <ftp://ftp.mozilla.org/pub.mozilla.org/firefox/releases/21.0/source/firefox-21.0.source.tar.bz2>
- Download MD5 sum: 6e2510e9466b280c367de0e4c05a8840
- Download size: 101 MB
- Estimated disk space required: 4.1 GB (125 MB installed)
- Estimated build time: 35 SBU

## Xulrunner Dependencies

### Required

alsa-lib-1.0.27, GTK+-2.24.17, Zip-3.0 and UnZip-6.0

### Recommended

libevent-2.0.21, libvpx-1.1.0, NSPR-4.9.6, NSS-3.14.3, SQLite-3.7.16.2 and yasm-1.2.0



### Note

If you don't install recommended dependencies, then internal copies of those packages will be used. They might be tested to work, but they can be out of date or contain security holes.

### Optional

cURL-7.30.0, D-Bus GLib Bindings-0.100.2, Doxygen-1.8.4, gnome-vfs-2.24.4 and libgnomeui-2.24.5 (for integration with the old version of GNOME), Hunspell, libnotify-0.7.5, startup-notification-0.12, Wget-1.14 and Wireless Tools-29

```
ac_add_options --disable-dbus

# If you have installed wireless-tools comment out this line:
ac_add_options --disable-necko-wifi

# If you have installed libnotify comment out this line:
ac_add_options --disable-libnotify

# Uncomment these lines if you have installed optional dependencies:
#ac_add_options --enable-system-hunspell
#ac_add_options --enable-startup-notification

# If you have not installed Yasm then uncomment this line:
#ac_add_options --disable-webm

# Comment out following options if you have not installed
# recommended dependencies:
ac_add_options --enable-system-sqlite
ac_add_options --with-system-libevent
ac_add_options --with-system-libvpx
ac_add_options --with-system-nspr
ac_add_options --with-system-nss

# It is recommended not to touch anything below this line
ac_add_options --prefix=/usr
ac_add_options --enable-application=xulrunner

ac_add_options --disable-crashreporter
ac_add_options --disable-installer
ac_add_options --disable-updater
ac_add_options --disable-debug
ac_add_options --disable-tests
ac_add_options --disable-mochitest

ac_add_options --enable-optimize
ac_add_options --enable-strip
ac_add_options --enable-install-strip

ac_add_options --enable-system-ffi
ac_add_options --enable-system-pixman

ac_add_options --enable-shared-js
ac_add_options --with-pthreads

ac_add_options --with-system-bz2
ac_add_options --with-system-jpeg
ac_add_options --with-system-png
ac_add_options --with-system-zlib

mk_add_options MOZ_OBJDIR=@TOPSRCDIR@/xulrunner-build-dir
EOF
```

Install Xulrunner by issuing the following commands:

```
make -f client.mk
```

This package does not come with a test suite.

Now, as the root user:

```
make -C xulrunner-build-dir install &&

mkdir -pv /usr/lib/mozilla/plugins &&
rm -rf /usr/lib/xulrunner-21.0/plugins &&
ln -sv ..mozilla/plugins /usr/lib/xulrunner-21.0 &&

chmod -v 755 /usr/lib/xulrunner-21.0/libxpcom.so \
          /usr/lib/xulrunner-devel-21.0/sdk/bin/xpcshell &&

for library in libmozalloc.so libmozjs.so libxpcom.so libxul.so; do
    ln -sfv ../../..xulrunner-21.0/$library \
        /usr/lib/xulrunner-devel-21.0/sdk/lib/$library
    ln -sfv xulrunner-21.0/$library /usr/lib/$library
done

ln -sfv ../xulrunner-devel-21.0/sdk/bin/run-mozilla.sh \
          /usr/lib/xulrunner-21.0
ln -sfv ../xulrunner-devel-21.0/sdk/bin/xpcshell \
          /usr/lib/xulrunner-21.0
```

## Command Explanations

**make -f client.mk ...:** Mozilla products are packaged to allow the use of a configuration file which can be used to pass the configuration settings to the **configure** command. **make** uses the **client.mk** file to get initial configuration and setup parameters.

**ln -sfv ..mozilla/plugins ...:** Some packages will install browser plugins into **/usr/lib/mozilla/plugins**. Creating this symlink Xulrunner keeps additional plugins in a common directory.

**for library in libmozalloc.so libmozjs.so libxpcom.so libxul.so ... :** The libraries shipped with this package are installed into **/usr/lib/xulrunner-21.0** which means they will not be found at runtime. These commands make relative symbolic links to the shared libraries from **/usr/lib**. They will also replace duplicate libraries that are installed in **/usr/lib/xulrunner-devel-21.0/sdk/lib** with symlinks in order to save some space.

**ln -sfv ..xulrunner-devel-21.0/sdk/bin/ ...** The **run-mozilla.sh** and **xpcshell** files have been moved in this version, but the code which installs Firefox (when linked to xulrunner) was not updated. These symlinks allow Firefox to install when built against Xulrunner.

## Contents

<b>Installed Programs:</b>	xulrunner
<b>Installed Libraries:</b>	Numerous libraries, browser components, plugins, extensions, and helper modules installed in <b>/usr/lib/xulrunner-21.0</b>
<b>Installed Directories:</b>	<b>/usr/include/xulrunner-21.0</b> , <b>/usr/lib/xulrunner-21.0</b> , <b>/usr/lib/xulrunner-devel-21.0</b> and <b>/usr/share/idl/xulrunner-21.0</b>

## Short Descriptions

**xulrunner** is a shell script used for identifying the installed version and running Xulrunner applications.

# Chapter 26. 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.

# Fluxbox-1.3.5

## Introduction to Fluxbox

The Fluxbox package contains a window manager.

This package is known to build and work properly using an LFS-7.3 platform.

## Package Information

- Download (HTTP): <http://downloads.sourceforge.net/fluxbox/fluxbox-1.3.5.tar.bz2>
- Download (FTP): <ftp://ftp.jaist.ac.jp/pub//sourceforge/f/fl/fluxbox/1.3.5/fluxbox-1.3.5.tar.bz2>
- Download MD5 sum: 9d9e183424a0934e20417ff20775a570
- Download size: 787 KB
- Estimated disk space required: 150 MB
- Estimated build time: 0.9 SBU

## Fluxbox Dependencies

### Required

X Window System

### Optional

FriBidi-0.19.5, Imlib2-1.4.5 (if you wish to use other image formats in addition to XPM) and *xmessage* (runtime only)

## Installation of Fluxbox

Install Fluxbox by running the following commands:

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

This package does not have a working testsuite.

Now, as the root user:

```
make install
```

## Configuring Fluxbox

### Config Files

`~/.fluxbox/init`, `~/.fluxbox/keys`, and `~/.fluxbox/menu`

### Configuration Information

If Fluxbox is the only Window Manager you want to use, you can start it with an `.xinitrc` file in your home folder. Be sure to backup your current `.xinitrc` before proceeding.

```
echo startfluxbox > ~/.xinitrc
```

Or alternatively, if you use a login manager like GDM-3.6.2 or kdm and would like to be able to choose Fluxbox at the login prompt, create a `fluxbox.desktop` file like this.

As root:

```
cat > /usr/share/xsessions/fluxbox.desktop << "EOF"
[Desktop Entry]
Encoding=UTF-8
Name=Fluxbox
Comment=This session logs you into Fluxbox
Exec=startfluxbox
Type=Application
EOF
```

If you didn't install GDM-3.6.2 or kdm in /usr, then change that command to fit the prefix you chose.

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
```

To generate the application menu:

```
cd ~/.fluxbox &&
fluxbox-generate_menu
```

Alternately, copy a pregenerated menu:

```
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.

If you want to use an image as your desktop background, copy the theme you like into ~/.fluxbox. Then add a line to make it use the correct image. In the following command, change <theme> for the name of the theme you want and change </path/to/nice/image.xpm> to point to the actual image you want to use.

```
cp /usr/share/fluxbox/styles/<theme> ~/.fluxbox/theme &&
sed -i 's,^(session.styleFile:).*,\1 ~/.fluxbox/theme,' ~/.fluxbox/init &&
echo "background.pixmap: </path/to/nice/image.xpm>" >> ~/.fluxbox/theme
```

In some locales the font specified in the theme may not contain the needed characters. This results in menus with blank items. You can fix this by editing ~/.fluxbox/theme with a text editor and altering it so that it names a suitable font.

## Contents

<b>Installed Programs:</b>	fluxbox, fbsetbg, fbsetroot, fluxbox-generate_menu, startfluxbox, fbrun, fluxbox-remote, and fluxbox-update_configs
<b>Installed Libraries:</b>	None
<b>Installed Directories:</b>	/usr/share/fluxbox and ~/.fluxbox

## Short Descriptions

<b>fluxbox</b>	is a window manager for X11 based on Blackbox 0.61.0.
----------------	---

<b>fbsetbg</b>	is a utility that sets the background image. It requires one of: <b>display</b> , <b>Esetroot</b> , <b>wmsetbg</b> , <b>xv</b> , <b>qiv</b> or <b>xsri</b> . It also requires <b>which</b> if <b>Esetroot</b> is found.
<b>fbsetroot</b>	is a utility to change root window appearance based on the Blackbox application bsetroot.
<b>fluxbox-generate_menu</b>	is a utility that generates a menu by scanning your PATH.
<b>startfluxbox</b>	is a session startup script that allows for command executions prior to <b>fluxbox</b> starting.
<b>fbrun</b>	displays a run dialog window.
<b>fluxbox-remote</b>	provides command line access to key commands for Fluxbox.

# IceWM-1.3.7

## Introduction to IceWM

IceWM is a window manager with the goals of speed, simplicity, and not getting in the user's way.

This package is known to build and work properly using an LFS-7.3 platform.

## Package Information

- Download (HTTP): <http://downloads.sourceforge.net/icewm/icewm-1.3.7.tar.gz>
- Download (FTP): <ftp://mirror.ovh.net/gentoo-distfiles/distfiles/icewm-1.3.7.tar.gz>
- Download MD5 sum: 224695231aedb2b91db3254a13e1c8dd
- Download size: 878 KB
- Estimated disk space required: 39 MB
- Estimated build time: 0.3 SBU

## IceWM Dependencies

### Required

X Window System and gdk-pixbuf-2.26.5

### Optional

EsounD-0.2.41

## Installation of IceWM



### Note

This version of IceWM is nominally a development release, but it provides a stable working environment and can be built without using obsolete libraries.

Install IceWM by running the following commands:

```
sed -i '/^LIBS/s/\(.*\)/\1 -lfontconfig/' src/Makefile.in &&
sed -i 's/define deprecated/define ICEWM_DEPRECATED/' src/base.h &&
./configure --prefix=/usr &&
make
```

This package does not have a working testsuite.

Now, as the root user:

```
make install &&
make install-docs &&
make install-man &&
make install-desktop
```

## Command Explanations

`sed -i '/^LIBS/s/(.*\+)/\1 -lfontconfig/' src/Makefile.in`: this fixes the build with recent versions of binutils.

`sed -i 's/define deprecated/define ICEWM_DEPRECATED/' src/base.h`: this fixes the build with current libX11.

## Configuring IceWM

### Config Files

`~/.icewm/keys`, `~/.icewm/menu`, and `~/.icewm/preferences`, and `~/.icewm/toolbar`, and `~/.icewm/winoptions`. The default versions are installed in `/usr/share/icewm/` and will be used if you have not copied them to `~/.icewm`.

### Configuration Information

If IceWM is the only Window Manager you want to use, you can start it with an `.xinitrc` file in your home folder. Be sure to backup your current `.xinitrc` before proceeding.

```
echo icewm-session > ~/.xinitrc
```

Now create the IceWM configuration files:

```
mkdir -v ~/.icewm &&
cp -v /usr/share/icewm/keys ~/.icewm/keys &&
cp -v /usr/share/icewm/menu ~/.icewm/menu &&
cp -v /usr/share/icewm/preferences ~/.icewm/preferences &
cp -v /usr/share/icewm/toolbar ~/.icewm/toolbar &
cp -v /usr/share/icewm/winoptions ~/.icewm/winoptions
```

You can now edit these files to meet your requirements. In particular, review the `preferences` file. You can use **Logout -> Restart-IceWM** on the main menu to load your changed preferences, but changes to the background only take effect when IceWM is started.

The syntax of the menus is explained in the help files, which you can access by running **help** from the menu, but some of the detail is out of date and the default selections in the menus (a few old applications on the main menu, everything else on the **Programs** menu) will benefit from being updated to meet your needs. The following examples are provided to encourage you to think about how you wish to organise your menus. Please note the following:

- If a program listed in the menu has not been installed, it will not appear when the menu is displayed. Similarly, if the program exists but the specified icon does not, no icon will be displayed in the menu.
- The icons can be either `.xpm` or `.png` files, and there is no need to specify the extension. If the icon is located in the "library" (`/usr/share/icewm/icons`) there is no need to specify the path.
- Most programs are in sub-menus, and the main menu will always append entries for `windows`, `help`, `settings`, `logout` at the bottom.
- An icon for firefox was copied to the library directory and given a meaningful name. The icon for xine is `xine.xpm` which was installed to a pixmap directory.

- The default toolbar is not altered.

It is unlikely that these examples meet your desires, but if you wish to use them run the following commands:

```
cat > ~/.icewm/menu << "EOF"
prog Urxvt xterm urxvt
prog GVolWheel /usr/share/pixmaps/gvolwheel/audio-volume-medium gvolwheel
separator
menufile General folder general
menufile Multimedia folder multimedia
menufile Tool_bar folder toolbar
EOF &&
>cat > ~/.icewm/general << "EOF"
prog Firefox firefox firefox
prog Epiphany /usr/share/icons/gnome/16x16/apps/web-browser epiphany
prog Midori /usr/share/icons/hicolor/24x24/apps/midori midori
separator
prog Gimp /usr/share/icons/hicolor/16x16/apps/gimp gimp
separator
prog Evince /usr/share/icons/hicolor/16x16/apps/evince evince
prog Epdfview /usr/share/epdfview/pixmaps/icon_epdfview-48 epdfview
EOF &&
>cat > ~/.icewm/multimedia << "EOF"
prog Audacious /usr/share/icons/hicolor/48x48/apps/audacious audacious
separator
prog Parole /usr/share/icons/hicolor/16x16/apps/parole parole
prog Totem /usr/share/icons/hicolor/16x16/apps/totem totem
prog Vlc /usr/share/icons/hicolor/16x16/apps/vlc vlc
prog Xine /usr/share/pixmaps/xine xine
EOF &&
```

If you wish to put icons on your desktop, you will need to install a program such as Rox-Filer-2.11 which provides a pinboard. If you do that you will no longer be able to access the menu by right-clicking on the desktop, you will have to use the IceWM button. To ensure that the rox pinboard is running, the following commands will put it in the startup file:

```
cat > ~/.icewm/startup << "EOF"
rox -p Default &
EOF &&
chmod +x ~/.icewm/startup
```

### Tip

There are a number of keyboard shortcuts in IceWM:

- Ctrl + Alt + FN : go to ttyN.
- Ctrl + Alt + N : go to desktop number N
- Ctrl + Alt + Space : open a box on the taskbar where you can key in the name of an application and run it.

## Contents

<b>Installed Programs:</b>	icehelp, icesh, icewm, icewm-session, icewm-set-gnomewm, icewmbg, icewmhint, icewmtray
<b>Installed Libraries:</b>	None
<b>Installed Directories:</b>	/usr/share/doc/icewm-1.3.7, /usr/share/icewm and ~/.icewm

## Short Descriptions

<b>icehelp</b>	is used to display the html manual.
<b>icesh</b>	is a command-line window manager which can be used in ~/.icewm/startup.
<b>icewm</b>	is the window manager.
<b>icewm-session</b>	runs icewmbg, icewm, icewmtray, startup, shutdown (i.e. startup and shutdown scripts are run if installed).
<b>icewm-set-gnomewm</b>	is a script to set the GNOME to icewm using gconf tool.
<b>icewmbg</b>	is used to set the background, according to the various DesktopBackground settings in the preferences.
<b>icewmhint</b>	is used internally.
<b>icewmtray</b>	provides the tray.

# openbox-3.5.0

## Introduction to openbox

Openbox is a highly configurable desktop window manager with extensive standards support. It allows you to control almost every aspect of how you interact with your desktop.

This package is known to build and work properly using an LFS-7.3 platform.

## Package Information

- Download (HTTP): <http://openbox.org/dist/openbox/openbox-3.5.0.tar.gz>
- Download MD5 sum: 00441b53cf14c03566c8e82643544ff9
- Download size: 9 MB
- Estimated disk space required: 18 MB
- Estimated build time: 0.3 SBU

## Openbox Dependencies

### Required

X Window System and Pango-1.32.5 (compiled with support for libXft).

### Optional

Imlib2-1.4.5 (to enable icons in the right click menu).

## Installation of Openbox



### Note

If XORG\_PREFIX is not /usr, tell **gcc** about it:

```
export LIBRARY_PATH=$XORG_PREFIX/lib
```

Install Openbox by running the following commands:

```
./configure --prefix=/usr --sysconfdir=/etc --disable-static \
--docdir=/usr/share/doc/openbox-3.5.0 &&
make
```

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

Now, as the root user:

```
make install
```

## Command Explanations

--sysconfdir=/etc: This option puts Openbox's configuration files in /etc/xdg/openbox instead of /usr/etc/xdg/openbox.

--disable-static: This option stops it compiling static versions of the libraries.

--docdir=/usr/share/doc/openbox-3.5.0: this puts a few files in a versioned directory in /usr/share/doc.

## Configuring Openbox

### Config Files

/etc/xdg/openbox/menu.xml, /etc/xdg/openbox/rc.xml, ~/.config/openbox/menu.xml and ~/.config/openbox/rc.xml

### Configuration Information

Openbox's right click menu can be used to launch programs. The menu itself is configured with 2 files, /etc/xdg/openbox/menu.xml and ~/.config/openbox/menu.xml. To make changes to the menu, copy /etc/xdg/openbox/menu.xml to ~/.config/openbox/menu.xml and edit it:

```
cp -rf /etc/xdg/openbox ~/.config
```

~/.config/openbox/menu.xml can be edited with a text editor or you can install *Obmenu* (requires pyxml and PyGTK-2.24.0).

To have icons in your right click menu requires installing Imlib2-1.4.5 before you install Openbox. To set an icon for an entry in the menu edit ~/.config/openbox/menu.xml and add an icon to the <item> tag like this:

```
<item label="Mplayer" icon="/usr/share/pixmaps/mplayer.png">
```

Many other aspects of Openbox's behaviour are configured with ~/.config/openbox/rc.xml such as what keybindings are used to launch programs or which mouse button launches the main menu.

Details of the theme that Openbox applies to window decorations are configured in ~/.config/openbox/rc.xml. You can get a list of the available themes with the command:

```
ls -d /usr/share/themes/*openbox-3 | sed 's#.*/##;s#o.*##'
```

## Starting Openbox

To automatically start **openbox** when you start Xorg:

```
echo openbox > ~/.xinitrc
```

If you want to set a background image to your desktop you can use **display** and launch it from ~/.xinitrc just before openbox:

```
cat > ~/.xinitrc << "HERE_DOC"
display -backdrop -window root /path/to/beautiful/picture.jpeg
exec openbox
HERE_DOC
```

Or if you like a bit of variety, put a selection of images in a folder (in this example, the directory `~/.config/backgrounds`) and choose one at random each time you **xinit**:

```
cat > ~/.xinitrc << "HERE_DOC"
# make an array which lists the pictures:
picture_list=(~/config/backgrounds/*)
# create a random integer between 0 and the number of pictures:
random_number=$(( ${RANDOM} % ${#picture_list[@]} ))
# display the chosen picture:
display -backdrop -window root "${picture_list[$random_number]}"
exec openbox
HERE_DOC
```

If you like to have the numlock key set when you start Xorg, install *Numlockx* and add that to your `xinitrc`. Another useful application is D-Bus-1.6.10

```
cat > ~/.xinitrc << "HERE_DOC"
. /etc/profile
picture_list=(~/config/backgrounds/*)
random_number=$(( ${RANDOM} % ${#picture_list[*]} ))
display -backdrop -window root "${picture_list[$random_number]}"
numlockx
eval $(dbus-launch --auto-syntax --exit-with-session)
lxpanel &
exec openbox
HERE_DOC
```

## Contents

<b>Installed Programs:</b>	gdm-control, gnome-panel-control, obxprop, openbox, openbox-gnome-session, openbox-kde-session and openbox-session
<b>Installed Libraries:</b>	libobrender.so and libobt.so
<b>Installed Directories:</b>	/etc/xdg/openbox, /usr/include/openbox, /usr/share/doc/openbox-3.5.0 and /usr/share/themes.

## Short Descriptions

<b>gdm-control</b>	is a command line tool to send signals to GDM.
<b>gnome-panel-control</b>	is a command line utility to invoke the Gnome Panel run dialog/menu.
<b>obxprop</b>	is a tool for displaying the properties on an x window. It has a similar functionality to <b>xprop</b> , but allows you to see UTF-8 strings as text.
<b>openbox</b>	is a standards compliant, highly configurable, window manager.
<b>openbox-gnome-session</b>	is a script to launch an Gnome session with openbox as your window manager from your <code>~/.xinitrc</code> .
<b>openbox-kde-session</b>	is a script to launch an KDE session with Openbox as your window manager from your <code>~/.xinitrc</code> .
<b>openbox-session</b>	is a script to launch an Openbox session from your <code>~/.xinitrc</code> .

`libobrender.so`

contains the functions used by Openbox for theme rendering.

`libobt.so`

is the Openbox toolkit library.

# sawfish-1.9.1

## 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.

This package is known to build and work properly using an LFS-7.2 platform.

## Package Information

- Download (HTTP): <http://download.tuxfamily.org/sawfish/sawfish-1.9.1.tar.xz>
- 
- Download MD5 sum: 502cf6ad78e39288abeb5d0527fe9a7
- Download size: 2.5 MB
- Estimated disk space required: 36 MB
- Estimated build time: 0.3 SBU

## sawfish Dependencies

### Required

rep-gtk-0.90.8.1 and which-2.20

### Recommended

GTK+-2.24.17 and Pango-1.32.5

## Installation of sawfish

Install sawfish by running the following commands:

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

This package does not come with a test suite.

Now, as the root user:

```
make install
```

## Configuring sawfish

### Configuration Information

Be sure to backup your current .xinitrc before proceeding.

```
cat >> ~/.xinitrc << "EOF"
exec sawfish
EOF
```

## Contents

**Installed Programs:** sawfish, sawfish-about, sawfish-client, and sawfish-config  
**Installed Libraries:** None  
**Installed Directory:** /usr/share/sawfish

## Short Descriptions

sawfish is the extensible window manager using a Lisp-based scripting language.  
sawfish-about is the sawfish about window.  
sawfish-client allows you to connect to a window manager process and evaluate arbitrary Lisp forms.  
sawfish-config is the sawfish configuration manager.

## Other Window Managers

**twm** is the Tab Window Manager. This is the default window manager installed by the X Window System packages.

**mwm** is the Motif® Window Manager. It is an OSF/Motif® clone packaged and installed with *LessTif*.

## **Part VII. KDE**

# Chapter 27. Introduction

## Introduction to KDE

KDE Software Compilation 4 is a comprehensive desktop environment with a huge number of applications written for it and a huge amount of users. It is based on the Qt framework.

For more information visit the official KDE project site at <http://www.kde.org/>.

## Build order

The core KDE packages are listed in the recommended and tested build order. The additional KDE packages can be built in any order.

## KDE Pre-installation Configuration

### Installing in /usr

One option is to put KDE into the `/usr` hierarchy. This creates a simpler setup but makes it more difficult to try multiple versions of KDE.

```
export KDE_PREFIX=/usr
```

### Installing in /opt

A method of building multiple versions installs KDE in the `/opt` hierarchy:

```
export KDE_PREFIX=/opt/kde
```

If you are not installing KDE in `/usr`, you will need to make some additional configuration changes. Best practice is to add those to your system or personal profile:

```
cat > /etc/profile.d/kde.sh << EOF
# Begin /etc/profile.d/kde.sh

KDE_PREFIX=/opt/kde
KDEDIR=$KDE_PREFIX

pathappend $KDE_PREFIX/bin          PATH
pathappend $KDE_PREFIX/lib/pkgconfig PKG_CONFIG_PATH
pathappend $KDE_PREFIX/share/pkgconfig PKG_CONFIG_PATH
pathappend $KDE_PREFIX/share          XDG_DATA_DIRS
pathappend /etc/kde/xdg             XDG_CONFIG_DIRS

export KDE_PREFIX KDEDIR

# End /etc/profile.d/kde.sh
EOF
```

Add to your /etc/ld.so.conf:

```
cat >> /etc/ld.so.conf << EOF
# Begin kde addition

/opt/kde/lib

# End kde addition
EOF
```

Several KDE packages install files into D-Bus and polkit directories. When installing KDE in a location other than /usr, D-Bus and polkit need to find these files. The easiest way to achieve this is to create the following symlinks (as the root user):

```
install -d $KDE_PREFIX/share &&
ln -svf /usr/share/dbus-1 $KDE_PREFIX/share &&
ln -svf /usr/share/polkit-1 $KDE_PREFIX/share
```

D-Bus also needs to find the configuration files for the system-wide bus, which, if you follow the books instructions, are installed in /etc/kde/dbus-1/system.d. Fix this by issuing the following (as root):

```
mkdir -pv /etc/dbus-1 &&
cat > /etc/dbus-1/system-local.conf << EOF
<!DOCTYPE busconfig PUBLIC
"-//freedesktop//DTD D-BUS Bus Configuration 1.0//EN"
"http://www.freedesktop.org/standards/dbus/1.0/busconfig.dtd">
<busconfig>

<includedir>/etc/kde/dbus-1/system.d</includedir>

</busconfig>
EOF
```

## Tip

Sometimes, the installation paths are coded into installed files. This is the reason why /opt/kde is used as installation prefix instead of /opt/kde-4.10.3. After installing KDE, you may rename the directory and create a symlink:

```
mv /opt/kde{,-4.10.3} &&
ln -svf kde-4.10.3 /opt/kde
```

Later on, you may want to install other versions of KDE. To do that, just remove the symlink and use /opt/kde as the prefix again (KDE must not be started). Which version of KDE you use depends only on where the symlink points to. No other reconfiguration will be needed.

## Chapter 28. The KDE Core

# Automoc4-0.9.88

## Introduction to Automoc4

Automoc4 is a tool to add rules for generating Qt moc files automatically to projects that use CMake as the buildsystem.

This package is known to build and work properly using an LFS-7.3 platform.

## Package Information

- Download (HTTP): <http://mirrors.isc.org/pub/kde/stable/automoc4/0.9.88/automoc4-0.9.88.tar.bz2>
- Download (FTP): <ftp://ftp.kde.org/pub/kde/stable/automoc4/0.9.88/automoc4-0.9.88.tar.bz2>
- Download MD5 sum: 91bf517cb940109180ecd07bc90c69ec
- Download size: 0.9 MB
- Estimated disk space required: 488 KB
- Estimated build time: 0.1 SBU

## Automoc4 Dependencies

### Required

CMake-2.8.11 and Qt-4.8.4

## Installation of Automoc4

Install automoc4 by running the following commands:

```
mkdir build &&
cd build &&
cmake -DCMAKE_INSTALL_PREFIX=$QTDIR .. &&
make
```

Now, as the root user:

```
make install
```

## Contents

<b>Installed Programs:</b>	automoc4
<b>Installed Libraries:</b>	none
<b>Installed Directories:</b>	none

## Short Descriptions

**automoc4** is a utility generating Qt moc files.

# Phonon-4.6.0

## Introduction to Phonon

Phonon is the multimedia API for KDE4. It replaces the old aRts, that is no longer supported by KDE. Phonon needs either the GStreamer or VLC backend.

This package is known to build and work properly using an LFS-7.3 platform.

## Package Information

- Download (HTTP): <http://mirrors.isc.org/pub/kde/stable/phonon/4.6.0/src/phonon-4.6.0.tar.xz>
- Download (FTP): <ftp://ftp.kde.org/pub/kde/stable/phonon/4.6.0/src/phonon-4.6.0.tar.xz>
- Download MD5 sum: bbe0c1c62ed14c31479c4c1a6cf1e173
- Download size: 275 KB
- Estimated disk space required: 7.4 MB
- Estimated build time: 0.5 SBU

## Phonon Dependencies

### Required

automoc4-0.9.88 and GLib-2.34.3

### Optional

PulseAudio-3.0 and *QZeitgeist*

## Installation of Phonon

Make sure that Qt-4.8.4 is compiled without the bundled Phonon library. This package provides a better implementation.

Install Phonon by running the following commands:

```
mkdir build &&
cd build &&
cmake -DCMAKE_INSTALL_PREFIX=$QTDIR \
      -DPHONON_INSTALL_QT_EXTENSIONS_INTO_SYSTEM_QT=TRUE \
      -DDBUS_INTERFACES_INSTALL_DIR=/usr/share/dbus-1/interfaces \
      .. &&
make
```

Now, as the root user:

```
make install
```

## Command Explanations

`-DPHONON_INSTALL_QT_EXTENSIONS_INTO_SYSTEM_QT=TRUE`: This option ensures that the plugins and mkspecs files get installed in the correct location.

-DDBUS\_INTERFACES\_INSTALL\_DIR=/usr/share/dbus-1/interfaces: This option sets the correct installation path for a D-Bus interfaces file.

## Contents

<b>Installed Programs:</b>	none
<b>Installed Libraries:</b>	libphonon.so and libphononexperimental.so
<b>Installed Directories:</b>	none

# Phonon-backend-gstreamer-4.6.3

## Introduction to the Phonon-backend-gstreamer

This package provides a Phonon backend which utilizes the GStreamer media framework.

This package is known to build and work properly using an LFS-7.3 platform.

### Package Information

- Download (HTTP): <http://mirrors.isc.org/pub/kde/stable/phonon/phonon-backend-gstreamer/4.6.3/src/phonon-backend-gstreamer-4.6.3.tar.xz>
- Download (FTP): <ftp://ftp.kde.org/pub/kde/stable/phonon/phonon-backend-gstreamer/4.6.3/src/phonon-backend-gstreamer-4.6.3.tar.xz>
- Download MD5 sum: d7b0b6245f380347c52c09033a814931
- Download size: 72 KB
- Estimated disk space required: 4.1 MB
- Estimated build time: 0.3 SBU

## Phonon-backend-gstreamer Dependencies

### Required

phonon-4.6.0 and GStreamer-0.10.36

### Recommended

gst-plugins-base-0.10.36 (needed for output to ALSA), gst-plugins-good-0.10.31 (needed for output to PulseAudio), gst-plugins-bad-0.10.23 (needed for AAC/M4A support) and gst-plugins-ugly-0.10.19 (needed for MP3 support)

## Installation of Phonon-backend-gstreamer

Install Phonon-backend-gstreamer by running the following commands:

```
mkdir build &&
cd build &&
cmake -DCMAKE_INSTALL_PREFIX=$KDE_PREFIX \
      -DCMAKE_BUILD_TYPE=Release \
      .. &&
make
```

Now, as the root user:

```
make install
```

## Command Explanations

-DCMAKE\_BUILD\_TYPE=Release: This switch is used to apply higher level of compiler optimizations.

## Contents

<b>Installed Programs:</b>	none
<b>Installed Libraries:</b>	phonon_gstreamer.so
<b>Installed Directories:</b>	\$KDE_PREFIX/lib/kde4/plugins/phonon_backend and \$KDE_PREFIX/share/kde4/services/phononbackends

# Phonon-backend-vlc-0.6.2

## Introduction to the Phonon-backend-vlc

This package provides a Phonon backend which utilizes the VLC media framework.

This package is known to build and work properly using an LFS-7.3 platform.

## Package Information

- Download (HTTP): <http://mirrors.isc.org/pub/kde/stable/phonon/phonon-backend-vlc/0.6.2/phonon-backend-vlc-0.6.2.tar.xz>
- Download (FTP): <ftp://ftp.kde.org/pub/kde/stable/phonon/phonon-backend-vlc/0.6.2/phonon-backend-vlc-0.6.2.tar.xz>
- Download MD5 sum: 1ae8b15594714841d2bcf8c72813a176
- Download size: 56 KB
- Estimated disk space required: 2.2 MB
- Estimated build time: 0.2 SBU

## Phonon-backend-vlc Dependencies

### Required

phonon-4.6.0 and VLC-2.0.6

## Installation of Phonon-backend-vlc

Install Phonon-backend-vlc by running the following commands:

```
mkdir build &&
cd build &&
cmake -DCMAKE_INSTALL_PREFIX=$KDE_PREFIX \
      -DCMAKE_BUILD_TYPE=Release \
      .. &&
make
```

Now, as the root user:

```
make install
```

## Command Explanations

`-DCMAKE_BUILD_TYPE=Release`: This switch is used to apply higher level of compiler optimizations.

## Contents

<b>Installed Program:</b>	none
<b>Installed Libraries:</b>	phonon_vlc.so
<b>Installed Directory:</b>	\$KDE_PREFIX/lib/kde4/plugins/phonon_backend and \$KDE_PREFIX/share/kde4/services/phononbackends

# Akonadi-1.9.2

## Introduction to Akonadi

Akonadi is an extensible cross-desktop storage service for PIM data and metadata providing concurrent read, write, and query access. It provides unique desktop-wide object identification and retrieval.

This package is known to build and work properly using an LFS-7.3 platform.

## Package Information

- Download (HTTP): <http://download.kde.org/stable/akonadi/src/akonadi-1.9.2.tar.bz2>
- Download (FTP): <ftp://ftp.kde.org/pub/kde/stable/akonadi/src/akonadi-1.9.2.tar.bz2>
- Download MD5 sum: bdce288f4b91055d69f35c26dab276d0
- Download size: 221 KB
- Estimated disk space required: 41 MB
- Estimated build time: 1.9 SBU

## Akonadi Dependencies

### Required

shared-mime-info-1.1, Boost-1.53.0, Soprano-2.9.2, and one of: SQLite-3.7.16.2, MySQL-5.6.11, or PostgreSQL-9.2.4

## Installation of Akonadi

Apply the following sed if using MySQL 5.6:

```
sed -i 's@table_cache@table_open_cache@' server/src/storage/mysql*
```

Install Akonadi by running the following commands:

```
mkdir build &&
cd build &&
cmake -DCMAKE_INSTALL_PREFIX=$KDE_PREFIX \
      -DCMAKE_PREFIX_PATH=$QTDIR \
      -DCMAKE_BUILD_TYPE=Release \
      -DINSTALL_SQLITE_IN_QT_PREFIX=TRUE \
      .. &&
make
```

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

Now, as the root user:

```
make install
```

## Command Explanations

**-DCMAKE\_PREFIX\_PATH=\$QTDIR**: This switch is used to help **cmake** find **automoc4**.

**-DCMAKE\_BUILD\_TYPE=Release**: This switch is used to apply a higher level of compiler optimizations.

-DINSTALL\_QSQLITE\_IN\_QT\_PREFIX=TRUE: This switch ensures that Akonadi SQLite extension is installed into the Qt plugins directory.

## Contents

<b>Installed Programs:</b>	akonadi_agent_launcher, akonadi_agent_server, akonadi_control, akonadi_rds, akonadictl and akonadiserver
<b>Installed Libraries:</b>	libakonadiprotointernal.so and libqsqlite3.so
<b>Installed Directories:</b>	\$KDE_PREFIX/include/akonadi, \$KDE_PREFIX/lib/cmake/Akonadi and \$KDE_PREFIX/share/config/akonadi

# Attica-0.4.1

## Introduction to Attica

Attica is a library to access "Open Collaboration Service" providers.

This package is known to build and work properly using an LFS-7.3 platform.

## Package Information

- Download (HTTP): <http://mirrors.isc.org/pub/kde/stable/attica/attica-0.4.1.tar.bz2>
- Download (FTP): <ftp://ftp.kde.org/pub/kde/stable/attica/attica-0.4.1.tar.bz2>
- Download MD5 sum: b90983ec5d79e5ddcbc9146fa23cab72
- Download size: 59 KB
- Estimated disk space required: 7.5 MB
- Estimated build time: 0.5 SBU

## Attica Dependencies

### Required

Qt-4.8.4 and CMake-2.8.11

## Installation of Attica

Install attica by running the following commands:

```
mkdir build &&
cd build &&
cmake -DCMAKE_INSTALL_PREFIX=$KDE_PREFIX .. &&
make
```

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

Now, as the root user:

```
make install
```

## Contents

<b>Installed Programs:</b>	none
<b>Installed Libraries:</b>	libattica.so
<b>Installed Directories:</b>	\$KDE_PREFIX/include/attica

# QImageblitz-0.0.6

## Introduction to QImageblitz

QImageblitz is a graphical effect and filter library for KDE.

This package is known to build and work properly using an LFS-7.3 platform.

## Package Information

- Download (HTTP): <http://mirrors.isc.org/pub/kde/stable/qimageblitz/qimageblitz-0.0.6.tar.bz2>
- Download (FTP): <ftp://ftp.kde.org/pub/kde/stable/qimageblitz/qimageblitz-0.0.6.tar.bz2>
- Download MD5 sum: 0ae2f7d4e0876764a97ca73799f61df4
- Download size: 57 KB
- Estimated disk space required: 1.4 MB
- Estimated build time: 0.1 SBU

## QImageblitz Dependencies

### Required

Qt-4.8.4 and CMake-2.8.11

## Installation of QImageblitz

Install QImageblitz by running the following commands:

```
mkdir build &&
cd build &&
cmake -DCMAKE_INSTALL_PREFIX=$KDE_PREFIX .. &&
make
```

This package does not come with a test suite.

Now, as the root user:

```
make install
```

## Contents

<b>Installed Programs:</b>	blitztest
<b>Installed Libraries:</b>	libqimageblitz.so
<b>Installed Directories:</b>	\$KDE_PREFIX/include/qimageblitz

## Short Descriptions

**blitztest** is a testing utility for qimageblitz.

# Shared-desktop-ontologies-0.10.0

## Introduction to Shared-Desktop-Ontologies

The Shared desktop ontologies provide RDF vocabularies for the Semantic Desktop. This includes basic ontologies like RDF and RDFS and all the Nepomuk ontologies like NRL, NIE, and NFO, which are also maintained and developed in this open-source project.

This package is known to build and work properly using an LFS-7.3 platform.

### Package Information

- Download (HTTP): <http://downloads.sourceforge.net/oscaf/shared-desktop-ontologies-0.10.0.tar.bz2>
- 
- Download MD5 sum: bfb7b5acbb43e5e45466c87dbe9c45b7
- Download size: 3.8 MB
- Estimated disk space required: 6.7 MB
- Estimated build time: <0.1 SBU

### Shared-desktop-ontologies Dependencies

#### Required

CMake-2.8.11

## Installation of Shared-desktop-ontologies

Install Shared-desktop-ontologies by running the following commands:

```
mkdir build &&
cd build &&
cmake -DCMAKE_INSTALL_PREFIX=$KDE_PREFIX ..
```

This package does not come with a test suite.

Now, as the root user:

```
make install
```

## Contents

<b>Installed Programs:</b>	none
<b>Installed Libraries:</b>	none
<b>Installed Directories:</b>	\$KDE_PREFIX/share/ontology SharedDesktopOntologies

# Polkit-Qt-0.103.0

## Introduction to Polkit-Qt

Polkit-Qt provides an API to polkit in the Qt environment.

This package is known to build and work properly using an LFS-7.3 platform.

## Package Information

- Download (HTTP): <http://mirrors.isc.org/pub/kde/stable/apps/KDE4.x/admin/polkit-qt-1-0.103.0.tar.bz2>
- Download (FTP): <ftp://ftp.kde.org/pub/kde/stable/apps/KDE4.x/admin/polkit-qt-1-0.103.0.tar.bz2>
- Download MD5 sum: a105e233e6733fb072c9080cd7ae1af2
- Download size: 67 KB
- Estimated disk space required: 2.5 MB
- Estimated build time: 0.1 SBU

## Polkit-Qt Dependencies

### Required

automoc4-0.9.88 and Polkit-0.111

## Installation of Polkit-Qt

Install Polkit-Qt by running the following commands:

```
mkdir build &&
cd build &&
CMAKE_PREFIX_PATH=$QTDIR \
    cmake -DCMAKE_INSTALL_PREFIX=$KDE_PREFIX .. &&
make
```

This package does not come with a test suite.

Now, as the root user:

```
make install
```

## Command Explanations

**CMAKE\_PREFIX\_PATH=\$QTDIR**: This option is set to find **automoc4**.

## Contents

<b>Installed Programs:</b>	none
<b>Installed Libraries:</b>	libpolkit-qt-agent-1.so, libpolkit-qt-core-1.so and libpolkit-qt-gui-1.so
<b>Installed Directories:</b>	\$KDE_PREFIX/include/polkit-qt-1

# Oxygen-icons-4.10.3

## Introduction to Oxygen-icons

The Oxygen theme is a photo-realistic icon style, with a high standard of graphics quality.

This package is known to build and work properly using an LFS-7.3 platform.

## Package Information

- Download (HTTP): <http://download.kde.org/stable/4.10.3/src/oxygen-icons-4.10.3.tar.xz>
- Download (FTP): <ftp://ftp.kde.org/pub/kde/stable/4.10.3/src/oxygen-icons-4.10.3.tar.xz>
- Download MD5 sum: f50dd4177a0e24d0a8bb2a5bad69ff50
- Download size: 289.5 MB
- Estimated disk space required: 431 MB
- Estimated build time: less than 0.1 SBU

## Oxygen-icons Dependencies

### Required

CMake-2.8.11

## Installation of Oxygen-icons

Install Oxygen-icons by running the following commands:

```
mkdir build &&
cd build &&
cmake -DCMAKE_INSTALL_PREFIX=$KDE_PREFIX ..
```

This package does not come with a test suite.

Now, as the root user:

```
make install
```

## Contents

<b>Installed Programs:</b>	none
<b>Installed Libraries:</b>	none
<b>Installed Directory:</b>	\$KDE_PREFIX/share/icons/oxygen

# Kdelibs-4.10.3

## Introduction to Kdelibs

This package includes programs and libraries that are central to development and execution of KDE programs.

This package is known to build and work properly using an LFS-7.3 platform.

## Package Information

- Download (HTTP): <http://download.kde.org/stable/4.10.3/src/kdelibs-4.10.3.tar.xz>
- Download (FTP): <ftp://ftp.kde.org/pub/kde/stable/4.10.3/src/kdelibs-4.10.3.tar.xz>
- Download MD5 sum: 190db40af4b9534515a62c327e6f4976
- Download size: 12.0 MB
- Estimated disk space required: 370 MB
- Estimated build time: 24 SBU

## Kdelibs Dependencies

### Required

phonon-4.6.0, attica-0.4.1, Soprano-2.9.2, strigi-0.7.8, qca-2.0.3, libdbusmenu-qt-0.9.2, docbook-xml-4.5, docbook-xsl-1.77.1, shared-desktop-ontologies-0.10.0 and shared-mime-info-1.1

### Recommended

polkit-qt-0.103.0, libpng-1.6.2, libjpeg-turbo-1.2.1, giflib-4.1.6, UPower-0.9.20 and UDisks-1.0.4

### Optional

JasPer-1.900.1, PCRE-8.32, Avahi-0.6.31, OpenSSL-1.0.1e, acl-2.2.51, Aspell-0.60.6.1, enchant-1.6.0, *Hspell, Grantlee, FAM, HUPnP, MIT Kerberos V5-1.11.2, OpenEXR and media-player-info*

## Installation of Kdelibs

Fix file conflicts with GNOME Menus by running the following commands:

```
sed -i "s@{SYSCONF_INSTALL_DIR}/xdg/menus@@& RENAME kde-applications.menu@" \
        kded/CMakeLists.txt &&
sed -i "s@applications.menu@kde-&@" \
        kded/kbuildsycoca.cpp
```

Install Kdelibs by running the following commands:

```
mkdir build &&
cd build &&
cmake -DCMAKE_INSTALL_PREFIX=$KDE_PREFIX \
      -DSYSCONF_INSTALL_DIR=/etc \
      -DCMAKE_BUILD_TYPE=Release \
      -DDOCBOOKXML_CURRENTDTD_DIR=/usr/share/xml/docbook/xml-dtd-4.5 \
      .. &&
make
```

The unit regression tests are designed to be run after kdelibs is installed.

Now, as the root user:

```
make install
```

To run the unit regression tests, you must have a current KDE session running and issue **make test**.

## Command Explanations

- DSYSCONF\_INSTALL\_DIR=/etc: This switch is used to install configuration files in /etc.
- DCMAKE\_BUILD\_TYPE=Release: This switch is used to apply higher level of compiler optimizations.
- DDOCBOOKXML\_CURRENTDTD\_DIR=...: This switch is used to tell **cmake** where to find the XML DTDs.

## Contents

<b>Installed Programs:</b>	checkXML, kbuildsycoca4, kconfig_compiler, kcookiejar4, kde4-config, kdedit4, kdeinit4, kdeinit4_shutdown, kdeinit4_wrapper, kfilemetadatareader, kjs, kjscmd, kmailservice, kross, kshell4, ktelnetservice, kunittestmodrunner, kwrapper4, makekdewidgets, meinproc4, meinproc4_simple, nepomuk-rcgen and preparetips several in \$KDE_PREFIX/lib
<b>Installed Libraries:</b>	
<b>Installed Directories:</b>	several in \$KDE_PREFIX/include, \$KDE_PREFIX/lib and \$KDE_PREFIX/share

## Short Descriptions

<b>checkXML</b>	is a tool used to check for syntax errors in KDE DocBook XML files.
<b>kbuildsycoca4</b>	is used to rebuild the system configuration cache.
<b>kconfig_compiler</b>	is the KDE configuration compiler.
<b>kcookiejar4</b>	is the KDE HTTP cookie daemon.
<b>kde4-config</b>	is used to print the KDE installation paths.
<b>kdedit4</b>	is the KDE daemon.
<b>kdeinit4</b>	is the KDE process launcher.
<b>kjs</b>	is the KDE ECMAScript/JavaScript engine.
<b>kjscmd</b>	is a tool used for launching KJSEmbed scripts from the command line.
<b>kross</b>	is the KDE application used to run kross scripts.
<b>makekdewidgets</b>	is used to build Qt widget plugins from an ini style description file.
<b>meinproc4</b>	is used to convert DocBook files to HTML.
<b>preparetips</b>	is a script used to extract the text from a tips file.

# Polkit-kde-agent-0.99.0

## Introduction to Polkit-kde-agent

Polkit-kde-agent provides a graphical authentication prompt so non-privileged users can authenticate themselves for performing administrative tasks in KDE.

This package is known to build and work properly using an LFS-7.3 platform.

## Package Information

- Download (HTTP): <http://mirrors.isc.org/pub/kde/stable/apps/KDE4.x/admin/polkit-kde-agent-1-0.99.0.tar.bz2>
- Download (FTP): <ftp://ftp.kde.org/pub/kde/stable/apps/KDE4.x/admin/polkit-kde-agent-1-0.99.0.tar.bz2>
- Download MD5 sum: a02d3fddc6270a88bceaf3ba604c92f8
- Download size: 34 KB
- Estimated disk space required: 6.8 MB
- Estimated build time: 0.1 SBU

## Additional Downloads

- Optional patch: [http://www.linuxfromscratch.org/patches/blfs/svn/polkit-kde-agent-1-0.99.0-remember\\_password-1.patch](http://www.linuxfromscratch.org/patches/blfs/svn/polkit-kde-agent-1-0.99.0-remember_password-1.patch)

## Polkit-kde-agent Dependencies

### Required

polkit-qt-0.103.0 and kdelibs-4.10.3

## Installation of Polkit-kde-agent

Install polkit-kde-agent by running the following commands:

```
patch -Npl -i ../polkit-kde-agent-1-0.99.0-remember_password-1.patch &&
mkdir build &&
cd build &&
cmake -DCMAKE_INSTALL_PREFIX=$KDE_PREFIX .. &&
make
```

This package does not come with a test suite.

Now, as the root user:

```
make install
```

## Contents

<b>Installed Programs:</b>	polkit-kde-authentication-agent-1
<b>Installed Libraries:</b>	none
<b>Installed Directories:</b>	\$KDE_PREFIX/share/apps/policykit1-kde

# Nepomuk-core-4.10.3

## Introduction to Nepomuk-core

Nepomuk-core contains the Semantik Desktop core libraries. This includes central services like file indexing, file system monitoring, query, and of course storage, as well as the corresponding client libraries.

This package is known to build and work properly using an LFS-7.3 platform.

## Package Information

- Download (HTTP): <http://download.kde.org/stable/4.10.3/src/nepomuk-core-4.10.3.tar.xz>
- Download (FTP): <ftp://ftp.kde.org/pub/kde/stable/4.10.3/src/nepomuk-core-4.10.3.tar.xz>
- Download MD5 sum: a0e347bbccfc2d46651d4fc5198e40fd
- Download size: 372 KB
- Estimated disk space required: 37 MB
- Estimated build time: 1.3 SBU

## Nepomuk-core Dependencies

### Required

kdelibs-4.10.3

### Recommended

Poppler-0.22.4, taglib-1.8, Exiv2-0.23 and FFmpeg-1.2.1

## Installation of Nepomuk-core

Install nepomuk-core by running the following commands:

```
mkdir build &&
cd build &&
cmake -DCMAKE_INSTALL_PREFIX=$KDE_PREFIX \
       -DCMAKE_BUILD_TYPE=Release \
       .. &&
make
```

This package does not come with a working test suite.

Now, as the root user:

```
make install
```

## Contents

<b>Installed Programs:</b>	nepomuk-simplesource-rcgen, nepomuk2-rcgen, nepomukbackup, nepomukcleaner, nepomukindexer, nepomukserver and nepomukservicestub
<b>Installed Libraries:</b>	libkdeinit4_nepomukserver.so, libnepomukcommon.so, libnepomukcore.so and several in \$KDE_PREFIX/lib/kde4
<b>Installed Directories:</b>	\$KDE_PREFIX/include/nepomuk2, \$KDE_PREFIX/include/Nepomuk2, \$KDE_PREFIX/lib/cmake/NepomukCore and several in \$KDE_PREFIX/share/apps

# Nepomuk-widgets-4.10.3

## Introduction to nepomuk-widgets

Nepomuk-widgets contains the widget library for the Nepomuk Semantik Desktop.

This package is known to build and work properly using an LFS-7.3 platform.

## Package Information

- Download (HTTP): <http://download.kde.org/stable/4.10.3/src/nepomuk-widgets-4.10.3.tar.xz>
- Download (FTP): <ftp://ftp.kde.org/pub/kde/stable/4.10.3/src/nepomuk-widgets-4.10.3.tar.xz>
- Download MD5 sum: 640d9a688414c2d8ae6abe3403830e90
- Download size: 80 KB
- Estimated disk space required: 4.8 MB
- Estimated build time: 0.1 SBU

## Nepomuk-widgets Dependencies

### Required

nepomuk-core-4.10.3

## Installation of nepomuk-widgets

Install nepomuk-widgets by running the following commands:

```
mkdir build &&
cd build &&
cmake -DCMAKE_INSTALL_PREFIX=$KDE_PREFIX \
      -DCMAKE_BUILD_TYPE=Release \
      .. &&
make
```

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

Now, as the **root** user:

```
make install
```

## Contents

<b>Installed Programs:</b>	none
<b>Installed Libraries:</b>	libnepomukwidgets.so
<b>Installed Directories:</b>	\$KDE_PREFIX/include/nepomuk2 and \$KDE_PREFIX/lib/cmake/NepomukWidgets

# Kdepimlibs-4.10.3

## Introduction to Kdepimlibs

Kdepimlibs is the common library for KDE PIM applications like **kmail**, **kalarm**, etc.

This package is known to build and work properly using an LFS-7.3 platform.

### Package Information

- Download (HTTP): <http://download.kde.org/stable/4.10.3/src/kdepimlibs-4.10.3.tar.xz>
- Download (FTP): <ftp://ftp.kde.org/pub/kde/stable/4.10.3/src/kdepimlibs-4.10.3.tar.xz>
- Download MD5 sum: 994ff6687038cfda8fd481e0a550299a
- Download size: 3.0 MB
- Estimated disk space required: 153 MB
- Estimated build time: 7.5 SBU

## Kdepimlibs Dependencies

### Required

nepomuk-core-4.10.3, libxslt-1.1.28, GPGME-1.4.1, libical-1.0, Akonadi-1.9.2, Cyrus SASL-2.1.26, Boost-1.53.0 and QJson-0.8.1

### Recommended

OpenLDAP-2.4.35

## Installation of Kdepimlibs

Install kdepimlibs by running the following commands:

```
mkdir build &&
cd build &&
cmake -DCMAKE_INSTALL_PREFIX=$KDE_PREFIX \
      -DCMAKE_BUILD_TYPE=Release \
      .. &&
make
```

The full test suite for this package is not enabled by default and not tested by the BLFS team.

Now, as the root user:

```
make install
```

## Contents

<b>Installed Programs:</b>	akonadi_benchmark and akonaditest
<b>Installed Libraries:</b>	several in \$KDE_PREFIX/lib
<b>Installed Directories:</b>	several in \$KDE_PREFIX/include, \$KDE_PREFIX/lib and \$KDE_PREFIX/share

# Kactivities-4.10.3

## Introduction to Kactivities

This package provides the activitymanager for KDE.

This package is known to build and work properly using an LFS-7.3 platform.

## Package Information

- Download (HTTP): <http://download.kde.org/stable/4.10.3/src/kactivities-4.10.3.tar.xz>
- Download (FTP): <ftp://ftp.kde.org/pub/kde/stable/4.10.3/src/kactivities-4.10.3.tar.xz>
- Download MD5 sum: 4079a7a99c2dfe1b5c7bde4f39657ae6
- Download size: 109 KB
- Estimated disk space required: 11.4 MB
- Estimated build time: 0.5 SBU

## Kactivities Dependencies

### Required

kdelibs-4.10.3

### Recommended

nepomuk-core-4.10.3

## Installation of Kactivities

Install Kactivities by running the following commands:

```
mkdir build &&
cd build &&
cmake -DCMAKE_INSTALL_PREFIX=$KDE_PREFIX \
       -DCMAKE_BUILD_TYPE=Release \
       .. &&
make
```

This package does not ship a default test suite.

Now, as the root user:

```
make install
```

## Contents

<b>Installed Programs:</b>	kactivitymanagerd
<b>Installed Libraries:</b>	libkactivities.so, libkactivities-models.so and several in \$KDE_PREFIX/lib/kde4
<b>Installed Directories:</b>	\$KDE_PREFIX/include/kactivities, \$KDE_PREFIX/include/kactivities-models, \$KDE_PREFIX/include/KDE/KActivities, \$KDE_PREFIX/lib/cmake/KActivities, \$KDE_PREFIX/lib/cmake/KActivities-models, and several in \$KDE_PREFIX/share

# Kde-runtime-4.10.3

## Introduction to Kde-runtime

Kde-runtime contains runtime applications and libraries essential for KDE.

This package is known to build and work properly using an LFS-7.3 platform.

## Package Information

- Download (HTTP): <http://download.kde.org/stable/4.10.3/src/kde-runtime-4.10.3.tar.xz>
- Download (FTP): <ftp://ftp.kde.org/pub/kde/stable/4.10.3/src/kde-runtime-4.10.3.tar.xz>
- Download MD5 sum: d4b839dd343cf6eb995071b685a05467
- Download size: 7.2 MB
- Estimated disk space required: 111 MB
- Estimated build time: 7.5 SBU

## Additional Downloads

- Required patch: [http://www.linuxfromscratch.org/patches/blfs/svn/kde-runtime-4.10.3-rpc\\_fix-1.patch](http://www.linuxfromscratch.org/patches/blfs/svn/kde-runtime-4.10.3-rpc_fix-1.patch)

## Kde-runtime Dependencies

### Required

kdelibs-4.10.3 and libtirpc-0.2.3

### Recommended

kactivities-4.10.3, kdepimlibs-4.10.3, alsa-lib-1.0.27, libjpeg-turbo-1.2.1 and Exiv2-0.23

### Optional

GDB-7.6, PulseAudio-3.0, xine-lib-1.2.2, libcanberra-0.30, Samba-3.6.12, NetworkManager-0.9.8.0, *OpenSLP*, *QNtrack*, *LibSSH* and *OpenEXR*

## Installation of Kde-runtime

Install kde-runtime by running the following commands:

```
patch -Np1 -i ../kde-runtime-4.10.3-rpc_fix-1.patch &&
mkdir build &&
cd build &&
cmake -DCMAKE_INSTALL_PREFIX=$KDE_PREFIX \
      -DSYSCONF_INSTALL_DIR=/etc \
      -DCMAKE_BUILD_TYPE=Release \
      .. &&
make
```

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

Now, as the root user:

```
make install &&
ln -s -v ../lib/kde4/libexec/kdesu $KDE_PREFIX/bin/kdesu
```

## Contents

### Installed Programs:

kcmshell4, kde-cp, kde-mv, kde-open, kde4, kde4-menu, kdebugdialog, keditfiletype, kfile4, kglobalaccel, khelpcenter, khotnewstuff-upload, khotnewstuff4, kiconfinder, kioclient, kmimetypefinder, knotify4, kquitapp, kreadconfig, kstart, ksvgtopng, ktraderclient, ktrash, kuiserver, kwalletd, kwriteconfig, nepomukcontroller, plasma-remote-helper, plasmapkg and solid-hardware.

several in \$KDE\_PREFIX/lib

### Installed Libraries:

### Installed Directories:

several in \$KDE\_PREFIX/lib and \$KDE\_PREFIX/share

# Kde-baseapps-4.10.3

## Introduction to Kde-baseapps

This package provides various applications, such as Dolphin (file manager) and Konqueror (web browser). Infrastructure files and libraries are also provided.

This package is known to build and work properly using an LFS-7.3 platform.

## Package Information

- Download (HTTP): <http://download.kde.org/stable/4.10.3/src/kde-baseapps-4.10.3.tar.xz>
- Download (FTP): <ftp://ftp.kde.org/pub/kde/stable/4.10.3/src/kde-baseapps-4.10.3.tar.xz>
- Download MD5 sum: 9db447a2ef7e944de430b6eb60fcde1a
- Download size: 2.6 MB
- Estimated disk space required: 82 MB
- Estimated build time: 5.2 SBU

## Kde-baseapps Dependencies

### Required

kdelibs-4.10.3

### Recommended

kactivities-4.10.3 and nepomuk-widgets-4.10.3

### Optional

HTML Tidy-cvs\_20101110 and GLib-2.34.3

## Installation of Kde-baseapps

Install Kde-baseapps by running the following commands:

```
mkdir build &&
cd build &&
cmake -DCMAKE_INSTALL_PREFIX=$KDE_PREFIX \
      -DCMAKE_BUILD_TYPE=Release \
      .. &&
make
```

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

Now, as the root user:

```
make install
```

## Contents

<b>Installed Programs:</b>	dolphin, fsview, kbookmarkmerger, kdepasswd, kdialog, keditbookmarks, kfind, kfmclient, konqueror, nspluginscan, nspluginviewer, servicemenudeinstallation and servicemenuinstallation
<b>Installed Libraries:</b>	libdolphinprivate.so, libkbookmarkmodel_private.so, libkdeinit4_dolphin.so, libkdeinit4_keditbookmarks.so, libkdeinit4_kfmclient.so, libkdeinit4_konqueror.so, libkonq.so, libkonqsidebarplugin.so, libkonquerorprivate.so and several in \$KDE_PREFIX/lib/kde4
<b>Installed Directories:</b>	several in \$KDE_PREFIX/share

## Short Descriptions

<b>kbookmarkmerger</b>	is a program for merging a given set of bookmarks into the user's set of bookmarks.
<b>kfind</b>	is the file find utility for KDE.

# Kde-base-artwork-4.10.3

## Introduction to Kde-base-artwork

This package provides the default splash screen for KDE.

This package is known to build and work properly using an LFS-7.3 platform.

## Package Information

- Download (HTTP): <http://download.kde.org/stable/4.10.3/src/kde-base-artwork-4.10.3.tar.xz>
- Download (FTP): <ftp://ftp.kde.org/pub/kde/stable/4.10.3/src/kde-base-artwork-4.10.3.tar.xz>
- Download MD5 sum: 5b69fb4978ea1d90c68951afdbc862c8
- Download size: 7.4 MB
- Estimated disk space required: 16 MB
- Estimated build time: less than 0.1 SBU

## Kde-base-artwork Dependencies

### Required

kdelibs-4.10.3

## Installation of Kde-base-artwork

Install Kde-base-artwork by running the following commands:

```
mkdir build &&
cd build &&
cmake -DCMAKE_INSTALL_PREFIX=$KDE_PREFIX ..
```

Now, as the root user:

```
make install
```

## Contents

<b>Installed Programs:</b>	none
<b>Installed Libraries:</b>	none
<b>Installed Directory:</b>	\$KDE_PREFIX/share/apps/ksplash/Themes/Default

# Kde-workspace-4.10.3

## Introduction to Kde-workspace

The Kde-workspace package contains components that are central to providing the KDE desktop environment. Of particular importance are KWin, the KDE window manager, and Plasma, which provides the workspace interface.

This package is known to build and work properly using an LFS-7.3 platform.

## Package Information

- Download (HTTP): <http://download.kde.org/stable/4.10.3/src/kde-workspace-4.10.3.tar.xz>
- Download (FTP): <ftp://ftp.kde.org/pub/kde/stable/4.10.3/src/kde-workspace-4.10.3.tar.xz>
- Download MD5 sum: eee6f7ac3bcd6042d594c4d73dc8daef
- Download size: 13.6 MB
- Estimated disk space required: 333 MB
- Estimated build time: 20 SBU

## Kde-workspace Dependencies

### Required

kactivities-4.10.3, qimageblitz-0.0.6, xcb-util-image-0.3.9, and xcb-util-renderutil-0.3.8

### Recommended

kdepimlibs-4.10.3, nepomuk-core-4.10.3, Boost-1.53.0, FreeType-2.4.12, pciutils-3.2.0, and ConsoleKit-0.4.6

### Optional

Linux-PAM-1.1.6, libusb-1.0.9, NetworkManager-0.9.8.0, lm\_sensors-3.3.3, QJson-0.8.1, PyKDE4, GoogleGadgets, Prison, libraw1394, gpsd, XMMS and libqalculate (wants CLN)



### Note

Kde-workspace has a run-time dependency called Application menu for Qt that allows the application menubar to be inserted as a single button in the titlebar. It can be found at *appmenu-qt*.

## Installation of Kde-workspace

It is recommended to have a dedicated user and group to take control of the **kdm** daemon after it is started. Issue the following commands as the `root` user:

```
groupadd -g 37 kdm &&
useradd -c "KDM Daemon Owner" -d /var/lib/kdm -g kdm \
-u 37 -s /bin/false kdm &&
install -o kdm -g kdm -dm755 /var/lib/kdm
```

Install Kde-workspace by running the following commands:

```
mkdir build &&
cd build &&
cmake -DCMAKE_INSTALL_PREFIX=$KDE_PREFIX \
    -DSYSCONF_INSTALL_DIR=/etc \
    -DCMAKE_BUILD_TYPE=Release \
    -DINSTALL_PYTHON_FILES_IN_PYTHON_PREFIX=TRUE \
    .. &&
make
```

Now, as the root user:

```
make install &&
mkdir -p /usr/share/xsessions &&
ln -sf $KDE_PREFIX/share/apps/kdm/sessions/kde-plasma.desktop \
    /usr/share/xsessions/kde-plasma.desktop
```

## Command Explanations

-DINSTALL\_PYTHON\_FILES\_IN\_PYTHON\_PREFIX=TRUE: This option is set to install the KDE Python objects in the correct place.

# Configuring KDE Workspace

## Linux PAM Configuration

If you built KDE Workspace with Linux PAM support, create necessary configuration files by running the following commands as the `root` user:

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

auth      requisite      pam_nologin.so
auth      required       pam_env.so

auth      required       pam_succeed_if.so uid >= 1000 quiet
auth      include        system-auth

account  include        system-account
password include       system-password
session   include        system-session

# End /etc/pam.d/kde
EOF
cat > /etc/pam.d/kde-np << "EOF" &&
# Begin /etc/pam.d/kde-np

auth      requisite      pam_nologin.so
auth      required       pam_env.so

auth      required       pam_succeed_if.so uid >= 1000 quiet
auth      required       pam_permit.so

account  include        system-account
password include       system-password
session   include        system-session

# End /etc/pam.d/kde-np
EOF
cat > /etc/pam.d/kscreensaver << "EOF"
# Begin /etc/pam.d/kscreensaver

auth      include system-auth
account  include system-account

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

## Contents

### Installed Programs:

genkdmconf, kaccess, kapplymousetheme, kblankscrn.kss, kcheckrunning, kcminit, kcminit\_startup, kdm, kdmcctl, kdostartupconfig4, kfontinst, kfontview, kinfocenter, klipper, kmenedit, krandom.kss, krandrstartup, krandrtray, krdb, krunner, ksmserver, ksplashqml, ksplashsimple, ksplashx, ksplashx\_scale, kstartupconfig4, ksysguard, ksysguardd, ksystraycmd, kwin, kwin\_gles, kwrited, oxygen-demo, oxygen-settings, oxygen-shadow-demo, plasma-desktop, plasma-netbook, plasma-overlay, plasma-windowed, solid-action-desktop-gen, solid-network, startkde and systemsettings several in \$KDE\_PREFIX/lib

### Installed Libraries:

### Installed Directories:

several in \$KDE\_PREFIX/include, \$KDE\_PREFIX/lib and \$KDE\_PREFIX/share

# Starting KDE

After Kde-workspace has been installed, the first important milestone has been reached. Now you need to configure your system to start KDE.

## Starting KDE from the command prompt

To start KDE from the command prompt, you first need to modify your `.xinitrc` file:

```
cat > ~/.xinitrc << EOF
# Begin .xinitrc

exec ck-launch-session dbus-launch --exit-with-session startkde

# End .xinitrc
EOF
```



### Note

If you are not using ConsoleKit, remove `ck-launch-session`.

You can now start KDE using the `startx` command.

## Starting KDE at boot

KDE comes with a graphical login interface called KDM (the KDE Display Manager), which provides a customizable graphical login at boot. To use KDM, you need to edit your `/etc/inittab` file (as the `root` user). First, setup run-level 5 to start KDM (adjust the path to `kdm` according to your system):

```
cat >> /etc/inittab << EOF
kd:5:respawn:/opt/kde/bin/kdm
EOF
```

Additionally, you need to change the default run-level from 3 to 5:

```
sed -i 's#id:3:initdefault:#id:5:initdefault:#' /etc/inittab
```

You can now restart your system and see the KDE login screen.

## Installing further KDE packages

Every subsequent package can be built while having KDE up and running, but remember to keep `$KDE_PREFIX` and `$QTDIR` set.

## Chapter 29. KDE Additional Packages

# Konsole-4.10.3

## Introduction to Konsole

This package provides a terminal emulator for KDE.

This package is known to build and work properly using an LFS-7.3 platform.

## Package Information

- Download (HTTP): <http://download.kde.org/stable/4.10.3/src/konsole-4.10.3.tar.xz>
- Download (FTP): <ftp://ftp.kde.org/pub/kde/stable/4.10.3/src/konsole-4.10.3.tar.xz>
- Download MD5 sum: d7d53a53c6c1d830dd6637aac59510e7
- Download size: 446 KB
- Estimated disk space required: 12 MB
- Estimated build time: 0.7 SBU

## Konsole Dependencies

### Required

kdelibs-4.10.3

### Recommended

kde-baseapps-4.10.3

## Installation of Konsole

Install Konsole by running the following commands:

```
mkdir build &&
cd build &&
cmake -DCMAKE_INSTALL_PREFIX=$KDE_PREFIX \
       -DCMAKE_BUILD_TYPE=Release \
       .. &&
make
```

Now, as the root user:

```
make install
```

## Contents

<b>Installed Programs:</b>	konsole and konsoleprofile
<b>Installed Libraries:</b>	libkdeinit4_konsole.so, libkonsolepart.so and libkonsoleprivate.so
<b>Installed Directories:</b>	\$KDE_PREFIX/share/apps/konsole and \$KDE_PREFIX/share/doc/HTML/en/konsole

## Short Descriptions

**konsole** is the KDE terminal emulator.

# Kate-4.10.3

## Introduction to Kate

This package provides two texteditors: Kate and KWrite. Kate is a powerful programmer's text editor with syntax highlighting for many programming and scripting languages. KWrite is the lightweight cousin of Kate.

This package is known to build and work properly using an LFS-7.3 platform.

## Package Information

- Download (HTTP): <http://download.kde.org/stable/4.10.3/src/kate-4.10.3.tar.xz>
- Download (FTP): <ftp://ftp.kde.org/pub/kde/stable/4.10.3/src/kate-4.10.3.tar.xz>
- Download MD5 sum: 84858eba48bbf4f0bb64e44a859b7a7d
- Download size: 2.6 MB
- Estimated disk space required: 75 MB
- Estimated build time: 4.6 SBU

## Kate Dependencies

### Required

kdelibs-4.10.3

### Recommended

kactivities-4.10.3

### Optional

QJson-0.8.1 and *PyKDE4*

## Installation of Kate

Install Kate by running the following commands:

```
mkdir build &&
cd build &&
cmake -DCMAKE_INSTALL_PREFIX=$KDE_PREFIX \
      -DCMAKE_BUILD_TYPE=Release \
      -DINSTALL_PYTHON_FILES_IN_PYTHON_PREFIX=TRUE \
      .. &&
make
```

Now, as the root user:

```
make install
```

## Command Explanations

**-DINSTALL\_PYTHON\_FILES\_IN\_PYTHON\_PREFIX=TRUE**: This option is set to install the KDE Python objects in the correct place.

## Contents

**Installed Programs:**

kate and kwrite

**Installed Libraries:**

libkateinterfaces.so, libkatepartinterfaces.so, libkdeinit4\_kate.so,

libkdeinit4\_kwedit.so and several in \$KDE\_PREFIX/lib/kde4

**Installed Directories:**

\$KDE\_PREFIX/include/kate and several in \$KDE\_PREFIX/share

## Short Descriptions

**kate** is the KDE text editor.

# Ark-4.10.3

## Introduction to Ark

This package provides an archiving utility for KDE.

This package is known to build and work properly using an LFS-7.3 platform.

## Package Information

- Download (HTTP): <http://download.kde.org/stable/4.10.3/src/ark-4.10.3.tar.xz>
- Download (FTP): <ftp://ftp.kde.org/pub/kde/stable/4.10.3/src/ark-4.10.3.tar.xz>
- Download MD5 sum: 4628271f1cf1fce1581bb452f573ce08
- Download size: 238 KB
- Estimated disk space required: 9.5 MB
- Estimated build time: 0.8 SBU

## Ark Dependencies

### Required

kde-baseapps-4.10.3 and libarchive-3.1.2

### Optional

QJson-0.8.1

## Installation of Ark

Install Ark by running the following commands:

```
mkdir build &&
cd build &&
cmake -DCMAKE_INSTALL_PREFIX=$KDE_PREFIX \
       -DCMAKE_BUILD_TYPE=Release \
       .. &&
make
```

Now, as the root user:

```
make install
```

## Contents

<b>Installed Program:</b>	ark
<b>Installed Libraries:</b>	libkerfuffle.so and several in \$KDE_PREFIX/lib/kde4
<b>Installed Directories:</b>	several in \$KDE_PREFIX/share

## Short Descriptions

**ark** is the KDE archiving utility.

# Kdeadmin-4.10.3

## Introduction to Kdeadmin

This package provides several administration tools for KDE. These include a tool for managing users, a cron command schedule editor, a printer administration tool and a log file viewer.

This package is known to build and work properly using an LFS-7.3 platform.

## Package Information

- Download (HTTP): <http://download.kde.org/stable/4.10.3/src/kdeadmin-4.10.3.tar.xz>
- Download (FTP): <ftp://ftp.kde.org/pub/kde/stable/4.10.3/src/kdeadmin-4.10.3.tar.xz>
- Download MD5 sum: 3f6352cb946a48f9ea681c0048fb691a
- Download size: 680 KB
- Estimated disk space required: 23 MB
- Estimated build time: 2.2 SBU

## Kdeadmin Dependencies

### Required

kdelibs-4.10.3

### Recommended

kdepimlibs-4.10.3

### Optional

*PyKDE4, PyCups and system-config-printer*

## Installation of Kdeadmin

Install kdeadmin by running the following commands:

```
mkdir build &&
cd build &&
cmake -DCMAKE_INSTALL_PREFIX=$KDE_PREFIX \
      -DCMAKE_BUILD_TYPE=Release \
      .. &&
make
```

Now, as the root user:

```
make install
```

## Contents

<b>Installed Programs:</b>	ksystemlog and kuser
<b>Installed Libraries:</b>	kcm_cron.so
<b>Installed Directories:</b>	several in \$KDE_PREFIX/share

# Kmix-4.10.3

## Introduction to Kmix

This packages provides an audio mixer application for KDE.

This package is known to build and work properly using an LFS-7.3 platform.

## Package Information

- Download (HTTP): <http://download.kde.org/stable/4.10.3/src/kmix-4.10.3.tar.xz>
- Download (FTP): <ftp://ftp.kde.org/pub/kde/stable/4.10.3/src/kmix-4.10.3.tar.xz>
- Download MD5 sum: f2f6371b7b61192cc1c7ce8ab1f10ab
- Download size: 386 KB
- Estimated disk space required: 15 MB
- Estimated build time: 0.3 SBU

## Kmix Dependencies

### Required

kdelibs-4.10.3

### Optional

PulseAudio-3.0 and libcanberra-0.30

## Installation of Kmix

Install Kmix by running the following commands:

```
mkdir build &&
cd build &&
cmake -DCMAKE_INSTALL_PREFIX=$KDE_PREFIX \
      -DCMAKE_BUILD_TYPE=Release \
      .. &&
make
```

Now, as the root user:

```
make install
```

## Contents

<b>Installed Programs:</b>	kmix and kmixctrl			
<b>Installed Libraries:</b>	libkdeinit4_kmix.so,	libkdeinit4_kmixctrl.so,	kded_kmixd.so	and
	plasma_engine_mixer.so			

**Installed Directories:** several in \$KDE\_PREFIX/share

## Short Descriptions

**kmix** is the KDE Volume Control.

# libkcddb-4.10.3

## Introduction to libkcddb

The libkcddb package contains a library used to retrieve audio CD meta data from the internet.

This package is known to build and work properly using an LFS-7.3 platform.

## Package Information

- Download (HTTP): <http://download.kde.org/stable/4.10.3/src/libkcddb-4.10.3.tar.xz>
- Download (FTP): <ftp://ftp.kde.org/pub/kde/stable/4.10.3/src/libkcddb-4.10.3.tar.xz>
- Download MD5 sum: 042bba982db2be4925e8e119f30c7e89
- Download size: 166 KB
- Estimated disk space required: 5.5 MB
- Estimated build time: 0.3 SBU

## libkcddb Dependencies

### Required

kdelibs-4.10.3 and libmusicbrainz-5.0.1

## Installation of libkcddb

Install libkcddb by running the following commands:

```
mkdir build &&
cd build &&
cmake -DCMAKE_INSTALL_PREFIX=$KDE_PREFIX \
      -DCMAKE_BUILD_TYPE=Release \
      .. &&
make
```

Now, as the root user:

```
make install
```

## Contents

<b>Installed Programs:</b>	None
<b>Installed Libraries:</b>	libkcddb.so and kcm_cddb.so in \$KDE_PREFIX/lib/kde4
<b>Installed Directories:</b>	\$KDE_PREFIX/include/libkcddb, \$KDE_PREFIX/lib/cmake/libkcddb and several in \$KDE_PREFIX/share

## Short Descriptions

**libkcddb.so** contains functions used to retrieve audio CD meta data from the internet.

# Kdepim-runtime-4.10.3

## Introduction to Kdepim-runtime

This package provides additional resources for Akonadi.

This package is known to build and work properly using an LFS-7.3 platform.

## Package Information

- Download (HTTP): <http://download.kde.org/stable/4.10.3/src/kdepim-runtime-4.10.3.tar.xz>
- Download (FTP): <ftp://ftp.kde.org/pub/kde/stable/4.10.3/src/kdepim-runtime-4.10.3.tar.xz>
- Download MD5 sum: 6358d063ab2541eed3ac61055ff1a3f3
- Download size: 1.2 MB
- Estimated disk space required: 106 MB
- Estimated build time: 7.2 SBU

## Kdepim-runtime Dependencies

### Required

`kdepimlibs-4.10.3`

### Optional

*LibKGAPI* (to access Google services) and *KolabLibraries*

## Installation of Kdepim-runtime

Install Kdepim-runtime by running the following commands:

```
mkdir build &&
cd build &&
cmake -DCMAKE_INSTALL_PREFIX=$KDE_PREFIX \
      -DCMAKE_BUILD_TYPE=Release \
      .. &&
make
```

Now, as the root user:

```
make install
```

## Contents

<b>Installed Programs:</b>	accountwizard, akonadi2xml, akonadi_nepomuk_feeder, akonadi_*_agent, akonadi_*_resource, akonaditray, kaddressbookmigrator, kjotsmigrator, kmailmigrator, kres-migrator and nepomukpimindexerutility
<b>Installed Libraries:</b>	libakonadi-filestore.so, libakonadi-xml.so, libkdepim-copy.so, libkmindexreader.so, libmaildir.so, libnepomukfeederpluginlib.a and several in \$KDE_PREFIX/lib/kde4
<b>Installed Directories:</b>	several in \$KDE_PREFIX/share

# Kdepim-4.10.3

## Introduction to Kdepim

This package provides several KDE programs for managing personal information. Programs include a contact manager, calendar, mail client, newsreader, X.509 certificate manager and sticky notes.

This package is known to build and work properly using an LFS-7.3 platform.

## Package Information

- Download (HTTP): <http://download.kde.org/stable/4.10.3/src/kdepim-4.10.3.tar.xz>
- Download (FTP): <ftp://ftp.kde.org/pub/kde/stable/4.10.3/src/kdepim-4.10.3.tar.xz>
- Download MD5 sum: 65b24e7b2afefb97721600884c5e06e2
- Download size: 14.4 MB
- Estimated disk space required: 318 MB
- Estimated build time: 19.2 SBU

## Additional Downloads

- Required patch: [http://www.linuxfromscratch.org/patches/blfs/svn/kdepim-4.10.3-boost\\_fix-2.patch](http://www.linuxfromscratch.org/patches/blfs/svn/kdepim-4.10.3-boost_fix-2.patch)

## Kdepim Dependencies

### Required

kdepim-runtime-4.10.3

### Recommended

nepomuk-widgets-4.10.3, Boost-1.53.0 and Libassuan-2.1.0

### Optional

*Prison, Grantlee and dblatex*

## Installation of Kdepim

Install Kdepim by running the following commands:

```
patch -Np1 -i ../kdepim-4.10.3-boost_fix-2.patch &&
mkdir build &&
cd build &&
cmake -DCMAKE_INSTALL_PREFIX=$KDE_PREFIX \
      -DSYSCONF_INSTALL_DIR=/etc \
      -DCMAKE_BUILD_TYPE=Release \
      .. &&
make
```

Now, as the root user:

```
make install
```

## Contents

### Installed Programs:

akonadi\_archivemail\_agent, akonadi\_mailfilter\_agent, akonadiconsole, akregator, akregatorstorageexporter, blogilo, ical2vcal, importwizard, kabc2mutt, kabcclient, kaddressbook, kaddressbook-mobile, kalarm, kalarmautostart, karm, kgpgconf, kincidenceeditor, kleopatra, kmail, kmail-mobile, kmail\_antivir.sh, kmail\_clamav.sh, kmail\_fprot.sh, kmail\_sav.sh, kmailcvt, knode, knotes, konsolekalendar, kontakt, korgac, korganizer, korganizer-mobile, ksendemail, ktimetracker, ktnef, kwatchgnupg, notes-mobile, pimsettingexporter and tasks-mobile

### Installed Libraries:

### Installed Directories:

several in \$KDE\_PREFIX/lib  
several in \$KDE\_PREFIX/share

# libkexiv2-4.10.3

## Introduction to libkexiv2

Libkexiv2 is a KDE wrapper around the Exiv2 library for manipulating image metadata.

This package is known to build and work properly using an LFS-7.3 platform.

### Package Information

- Download (HTTP): <http://download.kde.org/stable/4.10.3/src/libkexiv2-4.10.3.tar.xz>
- Download (FTP): <ftp://ftp.kde.org/pub/kde/stable/4.10.3/src/libkexiv2-4.10.3.tar.xz>
- Download MD5 sum: a43a132e0ec3fb953779ea54e9ced498
- Download size: 134 KB
- Estimated disk space required: 6.5 MB
- Estimated build time: 0.4 SBU

## libkexiv2 Dependencies

### Required

kdelibs-4.10.3 and Exiv2-0.23

## Installation of libkexiv2

Install libkexiv2 by running the following commands:

```
mkdir build &&
cd build &&
cmake -DCMAKE_INSTALL_PREFIX=$KDE_PREFIX \
      -DCMAKE_BUILD_TYPE=Release \
      .. &&
make
```

Now, as the root user:

```
make install
```

## Contents

**Installed Programs:**

none

**Installed Library:**

libkexiv2.so

**Installed Directories:**

\$KDE\_PREFIX/include/libkexiv2 and \$KDE\_PREFIX/share/apps/libkexiv2

# Kdeplasma-addons-4.10.3

## Introduction to Kdeplasma-addons

This package provides extra Plasma applets and engines like lancelot, calculator, wallpapers etc.

This package is known to build and work properly using an LFS-7.3 platform.

### Package Information

- Download (HTTP): <http://download.kde.org/stable/4.10.3/src/kdeplasma-addons-4.10.3.tar.xz>
- Download (FTP): <ftp://ftp.kde.org/pub/kde/stable/4.10.3/src/kdeplasma-addons-4.10.3.tar.xz>
- Download MD5 sum: 9880207d971c2fc7c43a478df4eec976
- Download size: 1.8 MB
- Estimated disk space required: 72 MB
- Estimated build time: 5.1 SBU

## Kdeplasma-addons Dependencies

### Required

kde-workspace-4.10.3 and kdepimlibs-4.10.3

### Optional

libkexiv2-4.10.3, IBus-1.5.2, QJson-0.8.1, *Marble* (for the desktop globe wallpaper), *Eigen* (for the Mandelbrot wallpaper plugin) and *QOAuth* (needed for the Plasma microblog dataengine)

## Installation of Kdeplasma-addons

Install Kdeplasma-addons by running the following commands:

```
mkdir build &&
cd build &&
cmake -DCMAKE_INSTALL_PREFIX=$KDE_PREFIX \
      -DCMAKE_BUILD_TYPE=Release \
      .. &&
make
```

Now, as the root user:

```
make install
```

## Contents

**Installed Programs:**

lancelot

**Installed Libraries:**

liblancelot-datamodels.so, liblancelot.so, libplasma\_groupingcontainment.so, libplasmacomicprovidercore.so, libplasmapotdprovidercore.so, libplasmaweather.so, librtm.so and several in \$KDE\_PREFIX/lib/kde4

**Installed Directories:**

several in \$KDE\_PREFIX/include and \$KDE\_PREFIX/share

# Okular-4.10.3

## Introduction to Okular

Okular is a document viewer for KDE. It can view documents of many types including PDF, PostScript, TIFF, Microsoft CHM, DjVu, DVI, XPS and ePub.

This package is known to build and work properly using an LFS-7.3 platform.

## Package Information

- Download (HTTP): <http://download.kde.org/stable/4.10.3/src/okular-4.10.3.tar.xz>
- Download (FTP): <ftp://ftp.kde.org/pub/kde/stable/4.10.3/src/okular-4.10.3.tar.xz>
- Download MD5 sum: 563c45e46c760bed802cd08cd6e1e628
- Download size: 1.4 MB
- Estimated disk space required: 26 MB
- Estimated build time: 2.1 SBU

## Okular Dependencies

### Required

kdelibs-4.10.3

### Recommended

`kactivities-4.10.3`, `FreeType-2.4.12`, `qimageblitz-0.0.6`, `LibTIFF-4.0.3`, `libjpeg-turbo-1.2.1` and `Poppler-0.22.4` (required for PDF support)



### Note

For PDF support in Okular you need to configure Poppler using `--enable-xpdf-headers` .

### Optional

`ActiveApp` (for developing applications for Plasma Active), `libspectre` (for PostScript support), `libchm`, `DjVuLibre` and `libepub`

## Installation of Okular

Install Okular by running the following commands:

```
mkdir build &&
cd build &&
cmake -DCMAKE_INSTALL_PREFIX=$KDE_PREFIX \
      -DCMAKE_BUILD_TYPE=Release \
      .. &&
make
```

Now, as the root user:

```
make install
```

## Contents

<b>Installed Programs:</b>	okular
<b>Installed Libraries:</b>	libokularcore.so and several in \$KDE_PREFIX/lib/kde4
<b>Installed Directories:</b>	\$KDE_PREFIX/include/okular and several in \$KDE_PREFIX/lib and \$KDE_PREFIX/share

## Short Descriptions

**okular** is the KDE document viewer.

# Gwenview-4.10.3

## Introduction to Gwenview

Gwenview is a fast and easy-to-use image viewer for KDE.

This package is known to build and work properly using an LFS-7.3 platform.

## Package Information

- Download (HTTP): <http://download.kde.org/stable/4.10.3/src/gwenview-4.10.3.tar.xz>
- Download (FTP): <ftp://ftp.kde.org/pub/kde/stable/4.10.3/src/gwenview-4.10.3.tar.xz>
- Download MD5 sum: 02090ef4d711cf0f507a08c7cf9d376e
- Download size: 2.2 MB
- Estimated disk space required: 24 MB
- Estimated build time: 1.6 SBU

## Gwenview Dependencies

### Required

kdelibs-4.10.3

### Recommended

kactivities-4.10.3, kde-baseapps-4.10.3, nepomuk-core-4.10.3, libkexiv2-4.10.3 and libjpeg-turbo-1.2.1

### Optional

Little CMS-2.4 and *Kipi-Plugins* (a collection of image manipulation plugins)

## Installation of Gwenview

Install Gwenview by running the following commands:

```
mkdir build &&
cd build &&
cmake -DCMAKE_INSTALL_PREFIX=$KDE_PREFIX \
      -DCMAKE_BUILD_TYPE=Release \
      .. &&
make
```

Now, as the root user:

```
make install
```

## Contents

<b>Installed Programs:</b>	gwenview and gwenview_importer
<b>Installed Libraries:</b>	libgwenviewlib.so and gvpart.so
<b>Installed Directories:</b>	several in \$KDE_PREFIX/share

## Short Descriptions

**gwenview** is the KDE image viewer.

## Further KDE packages

This section did not provide instructions for all of the available packages in the KDE Software Compilation. The included packages were selected based on what most people would want to use on a standard desktop computer.

For a full list of available packages, have a look on the KDE servers (*http* or *ftp*).

Some additional packages worth mentioning are:

- Kdeartwork: Collection of wallpapers, icon themes, screensavers, widget styles etc.
- Juk: A lightweight music player.
- Dragon: A video player.
- Kcalc: A scientific calculator.
- PyKDE4: Python bindings.
- Kdegames: Collection of desktop games.
- Kaccessible: Accessibility utilities.
- Kdetoys: Collection of desktop toys.
- Kwallet: Credentials management application.
- Marble: A global map program.
- Kdesdk: Tools for developers.

Most of these packages can be built with the standard KDE instructions:

```
mkdir build &&
cd build &&
cmake -DCMAKE_INSTALL_PREFIX=$KDE_PREFIX \
    -DCMAKE_BUILD_TYPE=Release \
    .. &&
make
```

And as the `root` user:

```
make install
```

## **Part VIII. GNOME**

# Introduction to GNOME

This chapter presents the instructions to install a complete GNOME-3.6.2 desktop environment. The order of the installed packages follows the build order defined by the GNOME development team and has been thoroughly tested by the BLFS team.

The installation of GNOME-3.6.2 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-3.6 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-3.6.2`. Setting the environment variable and the additional edits required by the second option are covered in the Pre-Installation Configuration section.

If you choose the second option, removal of GNOME-3.6.2 is as easy as removing the edits from the pre-installation page and issuing the following command (you may need to become the `root` user):

```
rm -rf /opt/gnome-3.6.2
```

If your system was completely built per LFS and BLFS instructions, you have a very good chance of using GNOME-3.6.2 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-3.6.2 into your unique setup, but you will have to install well over 50 packages before you can run GNOME through any testing (assuming your windowing system is preinstalled and tested). You should anticipate that you will be rebuilding GNOME at least once to make adjustments for your setup.

## Alternate Installation Methods

As was previously mentioned, building a GNOME desktop from sources is a significant project. Some may find it too tedious or time-consuming to perform a full installation following the BLFS book. You may wish to review the automated methods mentioned in the *GNOME-3.6 Release Notes*. Note that using any other method to install GNOME-3.6.2 other than using the BLFS instructions cannot be supported by the BLFS team. Alternate methods are only mentioned as a courtesy to builders who would like to build GNOME from sources but do not have the time/desire/patience/whatever to follow the BLFS book.

# Chapter 30. GNOME Core Packages

This section contains required elements of the GNOME environment to display a functional desktop. The packages are separated into “Platform” and “Desktop” sections in the same manner as the sources are distributed on the GNOME download mirrors.

## **dbus-python-1.1.1**

The D-Bus Python Bindings-1.1.1 package is located in the 'System Utilities' chapter and is required by GNOME but is not a direct dependency of any GNOME package, therefore the package is mentioned within the GNOME Core Packages (Shell Fallback section) chapter to ensure it is installed.

## **desktop-file-utils-0.21**

The desktop-file-utils-0.21 package is located in the 'General Utilities' chapter and is required by GNOME but is not a direct dependency of any GNOME package, therefore the package is mentioned within the GNOME Core Packages (Libraries section) chapter to ensure it is installed.

## **shared-mime-info-1.1**

The shared-mime-info-1.1 package is located in the 'X Libraries' chapter and is required by GNOME but is not a direct dependency of any GNOME package, therefore the package is mentioned within the GNOME Core Packages (Libraries section) chapter to ensure it is installed.

# AccountsService-0.6.31

## Introduction to AccountsService

The AccountsService package provides a set of D-Bus interfaces for querying and manipulating user account information and an implementation of these interfaces based on the usermod(8), useradd(8) and userdel(8) commands.

This package is known to build and work properly using an LFS-7.3 platform.

## Package Information

- Download (HTTP): <http://www.freedesktop.org/software/accountsservice/accountsservice-0.6.31.tar.xz>
- 
- Download MD5 sum: d594f1da95c6a83c0463695ca31815b2
- Download size: 352 KB
- Estimated disk space required: 12 MB
- Estimated build time: 0.1 SBU

## AccountsService Dependencies

### Required

libxslt-1.1.28 and Polkit-0.111

### Recommended

gobject-introspection-1.34.2 and Vala-0.18.1

### Optional

GTK-Doc-1.18 and xmlto-0.0.25

## Installation of AccountsService

Install AccountsService by running the following commands:

```
./configure --prefix=/usr \
            --sysconfdir=/etc \
            --localstatedir=/var \
            --libexecdir=/usr/lib/accountsservice \
            --disable-static &&
make
```

This package does not come with a test suite.

Now, as the root user:

```
make install
```

## Command Explanations

**--disable-static**: This switch prevents installation of static versions of the libraries.

--enable-gtk-doc: Use this parameter if GTK-Doc is installed and you wish to rebuild and install the API documentation.

## Contents

<b>Installed Program:</b>	accounts-daemon
<b>Installed Library:</b>	libaccountsservice.so
<b>Installed Directories:</b>	/usr/include/accountsservice-1.0, /usr/lib/accountsservice, /usr/share/gtk-doc/html/ libaccountsservice and /var/lib/AccountsService

## Short Descriptions

<b>accounts-daemon</b>	is the AccountsService daemon.
<b>libaccountsservice.so</b>	contains the AccountsService API functions.

# polkit-gnome-0.105

## Introduction to Polkit GNOME

The Polkit GNOME package provides an Authentication Agent for Polkit that integrates well with the GNOME Desktop environment.

This package is known to build and work properly using an LFS-7.2 platform.

### Package Information

- Download (HTTP): <http://ftp.gnome.org/pub/gnome/sources/polkit-gnome/0.105/polkit-gnome-0.105.tar.xz>
- Download (FTP): <ftp://ftp.gnome.org/pub/gnome/sources/polkit-gnome/0.105/polkit-gnome-0.105.tar.xz>
- Download MD5 sum: 50ecad37c8342fb4a52f590db7530621
- Download size: 305 KB
- Estimated disk space required: 5.0 MB
- Estimated build time: 0.1 SBU

## Polkit GNOME Dependencies

### Required

GTK+-3.6.4 and Polkit-0.111

## Installation of Polkit GNOME

Install Polkit GNOME by running the following commands:

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

This package does not come with a test suite.

Now, as the root user:

```
make install
```

## Configuring Polkit GNOME

### Automatic Startup

For the authentication framework to work, **polkit-gnome-authentication-agent-1** needs to be started. However, **make install** did not install a startup file for the Polkit GNOME so you have to create it by yourself.

Issue the following commands as the `root` user to create a startup file for Polkit GNOME:

```
mkdir -p /etc/xdg/autostart &&
cat > /etc/xdg/autostart/polkit-gnome-authentication-agent-1.desktop << "EOF"
[Desktop Entry]
Name=PolicyKit Authentication Agent
Comment=PolicyKit Authentication Agent
Exec=/usr/lib/polkit-gnome/polkit-gnome-authentication-agent-1
Terminal=false
Type=Application
Categories=
NoDisplay=true
OnlyShowIn=GNOME;XFCE;Unity;
AutostartCondition=GNOME3 unless-session gnome
EOF
```

## Contents

<b>Installed Program:</b>	polkit-gnome-authentication-agent-1
<b>Installed Libraries:</b>	None
<b>Installed Directory:</b>	/usr/lib/polkit-gnome

## Short Descriptions

<b>polkit-gnome-authentication-agent-1</b>	is the Polkit authentication agent.
--	-------------------------------------

# gnome-doc-utils-0.20.10

## 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.

This package is known to build and work properly using an LFS-7.2 platform.

### Package Information

- Download (HTTP): <http://ftp.gnome.org/pub/gnome/sources/gnome-doc-utils/0.20/gnome-doc-utils-0.20.10.tar.xz>
- Download (FTP): <ftp://ftp.gnome.org/pub/gnome/sources/gnome-doc-utils/0.20/gnome-doc-utils-0.20.10.tar.xz>
- Download MD5 sum: 3c64ad7bacd617b04999e4a168afaac5
- Download size: 516 KB
- Estimated disk space required: 17 MB
- Estimated build time: 0.2 SBU

## GNOME Doc Utils Dependencies

### Required

Intltool-0.50.2, libxslt-1.1.28, Python-2.7.5 (Required to be installed prior to libxml2-2.9.1) and which-2.20

### Recommended

Rarian-0.8.1

Rarian is listed as recommended even though GNOME Doc Utils will build fine without it. If you don't install Rarian (and you pass the appropriate flag to the **configure** command so that it will build without it), functionality will be missing that is expected later in other GNOME packages.

## Installation of GNOME Doc Utils

Install GNOME Doc Utils by running the following commands:

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

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

Now, as the **root** user:

```
make install
```

## Contents

<b>Installed Programs:</b>	gnome-doc-prepare, gnome-doc-tool and xml2po
<b>Installed Libraries:</b>	None
<b>Installed Directories:</b>	/usr/lib/python2.7/site-packages/xml2po, /usr/share/gnome-doc-utils, /usr/share/xml/gnome, /usr/share/xml/mallard, /usr/share/gnome/help/gnome-doc-make and /usr/share/gnome/help/gnome-doc-xslt
<b>Installed Stylesheets:</b>	Custom DocBook XSLT stylesheets

## Short Descriptions

**gnome-doc-prepare** prepares a package to use GNOME Doc Utils.

**gnome-doc-tool** is used to convert documents to either HTML or XHTML.

**xml2po** is a Python script used to translate XML documents.

# yelp-xsl-3.6.1

## Introduction to Yelp XSL

The Yelp XSL package contains XSL stylesheets that are used by the Yelp help browser to format Docbook and Mallard documents.

This package is known to build and work properly using an LFS-7.2 platform.

## Package Information

- Download (HTTP): <http://ftp.gnome.org/pub/gnome/sources/yelp-xsl/3.6/yelp-xsl-3.6.1.tar.xz>
- Download (FTP): <ftp://ftp.gnome.org/pub/gnome/sources/yelp-xsl/3.6/yelp-xsl-3.6.1.tar.xz>
- Download MD5 sum: 1cdc0457a1a37e2139cc9f7f67b89e0e
- Download size: 576 KB
- Estimated disk space required: 11 MB
- Estimated build time: less than 0.1 SBU

## Yelp XSL Dependencies

### Required

libxslt-1.1.28, Intltool-0.50.2 and Itstool-1.2.0

## Installation of Yelp XSL

Install Yelp XSL 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

<b>Installed Programs:</b>	None
<b>Installed Libraries:</b>	None
<b>Installed Directory:</b>	/usr/share/yelp-xsl

# libgnome-keyring-3.6.0

## Introduction to libgnome-keyring

The libgnome-keyring is used by applications to integrate with the GNOME Keyring system.

This package is known to build and work properly using an LFS-7.2 platform.

### Package Information

- Download (HTTP): <http://ftp.gnome.org/pub/gnome/sources/libgnome-keyring/3.6/libgnome-keyring-3.6.0.tar.xz>
- Download (FTP): <ftp://ftp.gnome.org/pub/gnome/sources/libgnome-keyring/3.6/libgnome-keyring-3.6.0.tar.xz>
- Download MD5 sum: 4d8a8e81e6f5413c2c0c472380988e6e
- Download size: 416 KB
- Estimated disk space required: 15 MB
- Estimated build time: 0.1 SBU

## libgnome-keyring Dependencies

### Required

D-Bus-1.6.10, GLib-2.34.3, Intltool-0.50.2 and libgcrypt-1.5.2

### Recommended

gobject-introspection-1.34.2 and Vala-0.18.1

### Optional

GTK-Doc-1.18 and Valgrind

## Installation of libgnome-keyring

Install libgnome-keyring 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**: Use this parameter if GTK-Doc is installed and you wish to rebuild and install the API documentation.

## Contents

<b>Installed Programs:</b>	None
<b>Installed Library:</b>	libgnome-keyring.so
<b>Installed Directories:</b>	/usr/include/gnome-keyring-1 and /usr/share/gtk-doc/html/gnome-keyring

## Short Descriptions

`libgnome-keyring.so` is used by applications to integrate with the GNOME Keyring system.

# libsecret-0.14

## Introduction to libsecret

The libsecret package contains a GObject based library for accessing the Secret Service API.

This package is known to build and work properly using an LFS-7.2 platform.

## Package Information

- Download (HTTP): <http://ftp.gnome.org/pub/gnome/sources/libsecret/0.14/libsecret-0.14.tar.xz>
- Download (FTP): <ftp://ftp.gnome.org/pub/gnome/sources/libsecret/0.14/libsecret-0.14.tar.xz>
- Download MD5 sum: ac4db2be8e970899ca5091791c1f7c36
- Download size: 476 KB
- Estimated disk space required: 21 MB
- Estimated build time: 0.2 SBU

## libsecret Dependencies

### Required

GLib-2.34.3

### Recommended

gobject-introspection-1.34.2, libgcrypt-1.5.2 and Vala-0.18.1

### Optional

GTK-Doc-1.18 and docbook-xml-4.5, docbook-xsl-1.77.1 and libxslt-1.1.28 (to build manual pages)

### Optional (Required for the testsuite)

D-Bus Python Bindings-1.1.1, Gjs-1.34.0 and PyGObject-3.4.2

## Installation of libsecret

Install libsecret by running the following commands:

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

To test the results, issue: **make -k check**. The JavaScript tests can sometimes fail for unknown reasons.

Now, as the root user:

```
make install
```

## Command Explanations

**--disable-static**: This switch prevents installation of static versions of the libraries.

**--enable-gtk-doc**: Use this parameter if GTK-Doc is installed and you wish to rebuild and install the API documentation.

--disable-manpages: Use this switch if you have not installed libxslt-1.1.28 and DocBook packages.  
--disable-gcrypt: Use this switch if you have not installed the recommended dependency of libgcrypt-1.5.2.

## Contents

**Installed Program:** secret-tool  
**Installed Library:** libsecret-1.so  
**Installed Directories:** /usr/include/libsecret-1 and /usr/share/gtk-doc/html/libsecret-1

## Short Descriptions

**secret-tool** is a command line tool that can be used to store and retrieve passwords.  
**libsecret-1.so** contains the libsecret API functions.

# gsettings-desktop-schemas-3.6.1

## Introduction to GSettings Desktop Schemas

The GSettings Desktop Schemas package contains a collection of GSettings schemas for settings shared by various components of a GNOME Desktop.

This package is known to build and work properly using an LFS-7.3 platform.

### Package Information

- Download (HTTP): <http://ftp.gnome.org/pub/gnome/sources/gsettings-desktop-schemas/3.6/gsettings-desktop-schemas-3.6.1.tar.xz>
- Download (FTP): <ftp://ftp.gnome.org/pub/gnome/sources/gsettings-desktop-schemas/3.6/gsettings-desktop-schemas-3.6.1.tar.xz>
- Download MD5 sum: 5f7d7c88c04b1abcf59c3f27027c05c2
- Download size: 376 KB
- Estimated disk space required: 9.5 MB
- Estimated build time: less than 0.1 SBU

## GSettings Desktop Schemas Dependencies

### Required

GLib-2.34.3 and Intltool-0.50.2

### Recommended

gobject-introspection-1.34.2

## Installation of GSettings Desktop Schemas

Install GSettings Desktop Schemas 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
```



### Note

If you installed the package to your system using a “DESTDIR” method, /usr/share/glib-2.0/schemas/gschemas.compiled was not updated/created. Create (or update) the file using the following command as the root user:

```
glib-compile-schemas /usr/share/glib-2.0/schemas
```

## Contents

**Installed Programs:**

None

**Installed Libraries:**

None

**Installed Directory:**

/usr/include/gsettings-desktop-schemas

# DConf-0.14.1

## Introduction to DConf

The DConf package contains a low-level configuration system. Its main purpose is to provide a backend to GSettings on platforms that don't already have configuration storage systems.

This package is known to build and work properly using an LFS-7.2 platform.

## Package Information

- Download (HTTP): <http://ftp.gnome.org/pub/gnome/sources/dconf/0.14/dconf-0.14.1.tar.xz>
- Download (FTP): <ftp://ftp.gnome.org/pub/gnome/sources/dconf/0.14/dconf-0.14.1.tar.xz>
- Download MD5 sum: eaa62d1a5655e6dd620358d6b1c4f272
- Download size: 288 KB
- Estimated disk space required: 13 MB
- Estimated build time: 0.2 SBU

## DConf Dependencies

### Required

D-Bus-1.6.10, GTK+-3.6.4 and libxml2-2.9.1

### Recommended

Vala-0.18.1

### Optional

GTK-Doc-1.18

## Installation of DConf

Install DConf by running the following commands:

```
./configure --prefix=/usr \
            --sysconfdir=/etc \
            --libexecdir=/usr/lib/dconf &&
make
```

This package does not come with a test suite.

Now, as the root user:

```
make install
```

## Command Explanations

--enable-gtk-doc: Use this parameter if GTK-Doc is installed and you wish to rebuild and install the API documentation.

## Contents

<b>Installed Programs:</b>	dconf, dconf-editor and dconf-service
<b>Installed Libraries:</b>	libdconf-dbus-1.so and libdconf.so
<b>Installed Directories:</b>	/usr/include/dconf, /usr/include/dconf-dbus-1, /usr/lib/dconf, /usr/share/dconf-editor and /usr/share/gtk-doc/html/dconf

## Short Descriptions

<b>dconf</b>	is a simple tool for manipulating the DConf database.
<b>dconf-editor</b>	is a graphical program for editing settings that are stored in the DConf database.
<b>dconf-service</b>	is the D-Bus service that writes to the DConf database.
<b>libdconf.so</b>	contains DConf client API functions.
<b>libdconf-dbus-1.so</b>	contains DConf client API functions for D-Bus.

# GConf-3.2.6

## Introduction to GConf

The GConf package contains a configuration database system used by many GNOME applications. This package is known to build and work properly using an LFS-7.3 platform.

### Package Information

- Download (HTTP): <http://ftp.gnome.org/pub/gnome/sources/GConf/3.2/GConf-3.2.6.tar.xz>
- Download (FTP): <ftp://ftp.gnome.org/pub/gnome/sources/GConf/3.2/GConf-3.2.6.tar.xz>
- Download MD5 sum: 2b16996d0e4b112856ee5c59130e822c
- Download size: 1.5 MB
- Estimated disk space required: 45 MB
- Estimated build time: 0.3 SBU

## GConf Dependencies

### Required

D-Bus GLib Bindings-0.100.2, Intltool-0.50.2 and libxml2-2.9.1

### Recommended

gobject-introspection-1.34.2, GTK+-3.6.4 and Polkit-0.111

### Optional

GTK-Doc-1.18 and OpenLDAP-2.4.35

## Installation of GConf

Install GConf by running the following commands:

```
./configure --prefix=/usr \
            --sysconfdir=/etc \
            --libexecdir=/usr/lib/GConf \
            --disable-orbit \
            --disable-static &&
make
```

This package does not come with a test suite.

Now, as the root user:

```
make install &&
ln -s gconf.xml.defaults /etc/gconf/gconf.xml.system
```

## Command Explanations

**--disable-orbit**: This switch is required if ORBit2 is not installed. ORBit2 is a deprecated package.

**--disable-static**: This switch prevents installation of static versions of the libraries.

--enable-gtk-doc: Use this parameter if GTK-Doc is installed and you wish to rebuild and install the API documentation.

## Contents

<b>Installed Programs:</b>	gconf-merge-tree, gconftool-2, gsettings-data-convert and gsettings-schema-convert
<b>Installed Libraries:</b>	libgconf-2.so
<b>Installed Directories:</b>	/etc/gconf, /usr/include/gconf, /usr/lib/GConf, /usr/share/GConf, /usr/share/gtk-doc/html/gconf and /usr/share/sgml/gconf

## Short Descriptions

<b>gconf-merge-tree</b>	merges an XML filesystem hierarchy.
<b>gconftool-2</b>	is a command line tool used for manipulating the GConf database.
<b>gsettings-data-convert</b>	reads values out of the users GConf database and stores them in GSettings.
<b>gsettings-schemas-convert</b>	converts between GConf and GSettings schema file formats.
<b>libgconf-2.so</b>	provides the functions necessary to maintain the configuration database.

# Gcr-3.6.2

## Introduction to Gcr

The Gcr package contains libraries used for displaying certificates and accessing key stores. It also provides the viewer for crypto files on the GNOME Desktop.

This package is known to build and work properly using an LFS-7.2 platform.

## Package Information

- Download (HTTP): <http://ftp.gnome.org/pub/gnome/sources/gcr/3.6/gcr-3.6.2.tar.xz>
- Download (FTP): <ftp://ftp.gnome.org/pub/gnome/sources/gcr/3.6/gcr-3.6.2.tar.xz>
- Download MD5 sum: b31d8b95c77333cd49e6eaa5abd93e50
- Download size: 1.4 MB
- Estimated disk space required: 85 MB
- Estimated build time: 0.8 SBU

## Gcr Dependencies

### Required

GTK+-3.6.4, Intltool-0.50.2, libgcrypt-1.5.2, libtasn1-3.3 and p11-kit-0.18.2

### Recommended

gobject-introspection-1.34.2

### Optional

GnuPG-1.4.13 or GnuPG-2.0.20, GTK-Doc-1.18 and Valgrind

## Installation of Gcr

Install Gcr by running the following commands:

```
./configure --prefix=/usr \
            --sysconfdir=/etc \
            --libexecdir=/usr/lib/gnome-keyring &&
make
```

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

Now, as the root user:

```
make install
```

## Command Explanations

--enable-gtk-doc: Use this parameter if GTK-Doc is installed and you wish to rebuild and install the API documentation.

## Contents

<b>Installed Program:</b>	gcr-viewer
<b>Installed Libraries:</b>	libgck-1.so, libgcr-3.so, libgcr-base-3.so and libmock-test-module.so
<b>Installed Directories:</b>	/usr/include/gck-1, /usr/include/gcr-3, /usr/lib/gnome-keyring, /usr/share/gcr-3, /usr/share/gtk-doc/html/gck and /usr/share/gtk-doc/html/gcr-3

## Short Descriptions

<b>gcr-viewer</b>	is used to view certificate and key files.
<b>libgck-1.so</b>	contains GObject bindings for PKCS#11.
<b>libgcr-3.so</b>	contains functions for high level crypto parsing.

# libgee-0.6.7

## Introduction to libgee

The libgee package is a collection library providing GObject based interfaces and classes for commonly used data structures.

This package is known to build and work properly using an LFS-7.2 platform.

## Package Information

- Download (HTTP): <http://ftp.gnome.org/pub/gnome/sources/libgee/0.6/libgee-0.6.7.tar.xz>
- Download (FTP): <ftp://ftp.gnome.org/pub/gnome/sources/libgee/0.6/libgee-0.6.7.tar.xz>
- Download MD5 sum: dc5bd40256e7eb840f6edf2a99667b38
- Download size: 496 KB
- Estimated disk space required: 21 MB
- Estimated build time: 0.2 SBU

## libgee Dependencies

### Required

GLib-2.34.3

### Recommended

gobject-introspection-1.34.2 and Vala-0.18.1

## Installation of libgee

Install libgee by running the following commands:

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

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

Now, as the root user:

```
make install
```

## Contents

<b>Installed Programs:</b>	None
<b>Installed Library:</b>	libgee.so
<b>Installed Directory:</b>	/usr/include/gee-1.0

## Short Descriptions

**libgee.so** contains the libgee API functions.

# libgweather-3.6.2

## Introduction to libgweather

The libgweather package is a library used to access weather information from online services for numerous locations.

This package is known to build and work properly using an LFS-7.2 platform.

## Package Information

- Download (HTTP): <http://ftp.gnome.org/pub/gnome/sources/libgweather/3.6/libgweather-3.6.2.tar.xz>
- Download (FTP): <ftp://ftp.gnome.org/pub/gnome/sources/libgweather/3.6/libgweather-3.6.2.tar.xz>
- Download MD5 sum: 29ec69bc04c12a1642046a7044f9e305
- Download size: 3.8 MB
- Estimated disk space required: 115 MB
- Estimated build time: 1.8 SBU

## libgweather Dependencies

### Required

GTK+-3.6.4 and libsoup-2.40.3

### Recommended

gobject-introspection-1.34.2

### Optional

GTK-Doc-1.18

## Installation of libgweather

Install libgweather by running the following commands:

```
./configure --prefix=/usr --enable-locations-compression &&
make
```

This package does not come with a test suite.

Now, as the root user:

```
make install
```

## Command Explanations

--enable-locations-compression: This switch enables compression of Locations.xml files.

--enable-gtk-doc: Use this parameter if GTK-Doc is installed and you wish to rebuild and install the API documentation.

## Contents

**Installed Programs:**

None

**Installed Library:**

libgweather-3.so

**Installed Directories:**

/usr/include/libgweather-3.0, /usr/share/gtk-doc/html/libgweather-3.0 and /usr/share/libgweather

## Short Descriptions

`libgweather-3.so` contains functions that allow the retrieval of weather information.

# libwnck-3.4.4

## Introduction to libwnck

The libwnck package contains the Window Navigator Construction Kit.

This package is known to build and work properly using an LFS-7.2 platform.

### Package Information

- Download (HTTP): <http://ftp.gnome.org/pub/gnome/sources/libwnck/3.4/libwnck-3.4.4.tar.xz>
- Download (FTP): <ftp://ftp.gnome.org/pub/gnome/sources/libwnck/3.4/libwnck-3.4.4.tar.xz>
- Download MD5 sum: c5c0e7793c887037210ad8e9fc557522
- Download size: 644 KB
- Estimated disk space required: 19 MB
- Estimated build time: 0.2 SBU

## libwnck Dependencies

### Required

GTK+-3.6.4 and Intltool-0.50.2

### Recommended

gobject-introspection-1.34.2 and startup-notification-0.12

### Optional

GTK-Doc-1.18

## 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
```

## Command Explanations

--enable-gtk-doc: Use this parameter if GTK-Doc is installed and you wish to rebuild and install the API documentation.

## Contents

<b>Installed Program:</b>	wnckprop and wnck-urgency-monitor
<b>Installed Library:</b>	libwnck-3.so
<b>Installed Directories:</b>	/usr/include/libwnck-3.0 and /usr/share/gtk-doc/html/libwnck-3.0

## Short Descriptions

**wnckprop** is used to print or modify the properties of a screen/workspace/window, or to interact with it.  
**libwnck-3.so** contains functions for writing pagers and task lists.

# libgnomekbd-3.6.0

## Introduction to libgnomekbd

The libgnomekbd package contains xkb hooks used by the GNOME Desktop.

This package is known to build and work properly using an LFS-7.2 platform.

## Package Information

- Download (HTTP): <http://ftp.gnome.org/pub/gnome/sources/libgnomekbd/3.6/libgnomekbd-3.6.0.tar.xz>
- Download (FTP): <ftp://ftp.gnome.org/pub/gnome/sources/libgnomekbd/3.6/libgnomekbd-3.6.0.tar.xz>
- Download MD5 sum: 2f000ed5aa11454936c846a784e484c7
- Download size: 368 KB
- Estimated disk space required: 8.5 MB
- Estimated build time: 0.1 SBU

## libgnomekbd Dependencies

### Required

GTK+-3.6.4, Intltool-0.50.2 and libxklavier-5.3

### Recommended

gobject-introspection-1.34.2

## Installation of libgnomekbd

Install libgnomekbd by running the following commands:

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

This package does not come with a test suite.

Now, as the root user:

```
make install
```

## Command Explanations

**--disable-static:** This switch prevents installation of static versions of the libraries.

## Contents

<b>Installed Program:</b>	gkbd-keyboard-display
<b>Installed Libraries:</b>	libgnomekbd.so and libgnomekbdui.so
<b>Installed Directories:</b>	/usr/include/libgnomekbd and /usr/share/libgnomekbd

## Short Descriptions

**libgnomekbd.so** contain the X keyboard API functions used to support xkb on the GNOME Desktop.

`libgnomekbdui.so` contains the UI widgets for `libgnomekbd`.

# libgtop-2.28.4

## Introduction to libgtop

The libgtop package contains the GNOME top libraries.

This package is known to build and work properly using an LFS-7.2 platform.

## Package Information

- Download (HTTP): <http://ftp.gnome.org/pub/gnome/sources/libgtop/2.28/libgtop-2.28.4.tar.xz>
- Download (FTP): <ftp://ftp.gnome.org/pub/gnome/sources/libgtop/2.28/libgtop-2.28.4.tar.xz>
- Download MD5 sum: c8aee3c9bde9033303147e993aa1b932
- Download size: 640 KB
- Estimated disk space required: 16 MB
- Estimated build time: 0.2 SBU

## libgtop Dependencies

### Required

GLib-2.34.3, Intltool-0.50.2 and Xorg Libraries

### Recommended

gobject-introspection-1.34.2

### Optional

GTK-Doc-1.18

## Installation of libgtop

Install libgtop by running the following commands:

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

This package does not come with a test suite.

Now, as the root user:

```
make install
```

## Command Explanations

**--disable-static:** This switch prevents installation of static versions of the libraries.

**--enable-gtk-doc:** Use this parameter if GTK-Doc is installed and you wish to rebuild and install the API documentation.

## Contents

**Installed Programs:**

None

**Installed Library:**

libgtop-2.0.so

**Installed Directories:**

/usr/include/libgtop-2.0 and /usr/share/gtk-doc/html/libgtop

## Short Descriptions

`libgtop-2.0.so` contains the functions that allow access to system performance data.

# libwacom-0.6.1

## Introduction to libwacom

The libwacom package contains a library used to identify wacom tablets and their model-specific features. This package is known to build and work properly using an LFS-7.2 platform.

### Package Information

- Download (HTTP): <http://downloads.sourceforge.net/linuxwacom/libwacom-0.6.tar.bz2>
- 
- Download MD5 sum: b1193c0e1e5400b2f1c97cf8fbee3ff3
- Download size: 372 KB
- Estimated disk space required: 4.2 MB
- Estimated build time: less than 0.1 SBU

## libwacom Dependencies

### Required

udev-Installed LFS Version or udev-extras (from systemd) (for GUdev)

## Installation of libwacom

Install libwacom by running the following commands:

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

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

Now, as the root user:

```
make install
```

## Command Explanations

**--disable-static**: This switch prevents installation of static versions of the libraries.

## Contents

<b>Installed Program:</b>	libwacom-list-local-devices
<b>Installed Library:</b>	libwacom.so
<b>Installed Directories:</b>	/usr/include/libwacom-1.0 and /usr/share/libwacom

## Short Descriptions

**libwacom.so** contains functions used for accessing Wacom information.

# gnome-online-accounts-3.6.2

## Introduction to GNOME Online Accounts

The GNOME Online Accounts package contains a framework used to access the user's online accounts.

This package is known to build and work properly using an LFS-7.2 platform.

### Package Information

- Download (HTTP): <http://ftp.gnome.org/pub/gnome/sources/gnome-online-accounts/3.6/gnome-online-accounts-3.6.2.tar.xz>
- Download (FTP): <ftp://ftp.gnome.org/pub/gnome/sources/gnome-online-accounts/3.6/gnome-online-accounts-3.6.2.tar.xz>
- Download MD5 sum: 178faf9ed1a57c306612d61423b9874e
- Download size: 572 KB
- Estimated disk space required: 25 MB
- Estimated build time: 0.2 SBU

## GNOME Online Accounts Dependencies

### Required

Gcr-3.6.2, libgnome-keyring-3.6.0, libnotify-0.7.5, librest-0.7.90, libsecret-0.14, JSON-GLib-0.16.0 and WebKitGTK+-1.10.2

### Recommended

gobject-introspection-1.34.2

### Optional

GTK-Doc-1.18 and MIT Kerberos V5-1.11.2

## Installation of GNOME Online Accounts

Install GNOME Online Accounts by running the following commands:

```
./configure --prefix=/usr \
            --libexecdir=/usr/lib/gnome-online-accounts \
            --disable-static &&
make
```

This package does not come with a test suite.

Now, as the root user:

```
make install
```

## Command Explanations

*--disable-static*: This switch prevents installation of static versions of the libraries.

--enable-kerberos: Use this switch if you have installed MIT Kerberos V5-1.11.2 and wish to use it with GNOME Online Accounts.

--enable-gtk-doc: Use this parameter if GTK-Doc is installed and you wish to rebuild and install the API documentation.

## Contents

<b>Installed Program:</b>	goa-daemon
<b>Installed Libraries:</b>	libgoa-1.0.so and libgoa-backend-1.0.so
<b>Installed Directories:</b>	/usr/include/goa-1.0, /usr/lib/gnome-online-accounts and /usr/share/gtk-doc/html/goa

## Short Descriptions

<b>goa-daemon</b>	is the GNOME Online Accounts Daemon.
<b>libgoa-1.0.so</b>	contains the GNOME Online Accounts API functions.
<b>libgoa-backend-1.0.so</b>	contains functions used by GNOME Online Accounts backends.

# libgdata-0.13.2

## Introduction to libgdata

The libgdata package is a GLib-based library for accessing online service APIs using the GData protocol, most notably, Google's services. It provides APIs to access the common Google services and has full asynchronous support.

This package is known to build and work properly using an LFS-7.2 platform.

## Package Information

- Download (HTTP): <http://ftp.gnome.org/pub/gnome/sources/libgdata/0.13/libgdata-0.13.2.tar.xz>
- Download (FTP): <ftp://ftp.gnome.org/pub/gnome/sources/libgdata/0.13/libgdata-0.13.2.tar.xz>
- Download MD5 sum: 8790767a3700d146e859ce870229f8e7
- Download size: 1.2 MB
- Estimated disk space required: 45 MB
- Estimated build time: 0.5 SBU

## libgdata Dependencies

### Required

gnome-online-accounts-3.6.2, libsoup-2.40.3 and liboauth-1.0.1

### Recommended

gobject-introspection-1.34.2 and GTK+-3.6.4

### Optional

GTK-Doc-1.18

## Installation of libgdata

Install libgdata by running the following commands:

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

To test the results, issue: **make check**. Note that the tests need network access.

Now, as the root user:

```
make install
```

## Command Explanations

**--disable-static**: This switch prevents installation of static versions of the libraries.

**--enable-gtk-doc**: Use this parameter if GTK-Doc is installed and you wish to rebuild and install the API documentation.

## Contents

**Installed Programs:** None  
**Installed Library:** libgdata.so  
**Installed Directories:** /usr/include/libgdata and /usr/share/gtk-doc/html/gdata

## Short Descriptions

`libgdata.so` contains the libgdata API functions.

# evolution-data-server-3.6.4

## Introduction to Evolution Data Server

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.

This package is known to build and work properly using an LFS-7.2 platform.

### Package Information

- Download (HTTP): <http://ftp.gnome.org/pub/gnome/sources/evolution-data-server/3.6/evolution-data-server-3.6.4.tar.xz>
- Download (FTP): <ftp://ftp.gnome.org/pub/gnome/sources/evolution-data-server/3.6/evolution-data-server-3.6.4.tar.xz>
- Download MD5 sum: 9a66998e1986a003c42222f41ea15d2e
- Download size: 3.9 MB
- Estimated disk space required: 225 MB
- Estimated build time: 2.2 SBU

## Evolution Data Server Dependencies

### Required

Berkeley DB-5.3.21, gnome-online-accounts-3.6.2, Gperf-3.0.4, libgdata-0.13.2, libical-1.0 and NSS-3.14.3

### Recommended

libgweather-3.6.2, gobject-introspection-1.34.2 and Vala-0.18.1

### Optional

GTK-Doc-1.18, MIT Kerberos V5-1.11.2, a MTA (that provides a **sendmail** command) and OpenLDAP-2.4.35

## Installation of Evolution Data Server

Install Evolution Data Server by running the following commands:

```
./configure --prefix=/usr \
            --libexecdir=/usr/lib/evolution-data-server \
            --enable-vala-bindings &&
make
```

This package does not have a working testsuite.

Now, as the **root** user:

```
make install
```

## Command Explanations

**--enable-vala-bindings**: This switch enables building of the Vala bindings. Remove if you don't have Vala-0.18.1 installed.

--with-openldap: Use this switch to enable OpenLDAP support in Evolution Data Server.

--with-krb5=/usr: Use this switch to enable Kerberos 5 support in Evolution Data Server.

--enable-gtk-doc: Use this parameter if GTK-Doc is installed and you wish to rebuild and install the API documentation.



### 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

<b>Installed Programs:</b>	None
<b>Installed Libraries:</b>	libcamel-1.2.so, libbackend-1.2.so, libebook-1.2.so, libical-1.2.so, libedata-book-1.2.so, libedata-cal-1.2.so, libedataserver-1.2.so and libedataserverui-3.0.so
<b>Installed Directories:</b>	/usr/include/evolution-data-server-3.6, /usr/lib/evolution-data-server, /usr/share/evolution-data-server-3.6, /usr/share/gtk-doc/html/camel, /usr/share/gtk-doc/html/libebackend, /usr/share/gtk-doc/html/libebook, /usr/share/gtk-doc/html/libical /usr/share/gtk-doc/html/libedata-book, /usr/share/gtk-doc/html/libedata-cal, /usr/share/gtk-doc/html/libedataserver, /usr/share/gtk-doc/html/libedataserverui and /usr/share/pixmaps/evolution-data-server

## Short Descriptions

libcamel-1.2.so	is the Evolution MIME message handling library.
libbackend-1.2.so	is the utility library for Evolution Data Server Backends.
libebook-1.2.so	is the client library for Evolution address books.
libical-1.2.so	is the client library for Evolution calendars.
libedata-book-1.2.so	is the backend library for Evolution address books.
libedata-cal-1.2.so	is the backend library for Evolution calendars.
libedataserver-1.2.so	is the utility library for Evolution Data Server.
libedataserverui-3.0.so	is the GUI utility library for Evolution Data Server.

# libzeitgeist-0.3.18

## Introduction to libzeitgeist

The libzeitgeist package contains a client library used to access and manage the Zeitgeist event log from languages such as C and Vala. Zeitgeist is a service which logs the user's activities and events (files opened, websites visited, conversations held with other people, etc.) and makes the relevant information available to other applications.

This package is known to build and work properly using an LFS-7.3 platform.

## Package Information

- Download (HTTP): <https://launchpad.net/libzeitgeist/0.3/0.3.18/+download/libzeitgeist-0.3.18.tar.gz>
- 
- Download MD5 sum: d63a37295d01a58086d0d4ae26e604c2
- Download size: 516 KB
- Estimated disk space required: 7.0 MB
- Estimated build time: 0.1 SBU

## libzeitgeist Dependencies

### Required

GLib-2.34.3

### Optional

GTK-Doc-1.18

## Installation of libzeitgeist

Install libzeitgeist by running the following commands:

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

This package does not have a working testsuite.

Now, as the root user:

```
make install
```

## Command Explanations

**--disable-static:** This switch prevents installation of static versions of the libraries.

**--enable-gtk-doc:** Use this parameter if GTK-Doc is installed and you wish to rebuild and install the API documentation.

## Contents

<b>Installed Programs:</b>	None
<b>Installed Library:</b>	libzeitgeist-1.0.so
<b>Installed Directories:</b>	/usr/include/libzeitgeist-1.0 and /usr/share/doc/libzeitgeist

## Short Descriptions

`libzeitgeist-1.0.so` contains the libzeitgeist API functions.

# Folks-0.8.0

## Introduction to Folks

Folks is a library that aggregates people from multiple sources (eg, Telepathy connection managers and eventually Evolution Data Server, Facebook, etc.) to create metacontacts.

This package is known to build and work properly using an LFS-7.2 platform.

## Package Information

- Download (HTTP): <http://ftp.gnome.org/pub/gnome/sources/folks/0.8/folks-0.8.0.tar.xz>
- Download (FTP): <ftp://ftp.gnome.org/pub/gnome/sources/folks/0.8/folks-0.8.0.tar.xz>
- Download MD5 sum: 5664f85c4acdda2934cbd08a9d3d78e3
- Download size: 1.5 MB
- Estimated disk space required: 70 MB
- Estimated build time: 0.7 SBU

## Folks Dependencies

### Required

*gobject-introspection-1.34.2*, *Intltool-0.50.2*, *libgee-0.6.7*, *libzeitgeist-0.3.18* and *telepathy-glib-0.20.2*

### Recommended

*evolution-data-server-3.6.4* and *Vala-0.18.1*

### Optional

*libsocialweb*, *Tracker* and *valadoc* (Required for generating the documentation)

## Installation of Folks

Install Folks by running the following commands:

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

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

Now, as the root user:

```
make install
```

## Command Explanations

--enable-vala: This switch enables building of the Vala bindings. Remove if you don't have Vala-0.18.1 installed.

--enable-tracker-backend: This switch enables building of the the Tracker backend.

--enable-docs: This switch enables documentation generation.

## Contents

<b>Installed Programs:</b>	folks-import and folks-inspect
<b>Installed Libraries:</b>	libfolks-eds.so, libfolks-lbsocialweb.so, libfolks.so, libfolks-telepathy.so and libfolks-tracker.so
<b>Installed Directories:</b>	/usr/include/folks and /usr/lib/folks

## Short Descriptions

<b>folks-import</b>	is used to import meta-contact information to libfolks.
<b>folks-inspect</b>	is used to inspect meta-contact information in libfolks.
<b>libfolks-eds.so</b>	contains Evolution specific implementations of the libfolks classes.
<b>libfolks-lbsocialweb.so</b>	contains libsocialweb specific implementations of the libfolks classes.
<b>libfolks.so</b>	contains the Folks API functions.
<b>libfolks-telepathy.so</b>	contains Telepathy specific implementations of the libfolks classes.
<b>libfolks-tracker.so</b>	contains Tracker specific implementations of the libfolks classes.

# gnome-js-common-0.1.2

## Introduction to GNOME JS Common

The GNOME JS Common package provides common modules for GNOME JavaScript bindings.

This package is known to build and work properly using an LFS-7.2 platform.

### Package Information

- Download (HTTP): <http://ftp.gnome.org/pub/gnome/sources/gnome-js-common/0.1/gnome-js-common-0.1.2.tar.bz2>
- Download (FTP): <ftp://ftp.gnome.org/pub/gnome/sources/gnome-js-common/0.1/gnome-js-common-0.1.2.tar.bz2>
- Download MD5 sum: a4147d24622ab0f1d01e9921a3bf501b
- Download size: 277 KB
- Estimated disk space required: 2.2 MB
- Estimated build time: 0.1 SBU

## GNOME JS Common Dependencies

### Optional

Seed-3.2.0 (Note that seed *requires* GNOME JS Common).

## Installation of GNOME JS Common

Install GNOME JS Common by running the following commands:

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

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

Now, as the root user:

```
make install
```

## Contents

<b>Installed Programs:</b>	None
<b>Installed Libraries:</b>	None
<b>Installed Directories:</b>	/usr/lib/gnome-js and /usr/share/doc/gnome_js_common

# Gjs-1.34.0

## Introduction to Gjs

Gjs is a Javascript binding for GNOME.

This package is known to build and work properly using an LFS-7.2 platform.

## Package Information

- Download (HTTP): <http://ftp.gnome.org/pub/gnome/sources/gjs/1.34/gjs-1.34.0.tar.xz>
- Download (FTP): <ftp://ftp.gnome.org/pub/gnome/sources/gjs/1.34/gjs-1.34.0.tar.xz>
- Download MD5 sum: 736f11821d785512bc92c0fe50968c5a
- Download size: 464 KB
- Estimated disk space required: 16 MB
- Estimated build time: 0.2 SBU

## Gjs Dependencies

### Required

Cairo-1.12.14, D-Bus GLib Bindings-0.100.2, gobject-introspection-1.34.2 and SpiderMonkey-1.0.0

## Installation of Gjs

Install Gjs by running the following commands:

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

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

Now, as the root user:

```
make install
```

## Contents

<b>Installed Programs:</b>	gjs and gjs-console
<b>Installed Libraries:</b>	libgjs-dbus.so and libgjs.so
<b>Installed Directories:</b>	/usr/include/gjs-1.0, /usr/lib/gjs, /usr/lib/gjs-1.0 and /usr/share/gjs-1.0

## Short Descriptions

**libgjs.so** contains the GNOME JavaScript bindings.

# Seed-3.2.0

## Introduction to Seed

Seed is a JavaScript interpreter.

This package is known to build and work properly using an LFS-7.2 platform.

## Package Information

- Download (HTTP): <http://ftp.gnome.org/pub/gnome/sources/seed/3.2/seed-3.2.0.tar.xz>
- Download (FTP): <ftp://ftp.gnome.org/pub/gnome/sources/seed/3.2/seed-3.2.0.tar.xz>
- Download MD5 sum: 792ac48542019bd14f8d639a9e401c0a
- Download size: 667 KB
- Estimated disk space required: 13 MB
- Estimated build time: 0.1 SBU

## Seed Dependencies

### Required

gnome-js-common-0.1.2, gobject-introspection-1.34.2 and WebKitGTK+-1.10.2

### Optional

GTK-Doc-1.18

## Installation of Seed

Install Seed by running the following commands:

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

This package does not come with a test suite.

Now, as the root user:

```
make install
```

## Command Explanations

**--disable-static:** This switch prevents installation of static versions of the libraries.

**--enable-gtk-doc:** Use this parameter if GTK-Doc is installed and you wish to rebuild and install the API documentation.

## Contents

<b>Installed Program:</b>	seed
<b>Installed Library:</b>	libseed-gtk3.so
<b>Installed Directories:</b>	/usr/include/seed-gtk3, /usr/lib/seed-gtk3, /usr/share/doc/seed, /usr/share/gtk-doc/html/seed and /usr/share/seed-gtk3

## Short Descriptions

**seed**                  is the command line JavaScript interpreter.

**libseed-gtk3.so**  contains the Seed API functions.

# libpeas-1.6.2

## Introduction to libpeas

libpeas is a GObject based plugins engine, and is targeted at giving every application the chance to assume its own extensibility.

This package is known to build and work properly using an LFS-7.2 platform.

## Package Information

- Download (HTTP): <http://ftp.gnome.org/pub/gnome/sources/libpeas/1.6/libpeas-1.6.2.tar.xz>
- Download (FTP): <ftp://ftp.gnome.org/pub/gnome/sources/libpeas/1.6/libpeas-1.6.2.tar.xz>
- Download MD5 sum: 183db6b32051a73c3b7bfbfccdc88e4c
- Download size: 516 KB
- Estimated disk space required: 20 MB
- Estimated build time: 0.3 SBU

## libpeas Dependencies

### Required

*gobject-introspection-1.34.2* and *GTK+-3.6.4*

### Recommended

*Gjs-1.34.0*, *PyGObject-3.4.2* and *Seed-3.2.0*

### Optional

*GDB-7.6*, *Glade*, *GTK-Doc-1.18* and *Valgrind*

## Installation of libpeas

Install libpeas by running the following commands:

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

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

Now, as the **root** user:

```
make install
```

## Contents

<b>Installed Program:</b>	peas-demo
<b>Installed Libraries:</b>	libpeas-1.0.so and libpeas-gtk-1.0.so
<b>Installed Directories:</b>	/usr/include/libpeas-1.0, /usr/lib/libpeas-1.0, /usr/lib/peas-demo and /usr/share/gtk-doc/html/libpeas

## Short Descriptions

**peas-demo** is the Peas demo program.

`libpeas-1.0.so` contains the libpeas API functions.

`libpeas-gtk-1.0.so` contains the libpeas GTK+ bindings.

# gtksourceview-3.6.2

## Introduction to GtkSourceView

The GtkSourceView package contains libraries used for extending the GTK+ text functions to include syntax highlighting.

This package is known to build and work properly using an LFS-7.2 platform.

### Package Information

- Download (HTTP): <http://ftp.gnome.org/pub/gnome/sources/gtksourceview/3.6/gtksourceview-3.6.2.tar.xz>
- Download (FTP): <ftp://ftp.gnome.org/pub/gnome/sources/gtksourceview/3.6/gtksourceview-3.6.2.tar.xz>
- Download MD5 sum: 45c74c5c22ea63f8b5e2f469a9a3c8fd
- Download size: 1.2 MB
- Estimated disk space required: 36 MB
- Estimated build time: 0.3 SBU

## GtkSourceView Dependencies

### Required

GTK+-3.6.4 and Intltool-0.50.2

### Recommended

gobject-introspection-1.34.2

### Optional

GTK-Doc-1.18

## Installation of GtkSourceView

Install GtkSourceView 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**: Use this parameter if GTK-Doc is installed and you wish to rebuild and install the API documentation.

## Contents

<b>Installed Programs:</b>	None
<b>Installed Library:</b>	libgtksourceview-3.0.so
<b>Installed Directories:</b>	/usr/include/gtksourceview-3.0, /usr/share/gtksourceview-3.0 and /usr/share/gtk-doc/html/gtksourceview-3.0

## Short Descriptions

`libgtksourceview-3.0.so` contains function extensions for the GtkTextView widget.

# GtkHTML-4.6.4

## Introduction to GtkHTML

The GtkHTML package contains a lightweight HTML rendering/printing/editing engine.

This package is known to build and work properly using an LFS-7.2 platform.

### Package Information

- Download (HTTP): <http://ftp.gnome.org/pub/gnome/sources/gtkhtml/4.6/gtkhtml-4.6.4.tar.xz>
- Download (FTP): <http://ftp.gnome.org/pub/gnome/sources/gtkhtml/4.6/gtkhtml-4.6.4.tar.xz>
- Download MD5 sum: 83276483fee23680b19bcba83e7e4315
- Download size: 1.1 MB
- Estimated disk space required: 50 MB
- Estimated build time: 0.5 SBU

## GtkHTML Dependencies

### Required

enchant-1.6.0, gnome-icon-theme-3.6.2, gsettings-desktop-schemas-3.6.1, GTK+-3.6.4 and ISO Codes-3.42

### Recommended

libsoup-2.40.3

## Installation of GtkHTML

Install GtkHTML 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

<b>Installed Program:</b>	gtkhtml-editor-test
<b>Installed Libraries:</b>	libgtkhtml-4.0.so and libgtkhtml-editor-4.0.so
<b>Installed Directories:</b>	/usr/include/libgtkhtml-4.0 and /usr/share/gtkhtml-4.0

## Short Descriptions

<b>gtkhtml-editor-test</b>	is a simple HTML editor widget.
<b>libgtkhtml-4.0.so</b>	provides the functions used to render HTML within applications.

# totem-pl-parser-3.4.3

## Introduction to Totem PL Parser

The Totem PL Parser package contains a simple GObject-based library used to parse a host of playlist formats, as well as save those.

This package is known to build and work properly using an LFS-7.2 platform.

## Package Information

- Download (HTTP): <http://ftp.gnome.org/pub/gnome/sources/totem-pl-parser/3.4/totem-pl-parser-3.4.3.tar.xz>
- Download (FTP): <ftp://ftp.gnome.org/pub/gnome/sources/totem-pl-parser/3.4/totem-pl-parser-3.4.3.tar.xz>
- Download MD5 sum: cebd115e267ef3d377370512122e34c9
- Download size: 1.6 MB
- Estimated disk space required: 13 MB
- Estimated build time: 0.1 SBU

## Totem PL Parser Dependencies

### Required

GMime-2.6.15, Intltool-0.50.2 and libsoup-2.40.3

### Recommended

gobject-introspection-1.34.2

### Optional

GTK-Doc-1.18, libarchive-3.1.2, libgcrypt-1.5.2 and libquvi

## Installation of Totem PL Parser

Install Totem PL Parser by running the following commands:

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

To test the results, issue: **make check**. You will need an active internet connection in order to sucessfully complete all tests.

Now, as the root user:

```
make install
```

## Command Explanations

**--disable-static**: This switch prevents installation of static versions of the libraries.

**--enable-gtk-doc**: Use this parameter if GTK-Doc is installed and you wish to rebuild and install the API documentation.

## Contents

**Installed Programs:** None  
**Installed Libraries:** libtotem-plparser-mini.so and libtotem-plparser.so  
**Installed Directories:** /usr/include/totem-pl-parser and /usr/share/gtk-doc/html/totem-pl-parser

## Short Descriptions

`libtotem-plparser.so` is the Totem Playlist Parser library.  
`libtotem-plparser-mini.so` is the Totem Playlist Parser library, mini version.

# VTE-0.34.2

## Introduction to VTE

The VTE package contains a termcap file implementation for terminal emulators.

This package is known to build and work properly using an LFS-7.2 platform.

### Package Information

- Download (HTTP): <http://ftp.gnome.org/pub/gnome/sources/vte/0.34/vte-0.34.2.tar.xz>
- Download (FTP): <ftp://ftp.gnome.org/pub/gnome/sources/vte/0.34/vte-0.34.2.tar.xz>
- Download MD5 sum: 523eae73bd93d58b9427357774956b22
- Download size: 960 KB
- Estimated disk space required: 20 MB
- Estimated build time: 0.2 SBU

## VTE Dependencies

### Required

GTK+-3.6.4 and Intltool-0.50.2

### Recommended

gobject-introspection-1.34.2

### Optional

GTK-Doc-1.18

## Installation of VTE

Install VTE by running the following commands:

```
./configure --prefix=/usr \
            --sysconfdir=/etc \
            --libexecdir=/usr/lib/vte-2.90 \
            --enable-introspection \
            --disable-static &&
make
```

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

Now, as the **root** user:

```
make install
```

## Command Explanations

**--enable-introspection**: This switch enables Gobject Introspection bindings. Remove if you don't have gobject-introspection-1.34.2 installed.

**--disable-static**: This switch prevents installation of static versions of the libraries.

--with-glx: This switch can be passed to the **configure** script to enable additional drawing methods in the VTE library.

--enable-gtk-doc: Use this parameter if GTK-Doc is installed and you wish to rebuild and install the API documentation.

## Contents

**Installed Program:** vte2\_90

**Installed Library:** libvte2\_90.so

**Installed Directories:** /usr/include/vte-2.90, /usr/lib/vte-2.90 and /usr/share/gtk-doc/html/vte-2.90

## Short Descriptions

**vte2\_90** is a test application for the VTE libraries.

**libvte2\_90.so** is a library which implements a terminal emulator widget for GTK+ 3.

# gnome-backgrounds-3.6.1

## Introduction to GNOME Backgrounds

The GNOME Backgrounds package contains a collection of graphics files which can be used as backgrounds in the GNOME Desktop environment. Additionally, the package creates the proper framework and directory structure so that you can add your own files to the collection.

This package is known to build and work properly using an LFS-7.2 platform.

## Package Information

- Download (HTTP): <http://ftp.gnome.org/pub/gnome/sources/gnome-backgrounds/3.6/gnome-backgrounds-3.6.1.tar.xz>
- Download (FTP): <ftp://ftp.gnome.org/pub/gnome/sources/gnome-backgrounds/3.6/gnome-backgrounds-3.6.1.tar.xz>
- Download MD5 sum: d057da50157451c1875e37e7654a0212
- Download size: 9.7 MB
- Estimated disk space required: 23 MB
- Estimated build time: less than 0.1 SBU

## GNOME Backgrounds Dependencies

### Required

Intltool-0.50.2

## Installation of GNOME Backgrounds

Install GNOME Backgrounds 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

<b>Installed Programs:</b>	None
<b>Installed Libraries:</b>	None
<b>Installed Directories:</b>	/usr/share/backgrounds/gnome and /usr/share/gnome-background-properties

## Short Descriptions

GNOME Backgrounds are background images for the GNOME Desktop.

# gnome-icon-theme-3.6.2

## Introduction to GNOME Icon Theme

The GNOME Icon Theme package contains an assortment of non-scalable icons of different sizes and themes.

This package is known to build and work properly using an LFS-7.3 platform.

### Package Information

- Download (HTTP): <http://ftp.gnome.org/pub/gnome/sources/gnome-icon-theme/3.6/gnome-icon-theme-3.6.2.tar.xz>
- Download (FTP): <ftp://ftp.gnome.org/pub/gnome/sources/gnome-icon-theme/3.6/gnome-icon-theme-3.6.2.tar.xz>
- Download MD5 sum: c7bf0c7cc3ca0c9d4ac120aedb9ab8af
- Download size: 15 MB
- Estimated disk space required: 135 MB
- Estimated build time: 0.3 SBU

## GNOME Icon Theme Dependencies

### Required

GTK+-3.6.4 or GTK+-2.24.17, hicolor-icon-theme-0.12, icon-naming-utils-0.8.90 and Intltool-0.50.2

## 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

<b>Installed Programs:</b>	None
<b>Installed Libraries:</b>	None
<b>Installed Directory:</b>	/usr/share/icons/gnome

# gnome-icon-theme-extras-3.6.2

## Introduction to GNOME Icon Theme Extras

The GNOME Icon Theme Extras package contains extra icons for the GNOME Desktop.

This package is known to build and work properly using an LFS-7.2 platform.

### Package Information

- Download (HTTP): <http://ftp.gnome.org/pub/gnome/sources/gnome-icon-theme-extras/3.6/gnome-icon-theme-extras-3.6.2.tar.xz>
- Download (FTP): <ftp://ftp.gnome.org/pub/gnome/sources/gnome-icon-theme-extras/3.6/gnome-icon-theme-extras-3.6.2.tar.xz>
- Download MD5 sum: 41a37beccf627237d98eef2b472e9c4d
- Download size: 1.6 MB
- Estimated disk space required: 12 MB
- Estimated build time: less than 0.1 SBU

## GNOME Icon Theme Extras Dependencies

### Required

gnome-icon-theme-3.6.2

## Installation of GNOME Icon Theme Extras

Install GNOME Icon Theme Extras 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
```

# gnome-icon-theme-symbolic-3.6.2

## Introduction to GNOME Icon Theme Symbolic

The GNOME Icon Theme Symbolic package contains symbolic icons for the default GNOME icon theme.

This package is known to build and work properly using an LFS-7.2 platform.

### Package Information

- Download (HTTP): <http://ftp.gnome.org/pub/gnome/sources/gnome-icon-theme-symbolic/3.6/gnome-icon-theme-symbolic-3.6.2.tar.xz>
- Download (FTP): <ftp://ftp.gnome.org/pub/gnome/sources/gnome-icon-theme-symbolic/3.6/gnome-icon-theme-symbolic-3.6.2.tar.xz>
- Download MD5 sum: 5c6a3834d50a14ff3c6d65513ac36eb4
- Download size: 208 KB
- Estimated disk space required: 6.0 MB
- Estimated build time: less than 0.1 SBU

## GNOME Icon Theme Symbolic Dependencies

### Required

GTK+-3.6.4 or GTK+-2.24.17 and icon-naming-utils-0.8.90

## Installation of GNOME Icon Theme Symbolic

Install GNOME Icon Theme Symbolic 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

<b>Installed Programs:</b>	None
<b>Installed Libraries:</b>	None
<b>Installed Directories:</b>	/usr/share/icons/gnome/scalable

# gnome-themes-standard-3.6.5

## Introduction to GNOME Themes Standard

The GNOME Themes Standard package contains various components of the default GNOME 3 theme.

This package is known to build and work properly using an LFS-7.3 platform.

### Package Information

- Download (HTTP): <http://ftp.gnome.org/pub/gnome/sources/gnome-themes-standard/3.6/gnome-themes-standard-3.6.5.tar.xz>
- Download (FTP): <ftp://ftp.gnome.org/pub/gnome/sources/gnome-themes-standard/3.6/gnome-themes-standard-3.6.5.tar.xz>
- Download MD5 sum: 0053b0680fe8961d4ebc88ede71aca6e
- Download size: 3.5 MB
- Estimated disk space required: 40 MB
- Estimated build time: 0.1 SBU

## GNOME Themes Standard Dependencies

### Required

GTK+-2.24.17, GTK+-3.6.4, Intltool-0.50.2 and librsvg-2.36.4

## Installation of GNOME Themes Standard

Install GNOME Themes Standard 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

<b>Installed Programs:</b>	None
<b>Installed Library:</b>	libadwaita.so
<b>Installed Directories:</b>	/usr/lib/gtk-3.0/3.0.0/theming-engines, /usr/share/gnome-background-properties, /usr/share/icons/Adwaita, /usr/share/icons/HighContrast, /usr/share/icons/HighContrastInverse and /usr/share/icons/LowContrast

## Short Descriptions

**libadwaita.so** is the Adwaita GTK+ 3 theme.

# gnome-video-effects-0.4.0

## Introduction to GNOME Video Effects

The GNOME Video Effects package contains a collection of GStreamer effects.

This package is known to build and work properly using an LFS-7.2 platform.

### Package Information

- Download (HTTP): <http://ftp.gnome.org/pub/gnome/sources/gnome-video-effects/0.4/gnome-video-effects-0.4.0.tar.xz>
- Download (FTP): <ftp://ftp.gnome.org/pub/gnome/sources/gnome-video-effects/0.4/gnome-video-effects-0.4.0.tar.xz>
- Download MD5 sum: bf77ccbf5bfff2d3c763c11b2ba90fcf
- Download size: 140 KB
- Estimated disk space required: 2.0 MB
- Estimated build time: less than 0.1 SBU

## GNOME Video Effects Dependencies

### Required

Intltool-0.50.2

## Installation of GNOME Video Effects

Install GNOME Video Effects by running the following commands:

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

This package does not come with a testsuite.

Now, as the root user:

```
make install
```

## Contents

<b>Installed Programs:</b>	None
<b>Installed Libraries:</b>	None
<b>Installed Directory:</b>	/usr/share/gnome-video-effects

# gnome-desktop-3.6.2

## Introduction to GNOME Desktop

The GNOME Desktop package contains a library that provides an API shared by several applications on the GNOME Desktop.

This package is known to build and work properly using an LFS-7.2 platform.

### Package Information

- Download (HTTP): <http://ftp.gnome.org/pub/gnome/sources/gnome-desktop/3.6/gnome-desktop-3.6.2.tar.xz>
- Download (FTP): <ftp://ftp.gnome.org/pub/gnome/sources/gnome-desktop/3.6/gnome-desktop-3.6.2.tar.xz>
- Download MD5 sum: df8f12afd088674bff1664c3fd6619c0
- Download size: 956 KB
- Estimated disk space required: 21 MB
- Estimated build time: 0.2 SBU

## GNOME Desktop Dependencies

### Required

gsettings-desktop-schemas-3.6.1, GTK+-3.6.4 and yelp-xsl-3.6.1

### Recommended

gobject-introspection-1.34.2 and startup-notification-0.12

### Optional

GTK-Doc-1.18

## Installation of GNOME Desktop

Install GNOME Desktop by running the following commands:

```
./configure --prefix=/usr --libexecdir=/usr/lib/gnome-desktop-3.0 &&
make
```

This package does not come with a test suite.

Now, as the root user:

```
make install
```

## Command Explanations

--with-gnome-distributor="Some Name": Use this parameter to supply a custom name in the “Distributor:” field of the “GNOME About” display window.

--enable-gtk-doc: Use this parameter if GTK-Doc is installed and you wish to rebuild and install the API documentation.

## Contents

<b>Installed Programs:</b>	None
<b>Installed Libraries:</b>	libgnome-desktop-3.so
<b>Installed Directories:</b>	/usr/include/gnome-desktop-3.0, /usr/lib/gnome-desktop-3.0, /usr/share/help/*/gpl, /usr/share/help/*/lgpl, /usr/share/help/*/fdl, /usr/share/gtk-doc/html/gnome-desktop3 and /usr/share/libgnome-desktop-3.0

## Short Descriptions

`libgnome-desktop-3.so` contains functions shared by several GNOME applications.

# gnome-keyring-3.6.3

## Introduction to GNOME Keyring

The GNOME Keyring package contains a daemon that keeps passwords and other secrets for users.

This package is known to build and work properly using an LFS-7.2 platform.

### Package Information

- Download (HTTP): <http://ftp.gnome.org/pub/gnome/sources/gnome-keyring/3.6/gnome-keyring-3.6.3.tar.xz>
- Download (FTP): <ftp://ftp.gnome.org/pub/gnome/sources/gnome-keyring/3.6/gnome-keyring-3.6.3.tar.xz>
- Download MD5 sum: 35c6dde6fc31f0ada1d1a332f4b7fa00
- Download size: 1.1 MB
- Estimated disk space required: 150 MB
- Estimated build time: 0.7 SBU

## GNOME Keyring Dependencies

### Required

D-Bus-1.6.10 and Gcr-3.6.2

### Recommended

Linux-PAM-1.1.6

### Optional

*libcap-ng* and *Valgrind*

## Installation of GNOME Keyring

Install GNOME Keyring by running the following commands:

```
./configure --prefix=/usr \
            --sysconfdir=/etc \
            --with-pam-dir=/lib/security \
            --with-root-certs=/etc/ssl/certs &&
make
```

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

Now, as the **root** user:

```
make install
```

## Command Explanations

**--with-pam-dir=/lib/security**: This switch specifies where the PAM module will be installed.

**--with-root-certs=/etc/ssl/certs**: This switch specifies where the trusted root certificates are located.

## Contents

**Installed Programs:** gnome-keyring, gnome-keyring-3 and gnome-keyring-daemon  
**Installed Libraries:** gnome-keyring-pkcs11.so and pam\_gnome\_keyring.so  
**Installed Directory:** /usr/lib/gnome-keyring-devel

## Short Descriptions

**gnome-keyring-daemon** is a session daemon that keeps passwords for users.

# gnome-menus-3.6.2

## Introduction to GNOME Menus

The GNOME Menus package contains an implementation of the draft *Desktop Menu Specification* from freedesktop.org. It also contains the GNOME menu layout configuration files, .directory files and a menu related utility program.

This package is known to build and work properly using an LFS-7.2 platform.

## Package Information

- Download (HTTP): <http://ftp.gnome.org/pub/gnome/sources/gnome-menus/3.6/gnome-menus-3.6.2.tar.xz>
- Download (FTP): <ftp://ftp.gnome.org/pub/gnome/sources/gnome-menus/3.6/gnome-menus-3.6.2.tar.xz>
- Download MD5 sum: c48775f704e7c542496d1fa1a84b2bfd
- Download size: 416 KB
- Estimated disk space required: 8.5 MB
- Estimated build time: less than 0.1 SBU

## GNOME Menus Dependencies

### Required

GLib-2.34.3 and Intltool-0.50.2

### Recommended

gobject-introspection-1.34.2

## Installation of GNOME Menus

Install GNOME Menus by running the following commands:

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

This package does not come with a test suite.

Now, as the root user:

```
make install
```

## Command Explanations

*--disable-static*: This switch prevents installation of static versions of the libraries.

## Contents

<b>Installed Program:</b>	gmenu-simple-editor
<b>Installed Library:</b>	libgnome-menu.so
<b>Installed Directories:</b>	/etc/xdg/menus, /usr/include/gnome-menus-3.0, /usr/lib/python2.7/site-packages/ GMenuSimpleEditor and /usr/share/gnome-menus

## Short Descriptions

**gmenu-simple-editor**

is used to modify GNOME Menu layout.

**libgnome-menu.so**

contains functions required to support GNOME's implementation of the Desktop Menu Specification.

# gnome-panel-3.6.2

## Introduction to GNOME Panel

GNOME Panel is an area on the desktop from which you can run applications and applets, and perform other tasks. This package is known to build and work properly using an LFS-7.2 platform.

### Package Information

- Download (HTTP): <http://ftp.gnome.org/pub/gnome/sources/gnome-panel/3.6/gnome-panel-3.6.2.tar.xz>
- Download (FTP): <ftp://ftp.gnome.org/pub/gnome/sources/gnome-panel/3.6/gnome-panel-3.6.2.tar.xz>
- Download MD5 sum: f394ad73babce95fd0bb65ec6fd3519
- Download size: 2.4 MB
- Estimated disk space required: 72 MB
- Estimated build time: 0.6 SBU

## GNOME Panel Dependencies

### Required

DConf-0.14.1, GConf-3.2.6, gnome-desktop-3.6.2, gnome-menus-3.6.2, libcanberra-0.30, libgweather-3.6.2, librsvg-2.36.4, libwnck-3.4.4 and yelp-xsl-3.6.1

### Recommended

evolution-data-server-3.6.4, gobject-introspection-1.34.2, NetworkManager-0.9.8.0 and telepathy-glib-0.20.2

### Optional

GTK-Doc-1.18

#### Note

The libxml2 Python module must have been built during the installation of libxml2 else the GNOME Panel build will fail.

## Installation of GNOME Panel

Install GNOME Panel by running the following commands:

```
./configure --prefix=/usr \
            --sysconfdir=/etc \
            --libexecdir=/usr/lib/gnome-applets &&
make
```

This package does not come with a test suite.

Now, as the root user:

```
make install
```

## Command Explanations

--enable-gtk-doc: Use this parameter if GTK-Doc is installed and you wish to rebuild and install the API documentation.

## Contents

<b>Installed Programs:</b>	gnome-desktop-item-edit, gnome-panel and panel-test-applets
<b>Installed Library:</b>	libpanel-applet-4.so
<b>Installed Directories:</b>	/usr/include/gnome-panel-4.0, /usr/lib/gnome-applets, /usr/share/gnome-applets, /usr/share/gtk-doc/html/panel-applet-4.0, /usr/share/help/*/clock and /usr/share/help/*/fish

## Short Descriptions

<b>gnome-panel</b>	provides the panels for the the GNOME Desktop.
<b>libpanel-applet-4.so</b>	contains functions used for development of small applications (applets) which may be embedded in the panel.

# Gvfs-1.14.2

## Introduction to Gvfs

The Gvfs package is a userspace virtual filesystem designed to work with the I/O abstractions of GLib's GIO library.

This package is known to build and work properly using an LFS-7.2 platform.

## Package Information

- Download (HTTP): <http://ftp.gnome.org/pub/gnome/sources/gvfs/1.14/gvfs-1.14.2.tar.xz>
- Download (FTP): <ftp://ftp.gnome.org/pub/gnome/sources/gvfs/1.14/gvfs-1.14.2.tar.xz>
- Download MD5 sum: 43e7af7132c2425289321c2156655d1f
- Download size: 1.5 MB
- Estimated disk space required: 90 MB
- Estimated build time: 0.7 SBU

## Gvfs Dependencies

### Required

D-Bus-1.6.10, GLib-2.34.3 and Intltool-0.50.2

### Recommended

GTK+-3.6.4, libsecret-0.14, libsoup-2.40.3 and UDisks-2.1.0

### Optional

Avahi-0.6.31, BlueZ-4.101, D-Bus GLib Bindings-0.100.2, Fuse-2.9.2, libarchive-3.1.2, *libbluray*, *libcdio*, libgcrypt-1.5.2, *libgphoto2*, *libimobiledevice*, OpenSSH-6.2p1 and Samba-3.6.12

### Optional (Runtime)

obex-data-server-0.4.6 and Obexd-0.48

## Installation of Gvfs

Install Gvfs by running the following commands:

```
./configure --prefix=/usr \
            --sysconfdir=/etc \
            --libexecdir=/usr/lib/gvfs \
            --disable-gphoto2 &&
make
```

This package does not come with a test suite.

Now, as the root user:

```
make install
```



## Note

If you installed the package to your system using a “DESTDIR” method, `/usr/share/glib-2.0/schemas/gschemas.compiled` was not updated/created. Create (or update) the file using the following command as the root user:

```
glib-compile-schemas /usr/share/glib-2.0/schemas
```

## Command Explanations

**--disable-gphoto2**: This switch is required if libgphoto2 is not installed. Remove it if you installed libgphoto2 and wish to use it with Gvfs.

## Contents

<b>Installed Programs:</b>	gvfs-cat, gvfs-copy, gvfs-info, gvfs-less, gvfs-ls, gvfs-mime, gvfs-mkdir, gvfs-monitor-dir, gvfs-monitor-file, gvfs-mount, gvfs-move, gvfs-open, gvfs-rename, gvfs-rm, gvfs-save, gvfs-set-attribute, gvfs-trash, gvfs-tree, gvfsd, gvfsd-fuse and gvfsd-metadata
<b>Installed Library:</b>	libgvfscommon.so
<b>Installed Directories:</b>	/usr/include/gvfs-client, /usr/lib/gvfs and /usr/share/gvfs

## Short Descriptions

<b>gvfs-cat</b>	concatenates the given files and prints them to the standard output.
<b>gvfs-copy</b>	copies a file from one URI location to another.
<b>gvfs-info</b>	shows information about the given locations.
<b>gvfs-less</b>	executes <b>less</b> using the VFS as input preprocessor, so less can access any resource accessible by any of the Gvfs backends.
<b>gvfs-ls</b>	lists information about the given locations.
<b>gvfs-mime</b>	is used to query information about applications that are registered to handle a mime-type, or set the default handler for a mime-type.
<b>gvfs-mkdir</b>	creates a directory specified by an URI.
<b>gvfs-monitor-dir</b>	prints information about file creation, deletion, file content and attribute changes and mount and unmount operations inside the specified directories.
<b>gvfs-monitor-file</b>	prints information about creation, deletion, content and attribute changes and mount and unmount operations affecting the monitored files.
<b>gvfs-mount</b>	provides commandline access to various aspects of GIOs mounting functionality.
<b>gvfs-move</b>	moves a file from one URI location to another.
<b>gvfs-open</b>	opens files with the default application that is registered to handle files of that type.
<b>gvfs-rename</b>	changes the name of a file or directory.
<b>gvfs-rm</b>	removes a file.
<b>gvfs-save</b>	reads from the standard input and saves the data to the given location.
<b>gvfs-set-attribute</b>	allows to set a file attribute on a file.

<b>gvfs-trash</b>	sends files or directories to the "Trashcan".
<b>gvfs-tree</b>	lists the contents of the given directories recursively, in a tree-like format.
<b>gvfsd</b>	is the main daemon for the Gvfs virtual filesystem.
<b>gvfsd-fuse</b>	maintains a FUSE mount to make Gvfs backends available to POSIX applications.
<b>gvfsd-metadata</b>	is a daemon acting as a write serialiser to the internal Gvfs metadata storage.
<code>libgvfscommon.so</code>	contains the common API functions used in Gvfs programs.

# Nautilus-3.6.3

## Introduction to Nautilus

The Nautilus package contains the GNOME file manager.

This package is known to build and work properly using an LFS-7.2 platform.

## Package Information

- Download (HTTP): <http://ftp.gnome.org/pub/gnome/sources/nautilus/3.6/nautilus-3.6.3.tar.xz>
- Download (FTP): <ftp://ftp.gnome.org/pub/gnome/sources/nautilus/3.6/nautilus-3.6.3.tar.xz>
- Download MD5 sum: a0ef8ce24933aa897568aef98645d4e8
- Download size: 4.8 MB
- Estimated disk space required: 140 MB
- Estimated build time: 0.7 SBU

## Nautilus Dependencies

### Required

gnome-desktop-3.6.2

### Recommended

gobject-introspection-1.34.2

### Optional

DocBook-utils-0.6.14, Exempi-2.2.0, libexif-0.6.21, *Tracker* and *Valgrind*

### Recommended (Runtime)

Gvfs-1.14.2 (For hotplugging and device mounting to work)

## Installation of Nautilus

Install Nautilus by running the following commands:

```
./configure --prefix=/usr \
            --sysconfdir=/etc \
            --libexecdir=/usr/lib/nautilus \
            --disable-nst-extension \
            --disable-packagekit \
            --disable-tracker &&
make
```

This package needs to be installed before its testsuite can be run.

Now, as the root user:

```
make install
```

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

## Command Explanations

--disable-packagekit: This switch disables use of PackageKit which isn't suitable for BLFS.

--disable-nst-extension: This switch disables building of the sendto extension which is provided by other package.

--disable-tracker: This switch disables use of Tracker which isn't part of BLFS.

--enable-gtk-doc: Use this parameter if GTK-Doc is installed and you wish to rebuild and install the API documentation.

## Contents

**Installed Programs:** nautilus, nautilus-autorun-software and nautilus-connect-server

**Installed Library:** libnautilus-extension.so

**Installed Directories:** /usr/include/nautilus, /usr/lib/nautilus, /usr/share/gnome-shell/search-providers, /usr/share/nautilus and /usr/share/gtk-doc/html/libnautilus-extension

## Short Descriptions

**nautilus** is the GNOME file manager.

**libnautilus-extension.so** supplies the functions needed by the file manager extensions.

# Nautilus-Sendto-3.6.1

## Introduction to Nautilus Sendto

The Nautilus Sendto package provides the Nautilus file manager with a context menu component for quickly sending files to accounts in an Evolution email address book, contacts on a Pidgin, Gajim instant messaging list, through Thunderbird, or through Claws Mail (formerly Sylpheed Claws).

This package is known to build and work properly using an LFS-7.2 platform.

## Package Information

- Download (HTTP): <http://ftp.gnome.org/pub/gnome/sources/nautilus-sendto/3.6/nautilus-sendto-3.6.1.tar.xz>
- Download (FTP): <ftp://ftp.gnome.org/pub/gnome/sources/nautilus-sendto/3.6/nautilus-sendto-3.6.1.tar.xz>
- Download MD5 sum: 8c3378e9af42c0609663ec8305b3dbbb
- Download size: 376 KB
- Estimated disk space required: 8.0 MB
- Estimated build time: less than 0.1 SBU

## Nautilus Sendto Dependencies

### Required

Nautilus-3.6.3

### Recommended

evolution-data-server-3.6.4

### Optional

GTK-Doc-1.18 and *GUPnP*

## Installation of Nautilus Sendto

Install Nautilus Sendto 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: Use this parameter if GTK-Doc is installed and you wish to rebuild and install the API documentation.

## Contents

**Installed Program:** nautilus-sendto  
**Installed Libraries:** None  
**Installed Directories:** /usr/include/nautilus-sendto, /usr/lib/nautilus-sendto, /usr/share/gtk-doc/html/nautilus-sendto and /usr/share/nautilus-sendto

## Short Descriptions

**nautilus-sendto** is a convenience application used to send a file via email or instant messenger.

# gnome-screensaver-3.6.1

## Introduction to GNOME Screensaver

The GNOME Screensaver package contains a screen saver and locker designed to have simple, sane, secure defaults and be well integrated with the desktop. It supports locking down of configuration settings, has translations into many languages and convenient user switching.

This package is known to build and work properly using an LFS-7.2 platform.

## Package Information

- Download (HTTP): <http://ftp.gnome.org/pub/gnome/sources/gnome-screensaver/3.6/gnome-screensaver-3.6.1.tar.xz>
- Download (FTP): <ftp://ftp.gnome.org/pub/gnome/sources/gnome-screensaver/3.6/gnome-screensaver-3.6.1.tar.xz>
- Download MD5 sum: 881cc58daa7cd8602737912ae5715cc8
- Download size: 556 KB
- Estimated disk space required: 13 MB
- Estimated build time: 0.1 SBU

## GNOME Screensaver Dependencies

### Required

D-Bus GLib Bindings-0.100.2, gnome-desktop-3.6.2 and Linux-PAM-1.1.6

### Recommended

libgnomekbd-3.6.0,

## Installation of GNOME Screensaver

Install GNOME Screensaver by running the following commands:

```
sed -i 's|etc/pam\.d"|"etc"' data/Makefile.in &&
./configure --prefix=/usr \
            --sysconfdir=/etc \
            --libexecdir=/usr/lib/gnome-screensaver \
            --with-pam-prefix=/etc &&
make
```

This package does not come with a test suite.

Now, as the root user:

```
make install
```

## Command Explanations

**sed -i 's|etc/pam\.d"|"etc'| data/Makefile.in:** This command is used so that an erroneous message to copy the PAM configuration file is not displayed.

*--with-pam-prefix=/etc*: This parameter is used so that the Linux PAM configuration file for the GNOME Screensaver application is installed in the correct location.

## Configuring GNOME Screensaver

### Config Files

/etc/pam.d/gnome-screensaver

### Configuration Information

#### Linux PAM Configuration

The default GNOME Screensaver configuration file does not work with a BLFS system. Replace the existing file with one that can be used on a BLFS system by issuing the following command as the `root` user:

```
cat > /etc/pam.d/gnome-screensaver << "EOF"
# Begin /etc/pam.d/gnome-screensaver

auth      include      system-auth
auth      optional     pam_gnome_keyring.so

account   include      system-account
password  include      system-password
session   include      system-session

# End /etc/pam.d/gnome-screensaver
EOF
chmod -v 644 /etc/pam.d/gnome-screensaver
```

## Contents

<b>Installed Programs:</b>	gnome-screensaver and gnome-screensaver-command
<b>Installed Libraries:</b>	None
<b>Installed Directory:</b>	/usr/lib/gnome-screensaver

## Short Descriptions

<b>gnome-screensaver</b>	is a screensaver and screen-locking program designed to work seamlessly with the GNOME Desktop.
<b>gnome-screensaver-command</b>	is a tool used for controlling an already running instance of GNOME Screensaver.

# gnome-power-manager-3.6.0

## Introduction to GNOME Power Manager

The GNOME Power Manager package contains a tool used to report on power management on the system. This package is known to build and work properly using an LFS-7.2 platform.

### Package Information

- Download (HTTP): <http://ftp.gnome.org/pub/gnome/sources/gnome-power-manager/3.6/gnome-power-manager-3.6.0.tar.xz>
- Download (FTP): <ftp://ftp.gnome.org/pub/gnome/sources/gnome-power-manager/3.6/gnome-power-manager-3.6.0.tar.xz>
- Download MD5 sum: 3bc0f6bf7040d3f4916def26359f20ee
- Download size: 728 KB
- Estimated disk space required: 13 MB
- Estimated build time: less than 0.1 SBU

### GNOME Power Manager Dependencies

#### Required

GTK+-3.6.4, Intltool-0.50.2 and UPower-0.9.20

#### Optional

DocBook-utils-0.6.14 (to regenerate man pages)

## Installation of GNOME Power Manager

Install GNOME Power Manager by running the following commands:

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

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

Now, as the root user:

```
make install
```

## Contents

<b>Installed Program:</b>	gnome-power-statistics
<b>Installed Libraries:</b>	None
<b>Installed Directory:</b>	/usr/share/gnome-power-manager

## Short Descriptions

<b>gnome-power-statistics</b>	is used to visualize the power consumption of laptop hardware.
-------------------------------	--

# gnome-bluetooth-3.6.1

## Introduction to GNOME Bluetooth

The GNOME Bluetooth package contains tools for managing and manipulating Bluetooth devices using the GNOME Desktop.

This package is known to build and work properly using an LFS-7.2 platform.

## Package Information

- Download (HTTP): <http://ftp.gnome.org/pub/gnome/sources/gnome-bluetooth/3.6/gnome-bluetooth-3.6.1.tar.xz>
- Download (FTP): <ftp://ftp.gnome.org/pub/gnome/sources/gnome-bluetooth/3.6/gnome-bluetooth-3.6.1.tar.xz>
- Download MD5 sum: a3b0b6c2c542b3264cb0144a4efb3342
- Download size: 1.3 MB
- Estimated disk space required: 21 MB
- Estimated build time: 0.2 SBU

## GNOME Bluetooth Dependencies

### Required

libnotify-0.7.5 and yelp-xsl-3.6.1

### Recommended

gobject-introspection-1.34.2 and Nautilus-Sendto-3.6.1

### Optional

GeoClue-0.12.0 and GTK-Doc-1.18

### Required (Runtime)

BlueZ-4.101, ConsoleKit-0.4.6 and Obexd-0.48 (Required for bluetooth-sendto to work)

## Installation of GNOME Bluetooth

Install GNOME Bluetooth 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
```

For GNOME Bluetooth to work as expected, users need to be allowed to write to `/dev/rfkill`. Create a Udev rule that will allow normal users to write to `/dev/rfkill` with the following command as the `root` user:

```
cat > /lib/udev/rules.d/61-gnome-bluetooth.rules << "EOF"
# Get access to /dev/rfkill for users
# See https://bugzilla.redhat.com/show_bug.cgi?id=514798
#
# Updated for udev >= 154
# http://bugs.debian.org/582188
# https://bugzilla.redhat.com/show_bug.cgi?id=588660

ENV{ACL_MANAGE}=="0", GOTO="gnome_bluetooth_end"
ACTION!="add|change", GOTO="gnome_bluetooth_end"
KERNEL=="rfkill", TAG+="udev-acl"
LABEL="gnome_bluetooth_end"
EOF
```

## Command Explanations

`--enable-gtk-doc`: Use this parameter if GTK-Doc is installed and you wish to rebuild and install the API documentation.

## Contents

<b>Installed Programs:</b>	bluetooth-applet, bluetooth-sendto and bluetooth-wizard
<b>Installed Library:</b>	libgnome-bluetooth.so
<b>Installed Directories:</b>	/usr/include/gnome-bluetooth, /usr/lib/gnome-bluetooth, /usr/share/gnome-bluetooth, /usr/share/gtk-doc/html/gnome-bluetooth and /usr/share/help/*/gnome-bluetooth

## Short Descriptions

<b>bluetooth-applet</b>	is a GNOME applet for prompting the user for a Bluetooth passkey (PIN).
<b>bluetooth-sendto</b>	is a GTK+ application for transferring files over Bluetooth.
<b>bluetooth-wizard</b>	is a GTK+ wizard for setting up devices with the Linux Bluetooth stack.
<b>libgnome-bluetooth.so</b>	contains the GNOME Bluetooth API functions.

# gnome-user-share-3.0.4

## Introduction to GNOME User Share

The GNOME User Share package allows easy user-level file sharing via WebDAV or ObexFTP. The shared files are announced on the network by Avahi.

This package is known to build and work properly using an LFS-7.2 platform.

### Package Information

- Download (HTTP): <http://ftp.gnome.org/pub/gnome/sources/gnome-user-share/3.0/gnome-user-share-3.0.4.tar.xz>
- Download (FTP): <ftp://ftp.gnome.org/pub/gnome/sources/gnome-user-share/3.0/gnome-user-share-3.0.4.tar.xz>
- Download MD5 sum: dff4e0eb468e61f3de4a2e6843c7d679
- Download size: 996 KB
- Estimated disk space required: 10 MB
- Estimated build time: 0.1 SBU

## GNOME User Share Dependencies

### Required

gnome-bluetooth-3.6.1, libcanberra-0.30 and yelp-xsl-3.6.1

### Required (Runtime)

mod\_dnssd-0.6

### Recommended

Nautilus-3.6.3

## Installation of GNOME User Share

Install GNOME User Share by running the following commands:

```
./configure --prefix=/usr \
            --sysconfdir=/etc \
            --libexecdir=/usr/lib/gnome-user-share \
            --with-modules-path=/usr/lib/apache &&
make
```

This package does not come with a test suite.

Now, as the root user:

```
make install
```

## Contents

<b>Installed Programs:</b>	gnome-file-share-properties and gnome-user-share
<b>Installed Libraries:</b>	None
<b>Installed Directories:</b>	/usr/lib/gnome-user-share, /usr/share/gnome-user-share and /usr/share/help/*/gnome-user-share

## Short Descriptions

**gnome-file-share-properties** is a tool used to manage shares.

# gnome-settings-daemon-3.6.4

## Introduction to GNOME Settings Daemon

The GNOME Settings Daemon is responsible for setting various parameters of a GNOME Session and the applications that run under it.

This package is known to build and work properly using an LFS-7.2 platform.

### Package Information

- Download (HTTP): <http://ftp.gnome.org/pub/gnome/sources/gnome-settings-daemon/3.6/gnome-settings-daemon-3.6.4.tar.xz>
- Download (FTP): <ftp://ftp.gnome.org/pub/gnome/sources/gnome-settings-daemon/3.6/gnome-settings-daemon-3.6.4.tar.xz>
- Download MD5 sum: 362803ee1f1a0aa02e3c7df61ef82309
- Download size: 1.5 MB
- Estimated disk space required: 70 MB
- Estimated build time: 0.7 SBU

## GNOME Settings Daemon Dependencies

### Required

Colord-1.0.0, gnome-desktop-3.6.2, libcanberra-0.30, libnotify-0.7.5, libgnomekbd-3.6.0, libwacom-0.6.1, PulseAudio-3.0, UPower-0.9.20 and Xorg Wacom Driver-0.20.0

### Recommended

Cups-1.6.2, IBus-1.5.2 and NSS-3.14.3



### Note

Recommended dependencies are not strictly required for this package to build and function, but you may not get expected results at runtime if you don't install them.

## Installation of GNOME Settings Daemon

Install GNOME Settings Daemon by running the following commands:

```
./configure --prefix=/usr \
            --sysconfdir=/etc \
            --libexecdir=/usr/lib/gnome-settings-daemon \
            --disable-packagekit \
            --disable-static &&
make
```

This package does not have a working testsuite.

Now, as the root user:

```
make install
```

## Command Explanations

- disable-packagekit: This switch disables use of PackageKit which isn't suitable for BLFS.
- disable-static: This switch prevents installation of static versions of the libraries.
- disable-cups: Use this switch if you have not installed recommended dependency Cups.
- disable-ibus: Use this switch if you have not installed recommended dependency IBus.
- disable-smartcard-support: Use this switch if you have not installed recommended dependency NSS and wish to disable SmartCard support.

## Contents

<b>Installed Program:</b>	gnome-settings-daemon
<b>Installed Libraries:</b>	None
<b>Installed Directories:</b>	/etc/gnome-settings-daemon, /usr/include/gnome-settings-daemon-3.0, /usr/lib/gnome-settings-daemon, /usr/lib/gnome-settings-daemon-3.0, /usr/share/gnome-settings-daemon and /usr/share/gnome-settings-daemon-3.0

## Short Descriptions

<b>gnome-settings-daemon</b>	is responsible for setting the various preference parameters of a GNOME session and the applications that run under it.
------------------------------	---

# gnome-control-center-3.6.3

## Introduction to GNOME Control Center

The GNOME Control Center package contains the GNOME settings manager.

This package is known to build and work properly using an LFS-7.2 platform.

### Package Information

- Download (HTTP): <http://ftp.gnome.org/pub/gnome/sources/gnome-control-center/3.6/gnome-control-center-3.6.3.tar.xz>
- Download (FTP): <ftp://ftp.gnome.org/pub/gnome/sources/gnome-control-center/3.6/gnome-control-center-3.6.3.tar.xz>
- Download MD5 sum: 13474a477658ccbca7484918edfc19d3
- Download size: 4.7 MB
- Estimated disk space required: 110 MB
- Estimated build time: 1.0 SBU

## GNOME Control Center Dependencies

### Required

gnome-menus-3.6.2, gnome-online-accounts-3.6.2, gnome-settings-daemon-3.6.4, ISO Codes-3.42, libgtop-2.28.4, libpwquality-1.2.1 and MIT Kerberos V5-1.11.2

### Required (Runtime)

AccountsService-0.6.31 and ConsoleKit-0.4.6

### Recommended

Cups-1.6.2, gnome-bluetooth-3.6.1, IBus-1.5.2 and NetworkManager-0.9.8.0

### Optional

Cheese-3.6.2 and *libsocialweb*



#### Note

Recommended dependencies are not strictly required for this package to build and function, but you may not get expected results at runtime if you don't install them.

## Installation of GNOME Control Center

Install GNOME Control Center by running the following commands:

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

This package does not come with a test suite.

Now, as the root user:

```
make install
```

## Command Explanations

--disable-static: This switch prevents installation of static versions of the libraries.

--disable-cups: Use this switch if you have not installed recommended dependency Cups.

--disable-ibus: Use this switch if you have not installed recommended dependency IBus.

## Contents

**Installed Programs:** gnome-control-center and gnome-sound-applet

**Installed Libraries:** None

**Installed Directories:** /usr/lib/control-center-1, /usr/share/gnome-control-center and /usr/share/sounds/gnome

## Short Descriptions

**gnome-control-center** is a graphical user interface used to configure various aspects of GNOME.

**gnome-sound-applet** is the GNOME Volume Control Applet.

# gnome-terminal-3.6.1

## Introduction to GNOME Terminal

The GNOME Terminal package contains the terminal emulator for GNOME Desktop.

This package is known to build and work properly using an LFS-7.2 platform.

## Package Information

- Download (HTTP): <http://ftp.gnome.org/pub/gnome/sources/gnome-terminal/3.6/gnome-terminal-3.6.1.tar.xz>
- Download (FTP): <ftp://ftp.gnome.org/pub/gnome/sources/gnome-terminal/3.6/gnome-terminal-3.6.1.tar.xz>
- Download MD5 sum: fc12453283199c2889fe1173cbd82a9b
- Download size: 1.6 MB
- Estimated disk space required: 60 MB
- Estimated build time: 0.2 SBU

## GNOME Terminal Dependencies

### Required

GConf-3.2.6, gnome-doc-utils-0.20.10, gsettings-desktop-schemas-3.6.1, VTE-0.34.2 and yelp-xsl-3.6.1

### Recommended

Rarian-0.8.1

## Installation of GNOME Terminal

Install GNOME Terminal 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
```

## Contents

<b>Installed Program:</b>	gnome-terminal
<b>Installed Libraries:</b>	None
<b>Installed Directories:</b>	/usr/share/gnome-terminal and /usr/share/help/*/gnome-terminal

## Short Descriptions

**gnome-terminal** is the GNOME Terminal Emulator.

# Zenity-3.6.0

## 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.

This package is known to build and work properly using an LFS-7.2 platform.

## Package Information

- Download (HTTP): <http://ftp.gnome.org/pub/gnome/sources/zenity/3.6/zenity-3.6.0.tar.xz>
- Download (FTP): <ftp://ftp.gnome.org/pub/gnome/sources/zenity/3.6/zenity-3.6.0.tar.xz>
- Download MD5 sum: a9ba39d7286ec172f726c938d911e933
- Download size: 3.5 MB
- Estimated disk space required: 24 MB
- Estimated build time: 0.1 SBU

## Zenity Dependencies

### Required

GTK+-3.6.4 and yelp-xsl-3.6.1

### Recommended

libnotify-0.7.5

### Optional

WebKitGTK+-1.10.2

## Installation of Zenity

Install Zenity 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

<b>Installed Programs:</b>	gdialog and zenity
<b>Installed Libraries:</b>	None
<b>Installed Directories:</b>	/usr/share/help/*/zenity and /usr/share/zenity

## 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.

# Metacity-2.34.13

## Introduction to Metacity

Metacity is the fallback window manager for GNOME, used if the video driver does not provide hardware acceleration. It is conventionally run from **gnome-session**, which will start the necessary GNOME daemons.

This package is known to build and work properly using an LFS-7.2 platform.

## Package Information

- Download (HTTP): <http://ftp.gnome.org/pub/gnome/sources/metacity/2.34/metacity-2.34.13.tar.xz>
- Download (FTP): <ftp://ftp.gnome.org/pub/gnome/sources/metacity/2.34/metacity-2.34.13.tar.xz>
- Download MD5 sum: 6d89b71672d4fa49fc87f83d610d0ef6
- Download size: 1.6 MB
- Estimated disk space required: 45 MB
- Estimated build time: 0.4 SBU

## Metacity Dependencies

### Required

GTK+-2.24.17, libcanberra-0.30, yelp-xsl-3.6.1 and Zenity-3.6.0

### Recommended

startup-notification-0.12

### Runtime Dependencies

notification-daemon-0.7.6 and polkit-gnome-0.105

## Installation of Metacity

Install Metacity by running the following commands:

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

This package does not come with a test suite.

Now, as the root user:

```
make install
```

## Command Explanations

**--disable-static**: This switch prevents installation of static versions of the libraries.

## Contents

**Installed Programs:**

metacity, metacity-message, metacity-theme-viewer and metacity-window-demo

**Installed Library:**

libmetacity-private.so

**Installed Directories:**

/usr/include/metacity-1, /usr/share/gnome/wm-properties, /usr/share/help/\*/creating-metacity-themes, /usr/share/metacity, /usr/share/themes/AgingGorilla/metacity-1, /usr/share/themes/Atlanta/metacity-1, /usr/share/themes/Bright/metacity-1, /usr/share/themes/Crux/metacity-1, /usr/share/themes/Escos/metacity-1, /usr/share/themes/Metabox/metacity-1 and /usr/share/themes/Simple/metacity-1

## Short Descriptions

**metacity**

is the GNOME fallback window manager, used when the video driver does not support acceleration.

**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.

# network-manager-applet-0.9.8.0

## Introduction to NetworkManager Applet

The NetworkManager Applet is a tool used to configure wired and wireless network connections through GUI.

This package is known to build and work properly using an LFS-7.2 platform.

### Package Information

- Download (HTTP): <http://ftp.gnome.org/pub/gnome/sources/network-manager-applet/0.9/network-manager-applet-0.9.8.0.tar.xz>
- Download (FTP): <ftp://ftp.gnome.org/pub/gnome/sources/network-manager-applet/0.9/network-manager-applet-0.9.8.0.tar.xz>
- Download MD5 sum: 531ce56c51ec86c5d2dc4cbe58649583
- Download size: 1.2 MB
- Estimated disk space required: 50 MB
- Estimated build time: 0.4 SBU

### NetworkManager Applet Dependencies

#### Required

GTK+-3.6.4, ISO Codes-3.42, libgnome-keyring-3.6.0, libnotify-0.7.5 and NetworkManager-0.9.8.0

#### Required (Runtime)

polkit-gnome-0.105

#### Recommended

gnome-bluetooth-3.6.1

#### Optional

*mobile-broadband-provider-info* and *ModemManager* (0.7 and later)

## Installation of NetworkManager Applet

Install NetworkManager Applet by running the following commands:

```
./configure --prefix=/usr \
            --sysconfdir=/etc \
            --libexecdir=/usr/lib/NetworkManager \
            --disable-migration \
            --disable-static &&
make
```

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

Now, as the root user:

```
make install
```

## Command Explanations

--disable-migration: This switch disables building of NetworkManager Applet GConf migration tool which is not necessary for BLFS.

--disable-static: This switch prevents installation of static versions of the libraries.

## Contents

**Installed Programs:** nm-applet and nm-connection-editor

**Installed Libraries:** libnm-gtk.so

**Installed Directories:** /usr/include/libnm-gtk, /usr/share/libnm-gtk and /usr/share/nm-applet

## Short Descriptions

**nm-connection-editor** allows users to view and edit network connection settings.

**libnm-gtk.so** contains the NetworkManager GTK+ bindings.

# Caribou-0.4.4.2

## Introduction to Caribou

Caribou is an input assistive technology intended for switch and pointer users.

This package is known to build and work properly using an LFS-7.2 platform.

## Package Information

- Download (HTTP): <http://ftp.gnome.org/pub/gnome/sources/caribou/0.4/caribou-0.4.4.2.tar.xz>
- Download (FTP): <ftp://ftp.gnome.org/pub/gnome/sources/caribou/0.4/caribou-0.4.4.2.tar.xz>
- Download MD5 sum: 02f6c153723ab89f67d5644df6c27b52
- Download size: 352 KB
- Estimated disk space required: 10 MB
- Estimated build time: 0.1 SBU

## Caribou Dependencies

### Required

Clutter-1.12.2, GTK+-3.6.4, libgee-0.6.7, libxklavier-5.3 and PyGObject-3.4.2

### Recommended

Vala-0.18.1

### Additional Runtime Dependencies

For most GNOME users, this package is only required as a compile-time dependency for other packages. If you intend to use its keyboard you will require pyatspi2-2.6.0, D-Bus Python Bindings-1.1.1 and DConf-0.14.1 at runtime.

## Installation of Caribou

Install Caribou by running the following commands:

```
./configure --prefix=/usr \
            --sysconfdir=/etc \
            --libexecdir=/usr/lib/caribou \
            --disable-gtk2-module \
            --disable-static &&
make
```

This package does not come with a testsuite.

Now, as the root user:

```
make install
```

## Command Explanations

**--disable-gtk2-module:** Because GNOME now uses GTK+-3, the module has no use on a GNOME desktop.

**--disable-static:** This switch prevents installation of static versions of the libraries.

## Contents

<b>Installed Programs:</b>	caribou and caribou-preferences
<b>Installed Library:</b>	libcaribou.so
<b>Installed Directories:</b>	/usr/include/libcaribou, /usr/lib/caribou, /usr/lib/python2.7/site-packages/caribou, /usr/share/antler and /usr/share/caribou

## Short Descriptions

`libcaribou.so` contains the Caribou API functions.

# Mutter-3.6.3

## Introduction to Mutter

Mutter is the window manager for GNOME. It is not invoked directly, but from gnome-session (on a machine with a hardware accelerated video driver).

This package is known to build and work properly using an LFS-7.2 platform.

## Package Information

- Download (HTTP): <http://ftp.gnome.org/pub/gnome/sources/mutter/3.6/mutter-3.6.3.tar.xz>
- Download (FTP): <ftp://ftp.gnome.org/pub/gnome/sources/mutter/3.6/mutter-3.6.3.tar.xz>
- Download MD5 sum: f04273e3e40b484dd0e36f7e8f5783ef
- Download size: 1.6 MB
- Estimated disk space required: 50 MB
- Estimated build time: 0.4 SBU

## Mutter Dependencies

### Required

Clutter-1.12.2, gsettings-desktop-schemas-3.6.1, GTK+-3.6.4 and Zenity-3.6.0

### Recommended

libcanberra-0.30, gobject-introspection-1.34.2 and startup-notification-0.12

## Installation of Mutter

Install Mutter by running the following commands:

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

This package does not come with a test suite.

Now, as the root user:

```
make install
```

## Command Explanations

*--disable-static*: This switch prevents installation of static versions of the libraries.

## Contents

<b>Installed Programs:</b>	mutter, mutter-message, mutter-theme-viewer and mutter-window-demo
<b>Installed Libraries:</b>	libmutter.so
<b>Installed Directories:</b>	/usr/include/mutter, /usr/lib/mutter and /usr/share/mutter

## Short Descriptions

**mutter** is a Clutter based compositing GTK+ Window Manager.

**mutter-message**

is a command used to send a message to Mutter.

**mutter-theme-viewer**

is used to preview any installed Mutter theme.

**mutter-window-demo**

is a Mutter demo program.

**libmutter.so**

contains the Mutter API functions.

# gnome-shell-3.6.3.1

## Introduction to GNOME Shell

The GNOME Shell is the core user interface of the GNOME Desktop environment.

This package is known to build and work properly using an LFS-7.2 platform.

## Package Information

- Download (HTTP): <http://ftp.gnome.org/pub/gnome/sources/gnome-shell/3.6/gnome-shell-3.6.3.1.tar.xz>
- Download (FTP): <ftp://ftp.gnome.org/pub/gnome/sources/gnome-shell/3.6/gnome-shell-3.6.3.1.tar.xz>
- Download MD5 sum: 6d00d16fd54fa0d0e5d4b3a7dcad0bfe
- Download size: 1.4 MB
- Estimated disk space required: 50 MB
- Estimated build time: 0.6 SBU

## GNOME Shell Dependencies

### Required

evolution-data-server-3.6.4, Gcr-3.6.2, Gjs-1.34.0, gnome-menus-3.6.2, gnome-settings-daemon-3.6.4, gst-plugins-base-1.0.7, JSON-GLib-0.16.0, libcroco-0.6.8, libgnome-keyring-3.6.0, Mutter-3.6.3, NetworkManager-0.9.8.0 and telepathy-logger-0.8.0

### Recommended

gnome-bluetooth-3.6.1

### Optional

GTK-Doc-1.18

## Runtime Dependencies

AccountsService-0.6.31, Caribou-0.4.4.2, DConf-0.14.1, gnome-icon-theme-3.6.2, gnome-icon-theme-symbolic-3.6.2 and telepathy-mission-control-5.14.1

## Installation of GNOME Shell

Install GNOME Shell by running the following commands:

```
./configure --prefix=/usr \
            --sysconfdir=/etc \
            --libexecdir=/usr/lib/gnome-shell &&
make
```

This package does not come with a test suite.

Now, as the root user:

```
make install
```

## Command Explanations

--enable-gtk-doc: Use this parameter if GTK-Doc is installed and you wish to rebuild and install the API documentation.

## Contents

**Installed Programs:** gnome-shell, gnome-shell-extension-prefs and gnome-shell-extension-tool and gnome-shell-pref-tool

**Installed Libraries:** None

**Installed Directories:** /usr/lib/gnome-shell, /usr/share/gnome-shell and /usr/share/gtk-doc/html/shell

## Short Descriptions

**gnome-shell** provides the core user interface functions for the GNOME 3 Desktop.

# gnome-session-3.6.2

## Introduction to GNOME Session

The GNOME Session package contains the GNOME session manager.

This package is known to build and work properly using an LFS-7.2 platform.

## Package Information

- Download (HTTP): <http://ftp.gnome.org/pub/gnome/sources/gnome-session/3.6/gnome-session-3.6.2.tar.xz>
- Download (FTP): <ftp://ftp.gnome.org/pub/gnome/sources/gnome-session/3.6/gnome-session-3.6.2.tar.xz>
- Download MD5 sum: 355730543dbcc166f331d806cd0da22d
- Download size: 716 KB
- Estimated disk space required: 20 MB
- Estimated build time: 0.3 SBU

## GNOME Session Dependencies

### Required

GConf-3.2.6, GTK+-3.6.4, JSON-GLib-0.16.0 and UPower-0.9.20

### Optional

xmldt-0.0.25

### Runtime Dependencies

ConsoleKit-0.4.6 (if you intend to use startx to initiate your GNOME desktop)

## Installation of GNOME Session

Install GNOME Session by running the following commands:

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

This package does not come with a test suite.

Now, as the root user:

```
make install
```

## Command Explanations

--enable-docbook-docs: This switch is used to enable building of the documentation.

## Configuring GNOME Session

### Configuration Information

If you are not using GDM to start your GNOME desktop, you will need to invoke **gnome-session** instead of invoking a window-manager directly. All of the packages in the 'Desktop' section of this chapter need to be installed first, and some of the 'Applications' - particularly GNOME Terminal (xterm does not install a '.desktop' file and so not appear in the menus).

When **gnome-session** is run, it invokes the necessary daemons and either Metacity or gnome-shell. A desktop manager such as GDM will invoke ConsoleKit before the window manager, but if you use **startx** the first invocation after booting may fail because the daemon is not already running, so it is invoked first.

To automatically start the gnome-session window manager when you issue the **startx** command, backup your current `~/.xinitrc` before proceeding. Note that you will be able to invoke GNOME Terminal from the menu, so there is no reason to invoke **xterm** here. Create a new `.xinitrc` using this command:

```
cat >> ~/.xinitrc << "EOF"
exec ck-launch-session dbus-launch --exit-with-session gnome-session
EOF
```

## Contents

<b>Installed Programs:</b>	gnome-session, gnome-session-properties and gnome-session-quit
<b>Installed Libraries:</b>	None
<b>Installed Directories:</b>	/usr/lib/gnome-session, /usr/share/doc/gnome-session and /usr/share/gnome-session

## Short Descriptions

<b>gnome-session</b>	is used to start up the GNOME Desktop environment.
<b>gnome-session-properties</b>	allows the users to configure which applications should be started at login.
<b>gnome-session-quit</b>	is used to end the GNOME Session.

# gnome-user-docs-3.6.2

## Introduction to GNOME User Docs

The GNOME User Docs package contains documentation for GNOME.

This package is known to build and work properly using an LFS-7.2 platform.

### Package Information

- Download (HTTP): <http://ftp.gnome.org/pub/gnome/sources/gnome-user-docs/3.6/gnome-user-docs-3.6.2.tar.xz>
- Download (FTP): <ftp://ftp.gnome.org/pub/gnome/sources/gnome-user-docs/3.6/gnome-user-docs-3.6.2.tar.xz>
- Download MD5 sum: 6301088417ce005772922e0e7ce0db4c
- Download size: 7.8 MB
- Estimated disk space required: 120 MB
- Estimated build time: 1.0 SBU

### GNOME User Docs Dependencies

#### Required

yelp-xsl-3.6.1

## Installation of GNOME User Docs

Install GNOME User Docs 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

<b>Installed Programs:</b>	None
<b>Installed Libraries:</b>	None
<b>Installed Directories:</b>	/usr/share/help/*/gnome-help and /usr/share/help/*/system-admin-guide

# Yelp-3.6.2

## Introduction to Yelp

The Yelp package contains the help browser used for viewing help files.

This package is known to build and work properly using an LFS-7.3 platform.

## Package Information

- Download (HTTP): <http://ftp.gnome.org/pub/gnome/sources/yelp/3.6/yelp-3.6.2.tar.xz>
- Download (FTP): <ftp://ftp.gnome.org/pub/gnome/sources/yelp/3.6/yelp-3.6.2.tar.xz>
- Download MD5 sum: b5f55b1358cec1e0fefd82b34a3e296d
- Download size: 832 KB
- Estimated disk space required: 19 MB
- Estimated build time: 0.2 SBU

## Yelp Dependencies

### Required

WebKitGTK+-1.10.2 and yelp-xsl-3.6.1

### Optional

GTK-Doc-1.18



### Note

The Yelp package is not required for a functional GNOME Desktop. Note, however, that without Yelp you will not be able to view the built-in Help provided by core GNOME and many of the support applications.

## Installation of Yelp

Install Yelp by running the following commands:

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

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

Now, as the root user:

```
make install
```

## Command Explanations

**--disable-static**: This switch prevents installation of static versions of the libraries.

**--enable-gtk-doc**: Use this parameter if GTK-Doc is installed and you wish to rebuild and install the API documentation.

## Contents

**Installed Program:** yelp  
**Installed Library:** libyelp.so  
**Installed Directories:** /usr/include/libyelp, /usr/share/yelp and /usr/share/gtk-doc/html/libyelp

## Short Descriptions

**yelp** is the GNOME Help Browser.  
**libyelp.so** contains the Yelp API functions.

# GDM-3.6.2

## Introduction to GDM

GDM is a system service that is responsible for providing graphical logins and managing local and remote displays.

This package is known to build and work properly using an LFS-7.2 platform.

## Package Information

- Download (HTTP): <http://ftp.gnome.org/pub/gnome/sources/gdm/3.6/gdm-3.6.2.tar.xz>
- Download (FTP): <ftp://ftp.gnome.org/pub/gnome/sources/gdm/3.6/gdm-3.6.2.tar.xz>
- Download MD5 sum: b1924268d1515b8b947acbbe49d72292
- Download size: 1.6 MB
- Estimated disk space required: 65 MB
- Estimated build time: 0.5 SBU

## GDM Dependencies

### Required

AccountsService-0.6.31, DConf-0.14.1, libcanberra-0.30, Linux-PAM-1.1.6, NSS-3.14.3 and yelp-xsl-3.6.1

### Recommended

gobject-introspection-1.34.2, ISO Codes-3.42 and UPower-0.9.20

### Optional

Check-0.9.10

## Runtime Dependencies

ConsoleKit-0.4.6, gnome-session-3.6.2 and either gnome-shell-3.6.3.1 or Metacity-2.34.13

## Installation of GDM

It is recommended to have a dedicated user and group to take control of the **gdm** daemon after it is started. Issue the following commands as the **root** user:

```
groupadd -g 21 gdm &&
useradd -c "GDM Daemon Owner" -d /var/lib/gdm -u 21 \
        -g gdm -s /bin/false gdm &&
usermod -a -G audio gdm &&
usermod -a -G video gdm
```

Install GDM by running the following commands:

```
./configure --prefix=/usr \
            --sysconfdir=/etc \
            --localstatedir=/var \
            --libexecdir=/usr/lib/gdm \
            --with-initial-vt=7 \
            --with-at-spi-registryd-directory=/usr/lib/at-spi2-core \
            --with-authentication-agent-directory=/usr/lib/polkit-gnome \
            --with-check-accelerated-directory=/usr/lib/gnome-session \
            --with-consolekit-directory=/usr/lib/ConsoleKit \
            --disable-static &&
make
```

If you have installed Check-0.9.10 and you wish to run the testsuite, issue: **make check**.

Now, as the `root` user:

```
make install &&
chown -R -v gdm:gdm /var/lib/gdm /var/cache/gdm /var/log/gdm
```

## Command Explanations

- with-initial-vt=7*: This switch causes GDM to start on vt7 instead of the first free VT.
- with-\*-directory=...*: These switches specify the location of programs that are used at runtime.
- disable-static*: This switch prevents installation of static versions of the libraries.
- with-default-pam-config=lfs*: Use this switch if you did not create `/etc/lfs-release` or distribution auto detection will fail and you will be unable to use GDM.

## Configuring GDM

### Config Files

`/etc/gdm/custom.conf`

### Configuration Information

The GDM daemon is configured using the `/etc/gdm/custom.conf` file. Default values are stored in GSettings in the `gdm.schemas` file. It is recommended that end-users modify the `/etc/gdm/custom.conf` file because the schemas file may be overwritten when the user updates their system to have a newer version of GDM.



### Important

If the system-wide D-BUS daemon was running during the installation of `gdm`, ensure you stop and restart the D-BUS daemon before attempting to start **gdm**.

**gdm** can be tested by executing it as the `root` user. If you wish to stop it you will need to go to a different tty and then kill it.

## Boot Script

To start a graphical login when the system is booted, install the `/etc/rc.d/init.d/gdm` init script included in the `blfs-bootscripts-20130512` package.

```
make install-gdm
```

Now edit `/etc/inittab` with the following command.

```
sed -i 's/id:3:initdefault:/id:5:initdefault:' \
/etc/inittab
```

## Contents

<b>Installed Programs:</b>	gdm and gdm-screenshot
<b>Installed Libraries:</b>	libgdm.so and libgdmsimplegreeter.so
<b>Installed Directories:</b>	/etc/dconf/db/gdm.d, /etc/gdm, /usr/include/gdm, /usr/lib/gdm, /usr/share/gdm, /usr/share/help/*/gdm, /var/cache/gdm, /var/gdm, /var/lib/gdm, /var/log/gdm and /var/run/gdm

## Short Descriptions

**gdm** is the GNOME based login prompt.

**gdm-screenshot** is a GDM screenshot tool.

# Chapter 31. GNOME Applications

These packages are desktop applications and assorted utilities for the GNOME environment. Feel free to install them on an as needed or as desired basis.

# Aisleriot-3.6.2

## Introduction to Aisleriot

Aisleriot (also known as Solitaire or sol) is a collection of card games which are easy to play with the aid of a mouse. The rules for the games have been coded for your pleasure in the GNOME scripting language (Scheme).

This package is known to build and work properly using an LFS-7.2 platform.

## Package Information

- Download (HTTP): <http://ftp.gnome.org/pub/gnome/sources/aisleriot/3.6/aisleriot-3.6.2.tar.xz>
- Download (FTP): <ftp://ftp.gnome.org/pub/gnome/sources/aisleriot/3.6/aisleriot-3.6.2.tar.xz>
- Download MD5 sum: 70a3ac85ffecbb08b17b047677c99e5d
- Download size: 4.0 MB
- Estimated disk space required: 70 MB
- Estimated build time: 0.5 SBU

## Aisleriot Dependencies

### Required

GConf-3.2.6, GTK+-3.6.4, Guile-2.0.9, libcanberra-0.30, librsvg-2.36.4 and yelp-xsl-3.6.1

### Optional

*Valgrind*

## Installation of Aisleriot

Install Aisleriot by running the following commands:

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

This package does not come with a test suite.

Now, as the root user:

```
make install
```

## Contents

<b>Installed Program:</b>	sol
<b>Installed Libraries:</b>	None
<b>Installed Directories:</b>	/usr/lib/aisleriot, /usr/share/aisleriot and /usr/share/help/*/aisleriot

## Short Descriptions

**sol** is a collection of card games.

# Alacarte-3.6.1

## Introduction to Alacarte

Alacarte is a menu editor for GNOME Desktop using the freedesktop.org menu specification.

This package is known to build and work properly using an LFS-7.2 platform.

## Package Information

- Download (HTTP): <http://ftp.gnome.org/pub/gnome/sources/alacarte/3.6/alacarte-3.6.1.tar.xz>
- Download (FTP): <ftp://ftp.gnome.org/pub/gnome/sources/alacarte/3.6/alacarte-3.6.1.tar.xz>
- Download MD5 sum: 4b801fa3125b82d0a29b4ff83d9e9d5b
- Download size: 176 KB
- Estimated disk space required: 3.4 MB
- Estimated build time: less than 0.1 SBU

## Alacarte Dependencies

### Required

gnome-menus-3.6.2 and PyGObject-3.4.2

## Installation of Alacarte

Install Alacarte 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

<b>Installed Program:</b>	alacarte
<b>Installed Libraries:</b>	None
<b>Installed Directories:</b>	/usr/lib/python2.7/site-packages/Alacarte and /usr/share/alacarte

## Short Descriptions

**alacarte** is a menu editor for GNOME Desktop.

# Baobab-3.6.4

## Introduction to Baobab

The Baobab package contains a graphical directory tree analyzer.

This package is known to build and work properly using an LFS-7.2 platform.

## Package Information

- Download (HTTP): <http://ftp.gnome.org/pub/gnome/sources/baobab/3.6/baobab-3.6.4.tar.xz>
- Download (FTP): <ftp://ftp.gnome.org/pub/gnome/sources/baobab/3.6/baobab-3.6.4.tar.xz>
- Download MD5 sum: a6d595f7fbf6c319717c8b39536f546e
- Download size: 980 KB
- Estimated disk space required: 17 MB
- Estimated build time: 0.1 SBU

## Baobab Dependencies

### Required

GTK+-3.6.4, Vala-0.18.1 and yelp-xsl-3.6.1

## Installation of Baobab

Install Baobab 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

<b>Installed Program:</b>	baobab
<b>Installed Libraries:</b>	None
<b>Installed Directories:</b>	/usr/lib/baobab, /usr/share/baobab and /usr/share/help/*/baobab

## Short Descriptions

**baobab** is a graphical tool used to analyze disk usage.

# Brasero-3.6.1

## Introduction to Brasero

Brasero is an application used to burn CD/DVD on the GNOME Desktop. It is designed to be as simple as possible and has some unique features that enable users to create their discs easily and quickly.

This package is known to build and work properly using an LFS-7.2 platform.

## Package Information

- Download (HTTP): <http://ftp.gnome.org/pub/gnome/sources/brasero/3.6/brasero-3.6.1.tar.xz>
- Download (FTP): <ftp://ftp.gnome.org/pub/gnome/sources/brasero/3.6/brasero-3.6.1.tar.xz>
- Download MD5 sum: 1bf94b5d75f4a003b3d139d50e620c7b
- Download size: 3.1 MB
- Estimated disk space required: 95 MB
- Estimated build time: 0.9 SBU

## Brasero Dependencies

### Required

`gst-plugins-base-1.0.7`, `libcanberra-0.30`, `libnotify-0.7.5` and `yelp-xsl-3.6.1`

### Recommended

`gobject-introspection-1.34.2`, `libburn-1.3.0` and `libisofs-1.3.0`, `Nautilus-3.6.3` and `totem-pl-parser-3.4.3`

### Optional

`GTK-Doc-1.18` and *Tracker*

### Recommended (Runtime)

`dvd+rw-tools-7.1` and `Gvfs-1.14.2`

### Optional (Runtime)

`Cdrdao-1.2.3`, *cdrkit*, `cdrtools`, `libdvcss-1.2.13` and *VCDImager*

## Installation of Brasero

Install Brasero 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: Use this parameter if GTK-Doc is installed and you wish to rebuild and install the API documentation.

## Contents

<b>Installed Programs:</b>	brasero
<b>Installed Libraries:</b>	libbrasero-burn3.so, libbrasero-media3.so and libbrasero-utils3.so
<b>Installed Directories:</b>	/usr/include/brasero3, /usr/lib/brasero3, /usr/share/brasero, /usr/share/gtk-doc/html/libbrasero-burn, /usr/share/gtk-doc/html/libbrasero-media and /usr/share/help/*/brasero

## Short Descriptions

<b>brasero</b>	is a simple and easy to use CD/DVD burning application for the GNOME Desktop.
<b>libbrasero-burn3.so</b>	contains the Burning API functions.
<b>libbrasero-media3.so</b>	contains the Media API functions.
<b>libbrasero-utils3.so</b>	contains the Brasero API functions.

# Cheese-3.6.2

## Introduction to Cheese

Cheese is used to take photos and videos with fun graphical effects.

This package is known to build and work properly using an LFS-7.2 platform.

## Package Information

- Download (HTTP): <http://ftp.gnome.org/pub/gnome/sources/cheese/3.6/cheese-3.6.2.tar.xz>
- Download (FTP): <ftp://ftp.gnome.org/pub/gnome/sources/cheese/3.6/cheese-3.6.2.tar.xz>
- Download MD5 sum: d152bd8bd29684a89213c633310634ac
- Download size: 3.6 MB
- Estimated disk space required: 28 MB
- Estimated build time: 0.3 SBU

## Cheese Dependencies

### Required

clutter-gst-2.0.2, clutter-gtk-1.4.2, gnome-desktop-3.6.2, gnome-video-effects-0.4.0, gst-plugins-bad-1.0.7, gst-plugins-good-1.0.7, libgee-0.6.7, libcanberra-0.30, librsvg-2.36.4, udev-Installed LFS Version or udev-extras (from systemd) (for GUdev) and yelp-xsl-3.6.1

### Recommended

gobject-introspection-1.34.2, Nautilus-Sendto-3.6.1 and Vala-0.18.1

### Optional

GTK-Doc-1.18

## Installation of Cheese

Install Cheese 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: Use this parameter if GTK-Doc is installed and you wish to rebuild and install the API documentation.

## Contents

<b>Installed Program:</b>	cheese
<b>Installed Library:</b>	libcheese.so and libcheese-gtk.so
<b>Installed Directories:</b>	/usr/include/cheese, /usr/share/cheese, /usr/share/gtk-doc/html/cheese and /usr/share/help/*/cheese

## Short Descriptions

<b>cheese</b>	is the webcam tool with graphical effects.
<b>libcheese.so</b>	contains the Cheese API functions.
<b>libcheese-gtk.so</b>	contains the Cheese GTK+ bindings.

# Empathy-3.6.3

## Introduction to Empathy

Empathy is an instant messaging program which supports text, voice, and video chat and file transfers over many different protocols.

This package is known to build and work properly using an LFS-7.2 platform.

## Package Information

- Download (HTTP): <http://ftp.gnome.org/pub/gnome/sources/empathy/3.6/empathy-3.6.3.tar.xz>
- Download (FTP): <ftp://ftp.gnome.org/pub/gnome/sources/empathy/3.6/empathy-3.6.3.tar.xz>
- Download MD5 sum: b45dc0c996a7068efe897e6a22896943
- Download size: 3.3 MB
- Estimated disk space required: 120 MB
- Estimated build time: 1.1 SBU

## Empathy Dependencies

### Required

`clutter-gst-2.0.2`, `clutter-gtk-1.4.2`, `evolution-data-server-3.6.4`, `Folks-0.8.0`, `libcanberra-0.30`, `PulseAudio-3.0`, `telepathy-farstream-0.6.0`, `telepathy-logger-0.8.0`, `telepathy-mission-control-5.14.1` and `yelp-xsl-3.6.1`

### Recommended

`enchant-1.6.0` and `ISO Codes-3.42`, `Nautilus-Sendto-3.6.1` and `udev`-Installed LFS Version or `udev-extras` (from `systemd`) (for GUdev)

### Optional

`Cheese-3.6.2`, `GeoClue-0.12.0`, `geocode-glib`, `libchamplain` and `Valgrind`

### Optional (Protocols)

`telepathy-gabble` (Jabber, Google Talk, XMPP), `telepathy-haze` (AIM, ICQ, Yahoo!), `telepathy-salut` (local network "Bonjour" - iChat-compatible) and `telepathy-sofiasip` (SIP)

## Installation of Empathy

Install Empathy by running the following commands:

```
./configure --prefix=/usr \
            --libexecdir=/usr/lib/empathy \
            --disable-static &&
make
```

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

Now, as the `root` user:

```
make install
```

## Command Explanations

*--disable-static*: This switch prevents installation of static versions of the libraries.

## Contents

<b>Installed Programs:</b>	empathy, empathy-accounts and empathy-debugger
<b>Installed Libraries:</b>	None
<b>Installed Directories:</b>	/usr/lib/empathy, /usr/lib/mission-control-plugins.0, /usr/share/adium, /usr/share/empathy and /usr/share/help/*/empathy

## Short Descriptions

<b>empathy</b>	is a GNOME instant messaging client using Telepathy.
<b>empathy-accounts</b>	is an accounts configuration dialog for Empathy.

# EOG-3.6.2

## Introduction to EOG

EOG is an application used for viewing and cataloging image files on the GNOME Desktop.

This package is known to build and work properly using an LFS-7.2 platform.

## Package Information

- Download (HTTP): <http://ftp.gnome.org/pub/gnome/sources/eog/3.6/eog-3.6.2.tar.xz>
- Download (FTP): <ftp://ftp.gnome.org/pub/gnome/sources/eog/3.6/eog-3.6.2.tar.xz>
- Download MD5 sum: da1c7011ba3c86f3fb9d6aca36048a45
- Download size: 3.5 MB
- Estimated disk space required: 55 MB
- Estimated build time: 0.5 SBU

## EOG Dependencies

### Required

gnome-desktop-3.6.2, gnome-icon-theme-3.6.2, libpeas-1.6.2, shared-mime-info-1.1 and yelp-xsl-3.6.1

### Recommended

gobject-introspection-1.34.2 and librsvg-2.36.4

### Optional

Exempi-2.2.0, GTK-Doc-1.18, Little CMS-2.4 and libexif-0.6.21

## Installation of EOG

Install EOG 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

--disable-scrollkeeper: Use this parameter if you have installed Rarian but wish to disable the updates to the Scrollkeeper database.

--enable-gtk-doc: Use this parameter if GTK-Doc is installed and you wish to rebuild and install the API documentation.

## Contents

<b>Installed Program:</b>	eog
<b>Installed Libraries:</b>	None
<b>Installed Directories:</b>	/usr/include/eog-3.0, /usr/lib/eog, /usr/share/eog, /usr/share/gtk-doc/html/eog and /usr/share/help/*/eog

## Short Descriptions

**eog** is a fast and functional image viewer as well as an image cataloging program.

# Epiphany-3.6.1

## Introduction to Epiphany

Epiphany is a simple yet powerful GNOME web browser targeted at non-technical users. Its principles are simplicity and standards compliance.

This package is known to build and work properly using an LFS-7.2 platform.

## Package Information

- Download (HTTP): <http://ftp.gnome.org/pub/gnome/sources/epiphany/3.6/epiphany-3.6.1.tar.xz>
- Download (FTP): <ftp://ftp.gnome.org/pub/gnome/sources/epiphany/3.6/epiphany-3.6.1.tar.xz>
- Download MD5 sum: 8360bd24a673223387c69297e8a710b8
- Download size: 2.4 MB
- Estimated disk space required: 95 MB
- Estimated build time: 0.6 SBU

## Epiphany Dependencies

### Required

Avahi-0.6.31, Gcr-3.6.2, gnome-desktop-3.6.2, ISO\_Codes-3.42, libgnome-keyring-3.6.0, libnotify-0.7.5 and WebKitGTK+-1.10.2

### Recommended

gobject-introspection-1.34.2 and NSS-3.14.3

### Optional

GTK-Doc-1.18

## Installation of Epiphany

Install Epiphany 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

**--with-webkit2**: This switch enables use of the next generation WebKit2 API which allows Epiphany to use GTK+ 2 plugins. Please note that WebKit2 is not production ready yet, so if you encounter some bugs with Epiphany, check if the problem is present without this switch.

**--enable-gtk-doc**: Use this parameter if GTK-Doc is installed and you wish to rebuild and install the API documentation.

## Contents

**Installed Program:** epiphany  
**Installed Libraries:** None  
**Installed Directories:** /usr/include/epiphany, /usr/share/epiphany and /usr/share/gtk-doc/html/epiphany

## Short Descriptions

**epiphany** is a GNOME web browser based on the WebKit2 rendering engine.

# Epiphany-Extensions-3.6.0

## Introduction to Epiphany Extensions

Epiphany Extensions is a collection of extensions for Epiphany, the GNOME Web Browser.

This package is known to build and work properly using an LFS-7.2 platform.

### Package Information

- Download (HTTP): <http://ftp.gnome.org/pub/gnome/sources/epiphany-extensions/3.6/epiphany-extensions-3.6.0.tar.xz>
- Download (FTP): <ftp://ftp.gnome.org/pub/gnome/sources/epiphany-extensions/3.6/epiphany-extensions-3.6.0.tar.xz>
- Download MD5 sum: 9bc0c6c65f03a52f681c22ec9ccc0571
- Download size: 1.4 MB
- Estimated disk space required: 21 MB
- Estimated build time: 0.2 SBU

## Epiphany Extensions Dependencies

### Required

Epiphany-3.6.1 and gnome-doc-utils-0.20.10

### Recommended

D-Bus GLib Bindings-0.100.2, OpenSP-1.5.2 and Rarian-0.8.1

## Installation of Epiphany Extensions

Install Epiphany Extensions 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

--disable-scrollkeeper: Use this parameter if you have installed Rarian but wish to disable the updates to the Scrollkeeper database.

## Configuring Epiphany Extensions

The extensions are all turned off until you go to Epiphany's tools menu and enable the extensions you wish to use.

To use the html5tube extension, you need to go to <http://www.youtube.com/html5> and click on 'Join the HTML5 Trial' (needs cookies enabled, and must be repeated for each browser on which you wish to use HTML5).

## Contents

<b>Installed Programs:</b>	None
<b>Installed Extensions:</b>	libactionsextension.so, libadblockextension.so, libautoreloadextension.so, libextensionsmanageruiextension.so, libgesturesextension.so, libgreasemonkeyextension.so, libhtml5tubeextension.so, libpushscrollerextension.so, librssextension.so, libsoupflyextension.so, libtabkeytabnavigateextension.so and libtabstatesextension.so
<b>Installed Directories:</b>	/usr/lib/epiphany/3.6/extensions, /usr/share/epiphany/icons/hicolor, /usr/share/epiphany-extensions, /usr/share/gnome/help/epiphany-extensions and /usr/share/omf/epiphany-extensions

## Short Descriptions

libactionsextension.so	is an extension for executing arbitrary commands from the context menu.
libadblockextension.so	is an extension for blocking advertisements.
libautoreloadextension.so	is an extension for reloading a tab periodically.
libgesturesextension.so	is an extension for performing actions with mouse gestures.
libgreasemonkeyextension.so	is an extension for running user scripts to modify web page's behaviour.
libhtml5tubeextension.so	is an extension for viewing most Youtube videos using WebKit's HTML5 media player.
libpushscrollerextension.so	is an extension for dragging the page with the middle mouse button.
librssextension.so	is an extension for subscribing to a news feed offered by the webpage.
libsoupflyextension.so	is an extension for debugging the Soup session which WebKit uses.
libtabkeynavigateextension.so	is an extension for using the tab key to navigate between tabs.
libtabstatesextension.so	is an extension for indicating new content in background tabs.

# Evince-3.6.1

## Introduction to Evince

Evince is a document viewer for multiple document formats. It supports PDF, Postscript, DjVu, TIFF and DVI. It is useful for viewing documents of various types using one simple application instead of the multiple document viewers that once existed on the GNOME Desktop.

This package is known to build and work properly using an LFS-7.3 platform.

## Package Information

- Download (HTTP): <http://ftp.gnome.org/pub/gnome/sources/evince/3.6/evince-3.6.1.tar.xz>
- Download (FTP): <ftp://ftp.gnome.org/pub/gnome/sources/evince/3.6/evince-3.6.1.tar.xz>
- Download MD5 sum: e03d1158eeba2f5c693e1a1db58ed1ec
- Download size: 6.2 MB
- Estimated disk space required: 95 MB
- Estimated build time: 0.9 SBU

## Evince Dependencies

### Required

`gnome-icon-theme-3.6.2`, `gsettings-desktop-schemas-3.6.1`, `GTK+-3.6.4` and `yelp-xsl-3.6.1`

### Recommended

`gobject-introspection-1.34.2`, `libgnome-keyring-3.6.0`, `Nautilus-3.6.3` and `Poppler-0.22.4`

### Optional

*DjVuLibre*, `GTK-Doc-1.18`, `libspectre`, `libgxps`, `t1lib` and `texlive-20120701`

## Installation of Evince

Install Evince by running the following commands:

```
./configure --prefix=/usr \
            --libexecdir=/usr/lib/evince \
            --enable-introspection \
            --disable-static &&
make
```

This package does not have a working testsuite.

Now, as the root user:

```
make install
```

## Command Explanation

`--enable-introspection`: By default, the Gobject Introspection support is turned off, even though that package is an expected component of the GNOME Desktop.

--disable-static: This switch prevents installation of static versions of the libraries.

--without-keyring: This switch disables use of the libgnome-keyring. Use this switch if libgnome-keyring is not installed.

--disable-nautilus: This switch disables building of the Nautilus Plugin. Use this switch if Nautilus is not installed.

--enable-gtk-doc: Use this parameter if GTK-Doc is installed and you wish to rebuild and install the API documentation.

## Contents

**Installed Programs:**

evince, evince-previewer and evince-thumbnailer

**Installed Library:**

libevdocument3.so and libevview3.so

**Installed Directories:**

/usr/include/evince, /usr/lib/evince, /usr/share/evince, /usr/share/gtk-doc/html/evince, /usr/share/gtk-doc/html/libevdocument-3.0, /usr/share/gtk-doc/html/libevview-3.0 and /usr/share/help/\*/evince

## Short Descriptions

**evince**

is a multiple format document viewer.

**evince-previewer**

is an applicaton that implements the printing preview.

**evince-thumbnailer**

is a simple program used to create thumbnail images of supported documents.

# Evolution-3.6.4

## Introduction to Evolution

The Evolution package contains an integrated mail, calendar and address book suite designed for the GNOME environment.

This package is known to build and work properly using an LFS-7.2 platform.

## Package Information

- Download (HTTP): <http://ftp.gnome.org/pub/gnome/sources/evolution/3.6/evolution-3.6.4.tar.xz>
- Download (FTP): <ftp://ftp.gnome.org/pub/gnome/sources/evolution/3.6/evolution-3.6.4.tar.xz>
- Download MD5 sum: 699c29a0179df3866ecc2f972bc626a4
- Download size: 12 MB
- Estimated disk space required: 505 MB
- Estimated build time: 4.5 SBU

## Evolution Dependencies

### Required

`evolution-data-server-3.6.4`, `gnome-desktop-3.6.2`, `gnome-icon-theme-3.6.2`, `GtkHTML-4.6.4` and `shared-mime-info-1.1`

### Recommended

`GStreamer-1.0.7`, `libcanberra-0.30` and `libgweather-3.6.2`

### Optional

`clutter-gtk-1.4.2`, `DocBook-utils-0.6.14`, `GeoClue-0.12.0`, `GTK-Doc-1.18`, `gtkimageview`, MIT Kerberos V5-1.11.2, `libchamplain`, `libpst`, `OpenLDAP-2.4.35` and `libytnet`

## Installation of Evolution

Install Evolution by running the following commands:

```
./configure --prefix=/usr \
            --sysconfdir=/etc \
            --libexecdir=/usr/lib \
            --disable-pst-import &&
make
```

This package does not come with a test suite.

Now, as the root user:

```
make install
```

## Command Explanations

`--disable-pst-import`: This switch is used to disable the pst-import plugin.

--with-openldap: This switch will enable OpenLDAP support in Evolution.

--with-krb5=/usr: This switch will enable Kerberos 5 support in Evolution.

--enable-gtk-doc: Use this parameter if GTK-Doc is installed and you wish to rebuild and install the API documentation.

## Contents

**Installed Program:** evolution

**Installed Libraries:** None

**Installed Directories:** /usr/include/evolution-3.6, /usr/lib/evolution, /usr/share/evolution, /usr/share/gtk-doc/html/eshell /usr/share/help/\*/evolution

## Short Descriptions

**evolution** is an email, calendar and address book suite for the GNOME Desktop.

# File-Roller-3.6.3

## 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.

This package is known to build and work properly using an LFS-7.2 platform.



### Note

File Roller is only a graphical interface to archiving utilities such as tar and zip.

## Package Information

- Download (HTTP): <http://ftp.gnome.org/pub/gnome/sources/file-roller/3.6/file-roller-3.6.3.tar.xz>
- Download (FTP): <ftp://ftp.gnome.org/pub/gnome/sources/file-roller/3.6/file-roller-3.6.3.tar.xz>
- Download MD5 sum: 6fdc21dfe47847125191a8ad8633871e
- Download size: 1.5 MB
- Estimated disk space required: 40 MB
- Estimated build time: 0.4 SBU

## File Roller Dependencies

### Required

GTK+-3.6.4 and yelp-xsl-3.6.1

### Recommended

JSON-GLib-0.16.0, libarchive-3.1.2, libnotify-0.7.5 and Nautilus-3.6.3

### Optional (Runtime)

UnRar-4.2.4, UnZip-6.0 and Zip-3.0

## Installation of File Roller

Install File Roller by running the following commands:

```
./configure --prefix=/usr \
            --libexecdir=/usr/lib \
            --disable-packagekit \
            --disable-static &&
make
```

This package does not come with a test suite.

Now, as the root user:

```
make install
```

## Command Explanations

- disable-packagekit: This switch disables use of PackageKit which isn't suitable for BLFS.
- disable-static: This switch prevents installation of static versions of the libraries.
- enable-gtk-doc: Use this parameter if GTK-Doc is installed and you wish to rebuild and install the API documentation.

## Contents

<b>Installed Program:</b>	file-roller
<b>Installed Libraries:</b>	None
<b>Installed Directories:</b>	/usr/lib/file-roller, /usr/share/file-roller and /usr/share/help/*file-roller

## Short Descriptions

**file-roller**      is an archive manager for GNOME.

# Gcalctool-6.6.2

## 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.

This package is known to build and work properly using an LFS-7.2 platform.

## Package Information

- Download (HTTP): <http://ftp.gnome.org/pub/gnome/sources/gcalctool/6.6/gcalctool-6.6.2.tar.xz>
- Download (FTP): <ftp://ftp.gnome.org/pub/gnome/sources/gcalctool/6.6/gcalctool-6.6.2.tar.xz>
- Download MD5 sum: 94b40737ab5d37983826ee558711199f
- Download size: 948 KB
- Estimated disk space required: 31 MB
- Estimated build time: 0.2 SBU

## Gcalctool Dependencies

### Required

GTK+-3.6.4 and yelp-xsl-3.6.1

## Installation of Gcalctool

Install Gcalctool 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

<b>Installed Programs:</b>	gcalccmd and gcalctool
<b>Installed Libraries:</b>	None
<b>Installed Directories:</b>	/usr/share/gcalctool and /usr/share/help/*/gcalctool

## Short Descriptions

<b>gcalctool</b>	is the official calculator of the GNOME Desktop.
<b>gcalccmd</b>	is a command line version of gcalctool.

# Gedit-3.6.2

## Introduction to Gedit

The Gedit package contains a lightweight UTF-8 text editor for the GNOME Desktop.

This package is known to build and work properly using an LFS-7.2 platform.

## Package Information

- Download (HTTP): <http://ftp.gnome.org/pub/gnome/sources/gedit/3.6/gedit-3.6.2.tar.xz>
- Download (FTP): <ftp://ftp.gnome.org/pub/gnome/sources/gedit/3.6/gedit-3.6.2.tar.xz>
- Download MD5 sum: 7c336819c023a4772cfb48ebe95a7113
- Download size: 3.0 MB
- Estimated disk space required: 105 MB
- Estimated build time: 0.8 SBU

## Gedit Dependencies

### Required

gsettings-desktop-schemas-3.6.1, gtksourceview-3.6.2, libpeas-1.6.2 and yelp-xsl-3.6.1

### Recommended

enchant-1.6.0 and ISO Codes-3.42, libsoup-2.40.3, libzeitgeist-0.3.18 and PyGObject-3.4.2

### Optional

GTK-Doc-1.18

## Installation of Gedit

Install Gedit by running the following commands:

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

To test the results, issue **make check**. Note that you should run tests from an already active GNOME session.

Now, as the root user:

```
make install
```

## Command Explanations

- disable-spell: Use this switch to disable spell-checking capability. It is required if Enchant is not installed.
- enable-gtk-doc: Use this parameter if GTK-Doc is installed and you wish to rebuild and install the API documentation.

## Contents

<b>Installed Program:</b>	gedit
<b>Installed Libraries:</b>	None
<b>Installed Directories:</b>	/usr/include/gedit-3.0, /usr/lib/gedit, /usr/share/gedit, /usr/share/gtk-doc/html/gedit and /usr/share/help/*/gedit

## Short Descriptions

**gedit** is a lightweight text editor integrated with the GNOME Desktop.

# gnome-color-manager-3.6.1

## Introduction to GNOME Color Manager

GNOME Color Manager is a session framework for the GNOME desktop environment that makes it easy to manage, install and generate color profiles.

This package is known to build and work properly using an LFS-7.2 platform.

### Package Information

- Download (HTTP): <http://ftp.gnome.org/pub/gnome/sources/gnome-color-manager/3.6/gnome-color-manager-3.6.1.tar.xz>
- Download (FTP): <ftp://ftp.gnome.org/pub/gnome/sources/gnome-color-manager/3.6/gnome-color-manager-3.6.1.tar.xz>
- Download MD5 sum: 820fd4d3c784edfc292e3e2260b0b490
- Download size: 2.5 MB
- Estimated disk space required: 27 MB
- Estimated build time: 0.2 SBU

## GNOME Color Manager Dependencies

### Required

colord-gtk-0.1.25, gnome-desktop-3.6.2, Little CMS-2.4 and libcanberra-0.30

### Recommended

Exiv2-0.23, libexif-0.6.21 and VTE-0.34.2

### Optional

clutter-gtk-1.4.2 and *Mash*

## Installation of GNOME Color Manager

Install GNOME Color Manager by running the following commands:

```
./configure --prefix=/usr \
            --libexecdir=/usr/lib/gnome-color-manager \
            --disable-packagekit &&
make
```

This package does not come with a test suite.

```
make install
```

## Command Explanations

**--disable-packagekit**: This parameter disables use of PackageKit which isn't suitable for BLFS.

## Contents

<b>Installed Programs:</b>	gcm-calibrate, gcm-import, gcm-inspect, gcm-picker and gcm-viewer
<b>Installed Libraries:</b>	None
<b>Installed Directories:</b>	/usr/lib/gnome-color-manager, /usr/share/gnome-color-manager and /usr/share/help/*/ gnome-color-manager

## Short Descriptions

<b>gcm-calibrate</b>	is the GCM calibrator tool.
<b>gcm-import</b>	allows you to import ICC profiles supplied by vendors.
<b>gcm-inspect</b>	allows you to inspect your session color-management settings.
<b>gcm-picker</b>	allows you to pick spot colors for use by an attached colorimeter.
<b>gcm-viewer</b>	allows you to view properties of ICC profiles.

# gnome-contacts-3.6.2

## Introduction to GNOME Contacts

GNOME Contacts is a simple contacts application that allows you to view your contacts as well as edit their details and create new contacts. Online integration is an important aspect of GNOME Contacts - it will seamlessly synchronise with the contacts stored in online accounts. If you have the same person in multiple online accounts, GNOME Contacts will automatically link them together into the same contact.

This package is known to build and work properly using an LFS-7.2 platform.

## Package Information

- Download (HTTP): <http://ftp.gnome.org/pub/gnome/sources/gnome-contacts/3.6/gnome-contacts-3.6.2.tar.xz>
- Download (FTP): <ftp://ftp.gnome.org/pub/gnome/sources/gnome-contacts/3.6/gnome-contacts-3.6.2.tar.xz>
- Download MD5 sum: 6af361b582015287d57760d491dc6e34
- Download size: 596 KB
- Estimated disk space required: 25 MB
- Estimated build time: 0.2 SBU

## GNOME Contacts Dependencies

### Required

evolution-data-server-3.6.4, Folks-0.8.0 (built with e-d-s support), gnome-desktop-3.6.2, gnome-online-accounts-3.6.2 and Vala-0.18.1

### Optional

Cheese-3.6.2

### Additional Runtime Dependencies

telepathy-mission-control-5.14.1

## Installation of GNOME Contacts

Install GNOME Contacts by running the following commands:

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

This package does not come with a test suite.

Now, as the root user:

```
make install
```

## Contents

<b>Installed Program:</b>	gnome-contacts
<b>Installed Libraries:</b>	None
<b>Installed Directories:</b>	/usr/lib/gnome-contacts

## Short Descriptions

**gnome-contacts** is a program for accessing and storing information about contacts.

# gnome-dictionary-3.6.0

## Introduction to GNOME Dictionary

The GNOME Dictionary package contains dictionary for the GNOME Desktop.

This package is known to build and work properly using an LFS-7.2 platform.

## Package Information

- Download (HTTP): <http://ftp.gnome.org/pub/gnome/sources/gnome-dictionary/3.6/gnome-dictionary-3.6.0.tar.xz>
- Download (FTP): <ftp://ftp.gnome.org/pub/gnome/sources/gnome-dictionary/3.6/gnome-dictionary-3.6.0.tar.xz>
- Download MD5 sum: 99ee031b6abfaddc42c195a7a4041e6e
- Download size: 2.1 MB
- Estimated disk space required: 23 MB
- Estimated build time: 0.2 SBU

## GNOME Dictionary Dependencies

### Required

GTK+-3.6.4 and yelp-xsl-3.6.1

### Optional

GTK-Doc-1.18.

## Installation of GNOME Dictionary

Install GNOME Dictionary 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: Use this parameter if GTK-Doc is installed and you wish to rebuild and install the API documentation.

## Contents

<b>Installed Program:</b>	gnome-dictionary
<b>Installed Library:</b>	libgdict.so
<b>Installed Directories:</b>	/usr/include/gdict-1.0, /usr/share/gdict-1.0, /usr/share/gnome-dictionary, /usr/share/gtk-doc/html/gdict and /usr/share/help/*/gnome-dictionary

## Short Descriptions

**gnome-dictionary** is used to look up words on dictionaries.

**libgdict.so** is GNOME Dictionary client library.

# gnome-disk-utility-3.6.1

## Introduction to GNOME Disk Utility

The GNOME Disk Utility package provides applications used for dealing with storage devices.

This package is known to build and work properly using an LFS-7.2 platform.

### Package Information

- Download (HTTP): <http://ftp.gnome.org/pub/gnome/sources/gnome-disk-utility/3.6/gnome-disk-utility-3.6.1.tar.xz>
- Download (FTP): <ftp://ftp.gnome.org/pub/gnome/sources/gnome-disk-utility/3.6/gnome-disk-utility-3.6.1.tar.xz>
- Download MD5 sum: ff6e0a50a3a6aa9a8d9aa8b19d304485
- Download size: 1.2 MB
- Estimated disk space required: 32 MB
- Estimated build time: 0.1 SBU

## GNOME Disk Utility Dependencies

### Required

GTK+-3.6.4, Intltool-0.50.2, libsecret-0.14, libpwquality-1.2.1 and UDisks-2.1.0

## Installation of GNOME Disk Utility

Install GNOME Disk Utility 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

<b>Installed Program:</b>	gnome-disk-image-mount and gnome-disks
<b>Installed Libraries:</b>	None
<b>Installed Directory:</b>	/usr/share/gnome-disk-utility

## Short Descriptions

<b>gnome-disk-image-mount</b>	is used to set up disk images.
<b>gnome-disks</b>	is used to inspect, format, partition and configure disks and block devices.

# gnome-games-3.6.1

## Introduction to GNOME Games

The GNOME Games is a collection of simple, but addictive games from the GNOME Desktop project. They represent many of the popular games and include card games, puzzle games and arcade games.

This package is known to build and work properly using an LFS-7.2 platform.

### Package Information

- Download (HTTP): <http://ftp.gnome.org/pub/gnome/sources/gnome-games/3.6/gnome-games-3.6.1.tar.xz>
- Download (FTP): <ftp://ftp.gnome.org/pub/gnome/sources/gnome-games/3.6/gnome-games-3.6.1.tar.xz>
- Download MD5 sum: 4f57151eefcb5de4349c2b5f570eff64
- Download size: 19 MB
- Estimated disk space required: 170 MB
- Estimated build time: 1.2 SBU

## GNOME Games Dependencies

### Required

clutter-gtk-1.4.2, libcanberra-0.30, librsvg-2.36.4, PyGObject-3.4.2 and yelp-xsl-3.6.1

### Recommended

gobject-introspection-1.34.2 and Vala-0.18.1

## 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 by running the following command as the `root` user:

```
install -v -m755 -d /var/games &&
groupadd -g 60 games &&
useradd -c "Games High Score Owner" -d /var/games \
        -g games -s /bin/false -u 60 games &&
chown -v games:games /var/games
```

Install GNOME Games by running the following commands:

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

This package does not come with a testsuite.

Now, as the `root` user:

```
make install
```

## Command Explanations

`--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

<b>Installed Programs:</b>	glchess, glines, gnect, gnibbles, gnobots2, gnome-mahjongg, gnome-sudoku, gnomine, gnotravex, gnotski, gtali, iagno, lightsoff, quadrapassel and swell-foop
<b>Installed Libraries:</b>	None
<b>Installed Directories:</b>	/usr/lib/python2.7/site-packages/gnome_sudoku, /usr/share/glchess, /usr/share/glines, /usr/share/gnect, /usr/share/gnibbles, /usr/share/gnobots2, /usr/share/gnome-mahjongg, /usr/share/gnome-sudoku, /usr/share/gnomine, /usr/share/gnotravex, /usr/share/gnotski, /usr/share/gtali, /usr/share/help/*/*/glchess, /usr/share/help/*/*/glines, /usr/share/help/*/*/gnect, /usr/share/help/*/*/gnibbles, /usr/share/help/*/*/gnobots2, /usr/share/help/*/*/gnome-mahjongg, /usr/share/help/*/*/gnome-sudoku, /usr/share/help/*/*/gnomine, /usr/share/help/*/*/gnotravex, /usr/share/help/*/*/gnotski, /usr/share/help/*/*/gtali, /usr/share/help/*/*/iagno, /usr/share/help/*/*/lightsoff, /usr/share/help/*/*/quadrapassel, /usr/share/help/*/*/swell-foop, /usr/share/iagno, /usr/share/lightsoff, /usr/share/quadrapassel, /usr/share/swell-foop and /var/games

## Short Descriptions

<b>glchess</b>	is a chess game which supports several chess engines.
<b>glines</b>	is a game which involves moving balls around the grid and try and form lines of the same colour to make them disappear.
<b>gnect</b>	is a classic game where each player tries to make a line of four disks before their opponent.
<b>gnibbles</b>	is a "worm" game. You pilot a worm around a maze trying to collect diamonds. With each diamond your worm grows and navigation becomes ever more difficult.
<b>gnobots2</b>	is a classic BSD robots game where you have to avoid a hoard of robots who are trying to kill you.
<b>gnome-mahjongg</b>	is a tile-based solitaire game with an oriental flavor. Remove tiles in matching pairs from a pile to try and dismantle it.
<b>gnome-sudoku</b>	is a logic game with a Japanese name that has recently exploded in popularity.
<b>gnomine</b>	is a game where you clear mines from a board using hints from squares you have already uncovered.
<b>gnotravex</b>	is a puzzle game where you have to match a grid of tiles together.
<b>gnotski</b>	is a series of sliding block puzzles.
<b>gtali</b>	is an ancient Roman game.
<b>iagno</b>	is a game where the goal is to control all the disks on the board by trapping your opponents disks between two of yours.
<b>quadrapassel</b>	is a Russian game of fitting falling geometric shapes.

# gnome-nettool-3.2.0

## Introduction to GNOME Nettool

The GNOME Nettool package is a network information tool which provides GUI interface for some of the most common command line network tools.

This package is known to build and work properly using an LFS-7.2 platform.

### Package Information

- Download (HTTP): <http://ftp.gnome.org/pub/gnome/sources/gnome-nettool/3.2/gnome-nettool-3.2.0.tar.xz>
- Download (FTP): <ftp://ftp.gnome.org/pub/gnome/sources/gnome-nettool/3.2/gnome-nettool-3.2.0.tar.xz>
- Download MD5 sum: 18b97581aee0d297d9ec5df60b550dc6
- Download size: 572 KB
- Estimated disk space required: 14 MB
- Estimated build time: 0.1 SBU

## GNOME Nettool Dependencies

### Required

gnome-doc-utils-0.20.10, GTK+-3.6.4 and libgtop-2.28.4

### Recommended

Rarian-0.8.1

### Runtime Dependencies

BIND-9.9.2-P2, Net-tools-CVS\_20101030, Traceroute-2.0.19 and Whois-5.0.25

## Installation of GNOME Nettool

Install GNOME Nettool 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

--disable-scrollkeeper: Use this parameter if you have installed Rarian but wish to disable the updates to the Scrollkeeper database.

## Contents

<b>Installed Program:</b>	gnome-nettool
<b>Installed Libraries:</b>	None
<b>Installed Directories:</b>	/usr/share/gnome/help/gnome-nettool, /usr/share/gnome-nettool and /usr/share/omf/gnome-nettool

## Short Descriptions

**gnome-nettool** is a network information tool.

# gnome-screenshot-3.6.1

## Introduction to GNOME Screenshot

The GNOME Screenshot is an utility used for taking screenshots of the entire screen, a window or an user-defined area of the screen, with optional beautifying border effects.

This package is known to build and work properly using an LFS-7.2 platform.

## Package Information

- Download (HTTP): <http://ftp.gnome.org/pub/gnome/sources/gnome-screenshot/3.6/gnome-screenshot-3.6.1.tar.xz>
- Download (FTP): <ftp://ftp.gnome.org/pub/gnome/sources/gnome-screenshot/3.6/gnome-screenshot-3.6.1.tar.xz>
- Download MD5 sum: c3cf7a5e378ff40bcdcad3be8af91246
- Download size: 268 KB
- Estimated disk space required: 6.5 MB
- Estimated build time: less than 0.1 SBU

## GNOME Screenshot Dependencies

### Required

GTK+-3.6.4 and libcanberra-0.30 (Compiled with GTK+3 support).

## Installation of GNOME Screenshot

Install GNOME Screenshot 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

<b>Installed Program:</b>	gnome-screenshot
<b>Installed Libraries:</b>	None
<b>Installed Directory:</b>	/usr/share/gnome-screenshot

## Short Descriptions

<b>gnome-screenshot</b>	is used to capture the screen, a window, or an user-defined area and save the snapshot image to a file.
-------------------------	---

# gnome-search-tool-3.6.0

## Introduction to GNOME Search Tool

The GNOME Search Tool package is an utility used for finding files on your system.

This package is known to build and work properly using an LFS-7.2 platform.

## Package Information

- Download (HTTP): <http://ftp.gnome.org/pub/gnome/sources/gnome-search-tool/3.6/gnome-search-tool-3.6.0.tar.xz>
- Download (FTP): <ftp://ftp.gnome.org/pub/gnome/sources/gnome-search-tool/3.6/gnome-search-tool-3.6.0.tar.xz>
- Download MD5 sum: 6aed3d63b77ceb0685a57300bc057a7e
- Download size: 672 KB
- Estimated disk space required: 17 MB
- Estimated build time: 0.1 SBU

## GNOME Search Tool Dependencies

### Required

GTK+-3.6.4 and yelp-xsl-3.6.1

## Installation of GNOME Search Tool

Install GNOME Search Tool 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

<b>Installed Program:</b>	gnome-search-tool
<b>Installed Libraries:</b>	None
<b>Installed Directories:</b>	/usr/share/help/*/gnome-search-tool and /usr/share/pixmaps/gsearchtool

## Short Descriptions

**gnome-search-tool** is the GNOME Search Tool.

# gnome-system-log-3.6.1

## Introduction to GNOME System Log

The GNOME System Log package contains a simple utility used to display system log files.

This package is known to build and work properly using an LFS-7.2 platform.

### Package Information

- Download (HTTP): <http://ftp.gnome.org/pub/gnome/sources/gnome-system-log/3.6/gnome-system-log-3.6.1.tar.xz>
- Download (FTP): <ftp://ftp.gnome.org/pub/gnome/sources/gnome-system-log/3.6/gnome-system-log-3.6.1.tar.xz>
- Download MD5 sum: 6615535fe8acf095c7e89b4f01caddc4
- Download size: 1.2 MB
- Estimated disk space required: 19 MB
- Estimated build time: 0.1 SBU

## GNOME System Log Dependencies

### Required

GTK+-3.6.4 and yelp-xsl-3.6.1

## Installation of GNOME System Log

Install GNOME System Log by running the following commands:

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

Now, as the root user:

```
make install
```

## Contents

<b>Installed Program:</b>	gnome-system-log
<b>Installed Libraries:</b>	None
<b>Installed Directory:</b>	/usr/share/help/*/gnome-system-log

## Short Descriptions

**gnome-system-log** is the GNOME System Log Viewer.

# gnome-system-monitor-3.6.1

## Introduction to GNOME System Monitor

The GNOME System Monitor package contains GNOME's replacement for **gtop**.

This package is known to build and work properly using an LFS-7.2 platform.

## Package Information

- Download (HTTP): <http://ftp.gnome.org/pub/gnome/sources/gnome-system-monitor/3.6/gnome-system-monitor-3.6.1.tar.xz>
- Download (FTP): <ftp://ftp.gnome.org/pub/gnome/sources/gnome-system-monitor/3.6/gnome-system-monitor-3.6.1.tar.xz>
- Download MD5 sum: a4f143e1f07455182a7119e9fcc604fc
- Download size: 2.6 MB
- Estimated disk space required: 36 MB
- Estimated build time: 0.4 SBU

## GNOME System Monitor Dependencies

### Required

gnome-icon-theme-3.6.2, Gtkmm-3.6.0, libgtop-2.28.4, librsvg-2.36.4, libwnck-3.4.4 and yelp-xsl-3.6.1

## Installation of GNOME System Monitor

Install GNOME System Monitor 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

<b>Installed Program:</b>	gnome-system-monitor
<b>Installed Libraries:</b>	None
<b>Installed Directories:</b>	/usr/share/gnome-system-monitor, /usr/share/help/*/gnome-system-monitor and /usr/share/pixmaps/gnome-system-monitor

## Short Descriptions

**gnome-system-monitor** is used to display the process tree and hardware meters.

# gnome-tweak-tool-3.6.1

## Introduction to GNOME Tweak Tool

GNOME Tweak Tool is a simple program used to tweak advanced GNOME settings.

This package is known to build and work properly using an LFS-7.2 platform.

### Package Information

- Download (HTTP): <http://ftp.gnome.org/pub/gnome/sources/gnome-tweak-tool/3.6/gnome-tweak-tool-3.6.1.tar.xz>
- Download (FTP): <ftp://ftp.gnome.org/pub/gnome/sources/gnome-tweak-tool/3.6/gnome-tweak-tool-3.6.1.tar.xz>
- Download MD5 sum: 82ea8aeb1a1d7fd8532695b743b3a437
- Download size: 220 KB
- Estimated disk space required: 3.2 MB
- Estimated build time: less than 0.1 SBU

## GNOME Tweak Tool Dependencies

### Required

GConf-3.2.6, gsettings-desktop-schemas-3.6.1 and PyGObject-3.4.2

## Installation of GNOME Tweak Tool

Install GNOME Tweak Tool 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

<b>Installed Program:</b>	gnome-tweak-tool
<b>Installed Libraries:</b>	None
<b>Installed Directories:</b>	/usr/lib/python2.7/site-packages/gtweak and /usr/share/gnome-tweak-tool

## Short Descriptions

**gnome-tweak-tool** is used to tweak advanced GNOME settings.

# Gucharmap-3.6.1

## Introduction to Gucharmap

Gucharmap is a Unicode character map and font viewer. It allows you to browse through all the available Unicode characters and categories for the installed fonts, and to examine their detailed properties. It is an easy way to find the character you might only know by its Unicode name or code point.

This package is known to build and work properly using an LFS-7.3 platform.

## Package Information

- Download (HTTP): <http://ftp.gnome.org/pub/gnome/sources/gucharmap/3.6/gucharmap-3.6.1.tar.xz>
- Download (FTP): <ftp://ftp.gnome.org/pub/gnome/sources/gucharmap/3.6/gucharmap-3.6.1.tar.xz>
- Download MD5 sum: a0e0cdf05a0db8a66b2da35b4f8b7f6e
- Download size: 1.9 MB
- Estimated disk space required: 40 MB
- Estimated build time: 0.2 SBU

## Gucharmap Dependencies

### Required

GTK+-3.6.4 and yelp-xsl-3.6.1

### Recommended

gobject-introspection-1.34.2 and Vala-0.18.1

### Optional

GTK-Doc-1.18

## Installation of Gucharmap

Install Gucharmap by running the following commands:

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

This package does not come with a test suite.

Now, as the root user:

```
make install
```

## Command Explanations

--enable-vala: This switch enables building of the Vala bindings. Remove if you don't have Vala-0.18.1 installed.

--enable-gtk-doc: Use this parameter if GTK-Doc is installed and you wish to rebuild and install the API documentation.

## Contents

**Installed Program:** gucharmap  
**Installed Library:** libgucharmap\_2\_90.so  
**Installed Directories:** /usr/include/gucharmap-2.90 and /usr/share/help/\*/gucharmap

## Short Descriptions

**gucharmap** is a Unicode character map and font viewer.

**libgucharmap\_2\_90.so** contains the Gucharmap API functions.

# Mousetweaks-3.6.0

## Introduction to Mouse Tweaks

The Mouse Tweaks package provides mouse accessibility enhancements for the GNOME desktop.

This package is known to build and work properly using an LFS-7.2 platform.

### Package Information

- Download (HTTP): <http://ftp.gnome.org/pub/gnome/sources/mousetweaks/3.6/mousetweaks-3.6.0.tar.xz>
- Download (FTP): <ftp://ftp.gnome.org/pub/gnome/sources/mousetweaks/3.6/mousetweaks-3.6.0.tar.xz>
- Download MD5 sum: 1ebd0e8a269045cc2ed50d3528fffb75
- Download size: 280 KB
- Estimated disk space required: 5.5 MB
- Estimated build time: less than 0.1 SBU

## Mouse Tweaks Dependencies

### Required

gsettings-desktop-schemas-3.6.1 and GTK+-3.6.4

## Installation of Mouse Tweaks

Install Mouse Tweaks 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

<b>Installed Program:</b>	mousetweaks
<b>Installed Libraries:</b>	None
<b>Installed Directory:</b>	/usr/share/mousetweaks

## Short Descriptions

**mousetweaks** is a collection of accessibility enhancements for pointing devices.

# Orca-3.6.3

## Introduction to Orca

Orca enables users with limited 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.

This package is known to build and work properly using an LFS-7.2 platform.

## Package Information

- Download (HTTP): <http://ftp.gnome.org/pub/gnome/sources/orca/3.6/orca-3.6.3.tar.xz>
- Download (FTP): <ftp://ftp.gnome.org/pub/gnome/sources/orca/3.6/orca-3.6.3.tar.xz>
- Download MD5 sum: 819d2c2551f4119a4f0dcee2490bad8b
- Download size: 3.6 MB
- Estimated disk space required: 65 MB
- Estimated build time: 0.2 SBU

## Orca Dependencies

### Required

GTK+-3.6.4, PyGObject-3.4.2 and yelp-xsl-3.6.1

### Optional

*BRLTTY* (required for braille output, must have Pyrex-0.9.9 installed first), *liblouis* (required for contracted braille) and *speech dispatcher* (required for speech synthesis)

## Installation of Orca

Install Orca 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
```

## Contents

<b>Installed Program:</b>	orca
<b>Installed Libraries:</b>	None
<b>Installed Directories:</b>	/usr/lib/python2.7/site-packages/orca, /usr/share/help/*/orca and /usr/share/orca

## Short Descriptions

**orca** is a GUI menu interface used to access and configure the various functionality parameters provided for users with limited vision.

# Seahorse-3.6.3

## Introduction to Seahorse

Seahorse is a graphical interface for managing and using encryption keys. Currently it supports PGP keys (using GPG/GPGME) and SSH keys.

This package is known to build and work properly using an LFS-7.2 platform.

### Package Information

- Download (HTTP): <http://ftp.gnome.org/pub/gnome/sources/seahorse/3.6/seahorse-3.6.3.tar.xz>
- Download (FTP): <ftp://ftp.gnome.org/pub/gnome/sources/seahorse/3.6/seahorse-3.6.3.tar.xz>
- Download MD5 sum: bc4ffc588015f014c8b03058f91c0d58
- Download size: 2.0 MB
- Estimated disk space required: 60 MB
- Estimated build time: 0.6 SBU

## Seahorse Dependencies

### Required

Gcr-3.6.2, GPGME-1.4.1, GnuPG-1.4.13 or GnuPG-2.0.20, libsecret-0.14 and yelp-xsl-3.6.1

### Recommended

libsoup-2.40.3

### Optional

Avahi-0.6.31, OpenLDAP-2.4.35 and OpenSSH-6.2p1

## Installation of Seahorse

Install Seahorse by running the following commands:

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

This package does not come with a test suite.

Now, as the root user:

```
make install
```

## Command Explanations

`--disable-static`: This switch prevents installation of static versions of the libraries.

## Contents

<b>Installed Program:</b>	seahorse
<b>Installed Libraries:</b>	None
<b>Installed Directories:</b>	/usr/lib/seahorse, /usr/share/help/*/seahorse and /usr/share/seahorse

## Short Descriptions

**seahorse** is the graphical interface for managing and using encryption keys.

# Sound-Juicer-3.4.0

## Introduction to Sound Juicer

The Sound Juicer package contains the simple CD ripping tool which is useful for extracting the audio tracks from audio compact discs and converting them into audio files. It can also play the audio tracks directly from the CD, allowing you to preview the CD before ripping it.

This package is known to build and work properly using an LFS-7.2 platform.

## Package Information

- Download (HTTP): <http://ftp.gnome.org/pub/gnome/sources/sound-juicer/3.4/sound-juicer-3.4.0.tar.xz>
- Download (FTP): <ftp://ftp.gnome.org/pub/gnome/sources/sound-juicer/3.4/sound-juicer-3.4.0.tar.xz>
- Download MD5 sum: a913b246260ccf3843ea779ae9cdb5e7
- Download size: 1.9 MB
- Estimated disk space required: 22 MB
- Estimated build time: 0.6 SBU

## Sound Juicer Dependencies

### Required

GConf-3.2.6, gnome-doc-utils-0.20.10, gst-plugins-base-0.10.36, GTK+-3.6.4, libcanberra-0.30 and libmusicbrainz3-3.0.3

### Recommended

Rarian-0.8.1

### Recommended (Runtime)

gst-plugins-good-0.10.31 (for the flacenc and wavenc plugins) and gst-plugins-ugly-0.10.19 (for the lame plugin)

## Installation of Sound Juicer

Install Sound Juicer 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

--disable-scrollkeeper: Use this parameter if you have installed Rarian but wish to disable the updates to the Scrollkeeper database.

# Configuring Sound Juicer

## Configuration Information

Configuration is accomplished by using the “Preferences” drop-down menu option. For information on how to configure **sound-juicer** to use LAME as the default encoding method (creating MP3 files as the default) see the Sound Juicer Help section.

## Contents

**Installed Program:** sound-juicer

**Installed Libraries:** None

**Installed Directories:** /usr/share/gnome/help/sound-juicer, /usr/share/omf/sound-juicer and /usr/share/sound-juicer

## Short Descriptions

**sound-juicer** is a graphical CD extraction (ripping) tool based on GTK+ and GStreamer.

# Totem-3.6.3

## Introduction to Totem

Totem package contains the official movie player of the GNOME Desktop based on GStreamer. It features a playlist, a full-screen mode, seek and volume controls, as well as keyboard navigation. This is useful for playing any GStreamer supported file, DVD, VCD or digital CD.

This package is known to build and work properly using an LFS-7.2 platform.

## Package Information

- Download (HTTP): <http://ftp.gnome.org/pub/gnome/sources/totem/3.6/totem-3.6.3.tar.xz>
- Download (FTP): <ftp://ftp.gnome.org/pub/gnome/sources/totem/3.6/totem-3.6.3.tar.xz>
- Download MD5 sum: 0afbc46fcb5a1c2634fb3ef7c181ecb9
- Download size: 3.0 MB
- Estimated disk space required: 75 MB
- Estimated build time: 0.9 SBU

## Totem Dependencies

### Required

clutter-gst-2.0.2, clutter-gtk-1.4.2, gnome-doc-utils-0.20.10, gnome-icon-theme-3.6.2, gst-plugins-bad-1.0.7, gst-plugins-good-1.0.7, libpeas-1.6.2 and totem-pl-parser-3.4.3

### Recommended

D-Bus GLib Bindings-0.100.2, gobject-introspection-1.34.2, libzeitgeist-0.3.18, Nautilus-3.6.3, PyGObject-3.4.2, Rarian-0.8.1 and Vala-0.18.1

### Optional

*Grilo*, GTK-Doc-1.18, *LIRC*, *pylint* and Xulrunner-21.0

### Recommended (Runtime)

gst-libav-1.0.7, gst-plugins-ugly-1.0.7 and libdvdcss-1.2.13

## Installation of Totem

Install Totem by running the following commands:

```
./configure --prefix=/usr \
            --libexecdir=/usr/lib/totem \
            --disable-static &&
make
```

This package does not come with a testsuite.

Now, as the root user:

```
make install
```

## Command Explanations

**--disable-static:** This switch prevents installation of static versions of the libraries.

**--disable-scrollkeeper:** Use this parameter if you have installed Rarian but wish to disable the updates to the Scrollkeeper database.

**--enable-gtk-doc:** Use this parameter if GTK-Doc is installed and you wish to rebuild and install the API documentation.

## Contents

**Installed Programs:** totem, totem-audio-preview and totem-video-thumbnailer

**Installed Library:** libtotem.so

**Installed Directories:** /usr/include/totem, /usr/lib/totem, /usr/share/gnome/help/totem, /usr/share/gtk-doc/html/totem, /usr/share/omf/totem and /usr/share/totem

## Short Descriptions

**totem**

is a GNOME Desktop movie player based on GStreamer.

**totem-video-thumbnailer**

is a video thumbnailer for the GNOME Desktop used internally by GNOME applications such as Nautilus to generate PNG thumbnails of video files. While it is possible to invoke it manually, it is usually done automatically by Nautilus.

**libtotem.so**

contains the Totem API functions.

# Vinagre-3.6.2

## Introduction to Vinagre

Vinagre is a VNC client for the GNOME Desktop.

This package is known to build and work properly using an LFS-7.2 platform.

## Package Information

- Download (HTTP): <http://ftp.gnome.org/pub/gnome/sources/vinagre/3.6/vinagre-3.6.2.tar.xz>
- Download (FTP): <ftp://ftp.gnome.org/pub/gnome/sources/vinagre/3.6/vinagre-3.6.2.tar.xz>
- Download MD5 sum: e41e875b458e7e536e3c00608b1d07cd
- Download size: 2.4 MB
- Estimated disk space required: 25 MB
- Estimated build time: 0.2 SBU

## Vinagre Dependencies

### Required

gnome-icon-theme-3.6.2, gtk-vnc-0.5.2, libsecret-0.14 and yelp-xsl-3.6.1

### Recommended

telepathy-glib-0.20.2, Vala-0.18.1 and VTE-0.34.2

### Optional

Avahi-0.6.31 and *Spice GTK*

## Installation of Vinagre

Install Vinagre 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

<b>Installed Program:</b>	vinagre
<b>Installed Libraries:</b>	None
<b>Installed Directories:</b>	/usr/share/help/*/vinagre and /usr/share/vinagre

## Short Descriptions

**vinagre** is a remote desktop viewer for the GNOME Desktop.

# Vino-3.6.2

## Introduction to Vino

The Vino package is a VNC server for GNOME. VNC is a protocol that allows remote display of a user's desktop. This package is known to build and work properly using an LFS-7.2 platform.

### Package Information

- Download (HTTP): <http://ftp.gnome.org/pub/gnome/sources/vino/3.6/vino-3.6.2.tar.xz>
- Download (FTP): <ftp://ftp.gnome.org/pub/gnome/sources/vino/3.6/vino-3.6.2.tar.xz>
- Download MD5 sum: 3054d9d0f9c70e0cd198f87ebcb61e3f
- Download size: 732 KB
- Estimated disk space required: 19 MB
- Estimated build time: 0.2 SBU

## Vino Dependencies

### Required

GTK+-3.6.4, Intltool-0.50.2 and libsoup-2.40.3

### Recommended

libnotify-0.7.5, libsecret-0.14, NetworkManager-0.9.8.0 and telepathy-glib-0.20.2

### Optional

Avahi-0.6.31, GnuTLS-3.2.0 and libgcrypt-1.5.2

## Installation of Vino

Install Vino by running the following commands:

```
./configure --prefix=/usr \
            --sysconfdir=/etc \
            --libexecdir=/usr/lib/vino &&
make
```

This package does not come with a test suite.

Now, as the root user:

```
make install
```

## Contents

<b>Installed Programs:</b>	vino-passwd, vino-preferences and vino-server
<b>Installed Libraries:</b>	None
<b>Installed Directories:</b>	/usr/lib/vino and /usr/share/vino

## Short Descriptions

**vino-passwd**      is used to update Vino password.

- vino-preferences** is a GUI tool used to configure the machine for VNC Access.  
**vino-server** is the Vino VNC server.

## Chapter 32. Deprecated GNOME Packages

This section contains legacy GNOME-2 packages which are currently used as dependencies by the stable versions of some other applications. When those applications have been updated to newer stable releases, these packages will be removed from the book.

# ORBit2-2.14.19

## 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.

This package is known to build and work properly using an LFS-7.2 platform.



### Note

This is a legacy GNOME-2 package which has been deprecated by the GNOME developers and will be removed from the book in due course. Please ensure that you really want or need it before you build it.

## Package Information

- Download (HTTP): <http://ftp.gnome.org/pub/gnome/sources/ORBit2/2.14/ORBit2-2.14.19.tar.bz2>
- Download (FTP): <ftp://ftp.gnome.org/pub/gnome/sources/ORBit2/2.14/ORBit2-2.14.19.tar.bz2>
- Download MD5 sum: 7082d317a9573ab338302243082d10d1
- Download size: 764 KB
- Estimated disk space required: 35 MB
- Estimated build time: 0.6 SBU

## ORBit2 Dependencies

### Required

libIDL-0.8.14

### Optional

GTK-Doc-1.18 and OpenSSL-1.0.1e

## Installation of ORBit2

Install ORBit2 by running the following commands:

Run the following commands:

```
./configure --prefix=/usr \
            --sysconfdir=/etc/gnome/2.30.2 &&
make
```

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

Now, as the **root** user:

```
make install
```

## Command Explanations

**--sysconfdir=/etc/gnome/2.30.2**: This parameter causes the configuration files to be installed in /etc/gnome/2.30.2 instead of \$GNOME\_PREFIX/etc. You may prefer to use a simpler value such as /etc/gnome or even /etc.

--enable-gtk-doc: Use this parameter if GTK-Doc is installed and you wish to rebuild and install the API documentation.

## Contents

<b>Installed Programs:</b>	ior-decode-2, linc-cleanup-sockets, orbit-idl-2, orbit2-config and typelib-dump
<b>Installed Libraries:</b>	libname-server-2.a, libORBit-2.{so,a}, libORBit-imodule-2.{so,a}, libORBitCosNaming-2.{so,a}, and Everything_module.{so,a}
<b>Installed Directories:</b>	\$GNOME_PREFIX/{include/orbit-2.0/*,lib/orbit-2.0, share/{gtk-doc/html/ ORBit2,idl/orbit-2.0}}}

## Short Descriptions

**libORBit-2.{so,a}** is the CORBA API.

# libbonobo-2.32.1

## Introduction to libbonobo

The libbonobo package contains libbonobo libraries. This is a component and compound document system for GNOME-2.

This package is known to build and work properly using an LFS-7.2 platform.



### Note

This is a legacy GNOME-2 package which has been deprecated by the GNOME developers and will be removed from the book in due course. Please ensure that you really want or need it before you build it.

## Package Information

- Download (HTTP): <http://ftp.gnome.org/pub/gnome/sources/libbonobo/2.32/libbonobo-2.32.1.tar.bz2>
- Download (FTP): <ftp://ftp.gnome.org/pub/gnome/sources/libbonobo/2.32/libbonobo-2.32.1.tar.bz2>
- Download MD5 sum: 27fa902d4fdf6762ee010e7053aaf77b
- Download size: 1.4 MB
- Estimated disk space required: 45 MB
- Estimated build time: 0.6 SBU

## libbonobo Dependencies

### Required

GLib-2.34.3, Intltool-0.50.2, libxml2-2.9.1, ORBit2-2.14.19, and popt-1.16

### Optional

X Window System and GTK-Doc-1.18

## Installation of libbonobo

Install libbonobo by running the following commands:

```
ORBit_prefix=$(pkg-config --variable=prefix ORBit-2.0) &&
./configure --prefix=$ORBit_prefix \
            --sysconfdir=/etc/gnome/2.30.2 \
            --libexecdir=$ORBit_prefix/lib/bonobo-2.0 \
            --mandir=$ORBit_prefix/share/man &&
unset ORBit_prefix &&
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 using this parameter instead of with \$GNOME\_PREFIX will ensure that the prefix is consistent with the installation environment and the package will be installed in the correct location.

`--sysconfdir=/etc/gnome/2.30.2`: This parameter causes the configuration files to be installed in /etc/gnome/2.30.2 instead of \$GNOME\_PREFIX/etc. You may prefer to use a simpler value such as /etc/gnome or even /etc.

`--libexecdir=$(pkg-config --variable=prefix ORBit-2.0)/lib/bonobo-2.0`: This parameter causes the libexec files to be installed in the preferred location of \$GNOME\_PREFIX/lib/bonobo-2.0 instead of \$GNOME\_PREFIX/libexec.

`--mandir=$GNOME_PREFIX/share/man`: This parameter causes the man.(X) files to be installed in \$GNOME\_PREFIX/share/man/man(X) instead of \$GNOME\_PREFIX/man/man(X).

`--disable-static`: This switch prevents the static libraries being installed.

`--enable-gtk-doc`: Use this parameter if GTK-Doc is installed and you wish to rebuild and install the API documentation.

## Contents

<b>Installed Programs:</b>	activation-client, bonobo-activation-run-query, bonobo-slay, echo-client-2, bonobo-activation-server, bonobo-echo-2, and bonobo-activation-sysconf
<b>Installed Libraries:</b>	libmoniker_std_2.{so,a}, libbonobo-2.{so,a}, and libbonobo-activation.{so,a}
<b>Installed Directories:</b>	/etc/gnome/2.30.2/bonobo-activation, \$GNOME_PREFIX/{include/{bonobo-activation-2.0/bonobo-activation, libbonobo-2.0/bonobo},lib/{bonobo-2.0/samples,bonobo/{monikers, servers } },share/{gtk-doc/html/{bonobo-activation,libbonobo}, idl/{bonobo-2.0,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.

# gnome-mime-data-2.18.0

## Introduction to GNOME MIME Data

The GNOME MIME Data package contains the base set of file types and applications for GNOME-2.

This package is known to build and work properly using an LFS-7.2 platform.

### Package Information

- Download (HTTP): <http://ftp.gnome.org/pub/gnome/sources/gnome-mime-data/2.18/gnome-mime-data-2.18.0.tar.bz2>
- Download (FTP): <ftp://ftp.gnome.org/pub/gnome/sources/gnome-mime-data/2.18/gnome-mime-data-2.18.0.tar.bz2>
- Download MD5 sum: 541858188f80090d12a33b5a7c34d42c
- Download size: 593 KB
- Estimated disk space required: 12 MB
- Estimated build time: 0.1 SBU

## GNOME MIME Data Dependencies

### Required

XML::Parser-2.41

## Installation of GNOME MIME Data



### Note

The instructions below are based on installing the package into a GNOME environment. If, for whatever reason, you're installing this package without having the core GNOME 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:

```
ORBit_prefix=$(pkg-config --variable=prefix ORBit-2.0) &&
./configure --prefix=$ORBit_prefix \
            --sysconfdir=/etc/gnome/2.30.2 \
            --mandir=$$ORBit_prefix/share/man &&
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 \
          $ORBit_prefix/share/man/man5/gnome-vfs-mime.5
```

## Contents

<b>Installed Programs:</b>	None
<b>Installed Libraries:</b>	None
<b>Installed Directories:</b>	\$GNOME_PREFIX/share/{application-registry, share/mime-info}

## Short Descriptions

application-registry contains the application mime database.  
mime-info contains the mime description database.

# gnome-vfs-2.24.4

## 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.

This package is known to build and work properly using an LFS-7.2 platform.



### Note

This is a legacy GNOME-2 package which has been deprecated by the GNOME developers and will be removed from the book in due course. Please ensure that you really want or need it before you build it.

## Package Information

- Download (HTTP): <http://ftp.gnome.org/pub/gnome/sources/gnome-vfs/2.24/gnome-vfs-2.24.4.tar.bz2>
- Download (FTP): <ftp://ftp.gnome.org/pub/gnome/sources/gnome-vfs/2.24/gnome-vfs-2.24.4.tar.bz2>
- Download MD5 sum: a05fab03eeef10a47dd156b758982f2e
- Download size: 1.8 MB
- Estimated disk space required: 56 MB
- Estimated build time: 1.0 SBU

## GNOME Virtual File System Dependencies

### Required

D-Bus GLib Bindings-0.100.2, GConf-3.2.6, and gnome-mime-data-2.18.0

### Optional

Samba-3.6.12, Gamin-0.1.10, Hal, GTK-Doc-1.18, OpenSSH-6.2p1, OpenSSL-1.0.1e or GnuTLS-3.2.0, MIT Kerberos V5-1.11.2, Avahi-0.6.31, OpenAFS, and CDPParanoia-III-10.2 (not recommended)

If you run **./configure --help** for the complete list of dependency requirements and available parameters, you may notice a message about the *gnome-mount* package. This package is not required at build-time, and is only a run-time dependency. If *gnome-mount* is available at run-time, GNOME-VFS will use it. If it is not available, GNOME-VFS will fall back to using other mounting mechanisms.

## Installation of GNOME Virtual File System

Install GNOME Virtual File System by running the following commands:

```
ORBit_prefix=$(pkg-config --variable=prefix ORBit-2.0)    &&
./configure --prefix=$ORBit_prefix                         \
            --sysconfdir=/etc/gnome/2.30.2                  \
            --libexecdir=$ORBit_prefix/lib/gnome-vfs-2.0 &&
make
```

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

Now, as the root user:

```
make install
```

## Command Explanations

`--prefix=$(pkg-config --variable=prefix ORBit-2.0)`: Setting the prefix using this parameter instead of with `$GNOME_PREFIX` will ensure that the prefix is consistent with the installation environment and the package will be installed in the correct location.

`--sysconfdir=/etc/gnome/2.30.2`: This parameter causes the configuration files to be installed in `/etc/gnome/2.30.2` instead of `$GNOME_PREFIX/etc`. You may prefer to use a simpler value such as `/etc/gnome` or even `/etc`.

`--libexecdir=$(pkg-config --variable=prefix ORBit-2.0)/lib/gnome-vfs-2.0`: This parameter causes the libexec files to be installed in the preferred location of `$GNOME_PREFIX/lib/gnome-vfs-2.0` instead of `$GNOME_PREFIX/libexec`.

`--with-dbus-service-dir=/usr/share/dbus-1/services`: Use this parameter if you linked HAL into the build and you want the `gnome-vfs-daemon.service` file installed in the default D-Bus location instead of in `GNOME_PREFIX/share/dbus-1/services`. See the information in the configuration section below if you don't use this parameter.

`--with-hal-eject=PROGRAM`: This parameter does not need to be passed if you have Eject-2.1.5 or `gnome-mount` installed, as the `eject` program is used if `gnome-mount` is not installed.

`--enable-gtk-doc`: Use this parameter if GTK-Doc is installed and you wish to rebuild and install the API documentation.

## Configuring Gnome Virtual File System

### Configuration Information

If HAL was linked into the build and GNOME is being installed in any location other than `/usr`, you should create a local D-Bus session configuration file so that the installed `gnome-vfs-daemon.service` file can be discovered by D-Bus. You should reference the information on the D-Bus page for instructions on how to create a D-Bus custom services directory.

## Contents

<b>Installed Programs:</b>	gnomevfs-cat, gnomevfs-copy, gnomevfs-df, gnomevfs-info, gnomevfs-ls, gnomevfs-mkdir, gnomevfs-monitor, gnomevfs-mv, gnomevfs-rm, and gnome-vfs-daemon
<b>Installed Libraries:</b>	libbz2.{so,a}, libcomputer.{so,a}, libdns-sd.{so,a}, libfile.{so,a}, libftp.{so,a}, libgzip.{so,a}, libhttp.{so,a}, libnetwork.{so,a}, libntp.{so,a}, libsftp.{so,a}, libtar.{so,a}, libvfs-test.{so,a}, and libgnomevfs-2.{so,a}
<b>Installed Directories:</b>	/etc/gnome/2.30.2/gnome-vfs-2.0/modules, <code>\$GNOME_PREFIX/{include/{gnome-vfs-2.0/libgnomevfs, gnome-vfs-module-2.0/libgnomevfs},lib/gnome-vfs-2.0/{include,modules}, share/gtk-doc/html/gnome-vfs-2.0}</code>

# libgnome-2.32.1

## Introduction to libgnome

The libgnome package contains the libgnome library.

This package is known to build and work properly using an LFS-7.2 platform.



### Note

This is a legacy GNOME-2 package which has been deprecated by the GNOME developers and will be removed from the book in due course. Please ensure that you really want or need it before you build it.

## Package Information

- Download (HTTP): <http://ftp.gnome.org/pub/gnome/sources/libgnome/2.32/libgnome-2.32.1.tar.bz2>
- Download (FTP): <ftp://ftp.gnome.org/pub/gnome/sources/libgnome/2.32/libgnome-2.32.1.tar.bz2>
- Download MD5 sum: a4345e6087ae6195d65a4674ffdca559
- Download size: 1.7 MB
- Estimated disk space required: 28 MB
- Estimated build time: 0.2 SBU

## libgnome Dependencies

### Required

libbonobo-2.32.1 and gnome-vfs-2.24.4

### Recommended (if you plan on installing the GNOME-2 deprecated packages)

libcanberra-0.30

### Optional

GTK-Doc-1.18

## Installation of libgnome

Install libgnome by running the following commands:

```
ORBit=$(pkg-config --variable=prefix ORBit-2.0) &&
./configure --prefix=$ORBit           \
            --sysconfdir=/etc/gnome/2.30.2 \
            --localstatedir=/var/lib          \
            --mandir=$ORBit/share/man &&
make
```

This package does not come with a test suite.

Now, as the root user:

```
make install
```

## Command Explanations

`--prefix=$(pkg-config --variable=prefix ORBit-2.0)`: Setting the prefix using this parameter instead of with \$GNOME\_PREFIX will ensure that the prefix is consistent with the installation environment and the package will be installed in the correct location.

`--sysconfdir=/etc/gnome/2.30.2`: This parameter causes the configuration files to be installed in /etc/gnome/2.30.2 instead of \$GNOME\_PREFIX/etc. You may prefer to use a simpler value such as /etc/gnome or even /etc.

`--localstatedir=/var/lib`: This parameter sets LIBGNOME\_LOCALSTATEDIR to /var/lib instead of /usr/var to synchronize with the GNOME Games installation and properly record high scores in /var/lib/games.

`--disable-static`: This switch prevents the static libraries being installed.

`--enable-gtk-doc`: Use this parameter if GTK-Doc is installed and you wish to rebuild and install the API documentation.

## Contents

**Installed Program:** gnome-open

**Installed Libraries:** libgnome-2.{so,a} and the libmoniker\_extra\_2.{so,a} (bonobo library)

**Installed Directories:** /etc/gnome/2.30.2/sound/events, \$GNOME\_PREFIX/{include/libgnome-2.0/libgnome, share/gtk-doc/html/libgnome}

## Short Descriptions

libgnome-2.{so,a} are the non-GUI portion of the GNOME libraries.

# libgnomecanvas-2.30.3

## 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.

This package is known to build and work properly using an LFS-7.2 platform.



### Note

This is a legacy GNOME-2 package which has been deprecated by the GNOME developers and will be removed from the book in due course. Please ensure that you really want or need it before you build it.

## Package Information

- Download (HTTP): <http://ftp.gnome.org/pub/gnome/sources/libgnomecanvas/2.30/libgnomecanvas-2.30.3.tar.bz2>
- Download (FTP): <ftp://ftp.gnome.org/pub/gnome/sources/libgnomecanvas/2.30/libgnomecanvas-2.30.3.tar.bz2>
- Download MD5 sum: ffcbb719c671ff5cd86e59aeba8d0b92
- Download size: 561 KB
- Estimated disk space required: 20 MB
- Estimated build time: 0.3 SBU

## libgnomecanvas Dependencies

### Required

GTK+-2.24.17, Intltool-0.50.2, and libart\_lgpl-2.3.21

### Optional

GTK-Doc-1.18 and libglade-2.6.4

## Installation of libgnomecanvas



### Note

The instructions below are based on installing the package into a GNOME environment. If, for whatever reason, you're installing this package without having the core GNOME 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
```

This package does not have a testsuite.

Now, as the `root` user:

```
make install
```

## Command Explanations

--prefix=\$(pkg-config --variable=prefix ORBit-2.0): Setting the prefix using this parameter instead of with \$GNOME\_PREFIX will ensure that the prefix is consistent with the installation environment and the package will be installed in the correct location.

--disable-static: This switch prevents the static libraries being installed.

--enable-gtk-doc: Use this parameter if GTK-Doc is installed and you wish to rebuild and install the API documentation.

## Contents

**Installed Programs:** None

**Installed Library:** libgnomecanvas-2.{so,a}

**Installed Directories:** /usr/{include/libgnomecanvas-2.0/libgnomecanvas,  
libgnomecanvas} share/gtk-doc/html/

# LibBonoboUI-2.24.5

## Introduction to LibBonoboUI

The Bonobo User Interface library provides user interface code for Bonobo, the Object Activation Framework for GNOME 2.

This package is known to build and work properly using an LFS-7.2 platform.



### Note

This is a legacy GNOME-2 package which has been deprecated by the GNOME developers and will be removed from the book in due course. Please ensure that you really want or need it before you build it.

## Package Information

- Download (HTTP): <http://ftp.gnome.org/pub/gnome/sources/libbonoboui/2.24/libbonoboui-2.24.5.tar.bz2>
- Download (FTP): <ftp://ftp.gnome.org/pub/gnome/sources/libbonoboui/2.24/libbonoboui-2.24.5.tar.bz2>
- Download MD5 sum: 853be8e28aaa4ce48ba60be7d9046bf4
- Download size: 954 KB
- Estimated disk space required: 41 MB
- Estimated build time: 0.9 SBU

## LibBonoboUI Dependencies

### Required

libglade-2.6.4, libgnome-2.32.1 and libgnomecanvas-2.30.3

### Optional

GTK-Doc-1.18

## Installation of LibBonoboUI

Install LibBonoboUI by running the following commands:

```
./configure --prefix=$(pkg-config --variable=prefix ORBit-2.0) \
--disable-static &&
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/libbonoboui-2.24.5 &&

install -v -m644 doc/*.{dtd,txt,xml,html} $(pkg-config \
--variable=prefix ORBit-2.0)/share/doc/libbonoboui-2.24.5
```

## Command Explanations

`--prefix=$(pkg-config --variable=prefix ORBit-2.0)`: Setting the prefix using this parameter instead of with `$GNOME_PREFIX` will ensure that the prefix is consistent with the installation environment and the package will be installed in the correct location.

`--disable-static`: This switch prevents installation of static versions of the libraries.

`--enable-gtk-doc`: Use this parameter if GTK-Doc is installed and you wish to rebuild and install the API documentation.

## Configuring LibBonoboUI

If you have installed gnome with a different prefix to LibGlade (eg, LibGlade is installed into `/usr` and LibBonoboUI is installed into `/opt/gnome`) you will need to add the directory containing the Glade files to the environment variable `LIBGLADE_MODULE_PATH`. As the root user:

```
echo export \
  LIBGLADE_MODULE_PATH=$(pkg-config --variable=prefix ORBit-2.0)/lib/libglade/2.0
>> /etc/profile
```

## Contents

<b>Installed Programs:</b>	bonobo-browser and test-moniker
<b>Installed Libraries:</b>	libbonoboui-2.so and libbonobo.so Glade library
<b>Installed Directories:</b>	/usr/include/libbonoboui-2.0/bonobo, /usr/share/doc/libbonoboui-2.24.3, /usr/share/gnome-2.0/ui and /usr/share/gtk-doc/html/libbonoboui

## Short Descriptions

`libbonoboui-2.so` are the GUI portion of the Bonobo libraries.

# libgnomeui-2.24.5

## Introduction to libgnomeui

The libgnomeui package contains libgnomeui libraries.

This package is known to build and work properly using an LFS-7.2 platform.



### Note

This is a legacy GNOME-2 package which has been deprecated by the GNOME developers and will be removed from the book in due course. Please ensure that you really want or need it before you build it.

## Package Information

- Download (HTTP): <http://ftp.gnome.org/pub/gnome/sources/libgnomeui/2.24/libgnomeui-2.24.5.tar.bz2>
- Download (FTP): <ftp://ftp.gnome.org/pub/gnome/sources/libgnomeui/2.24/libgnomeui-2.24.5.tar.bz2>
- Download MD5 sum: d4bb506b1916015323928faab5aa708b
- Download size: 1.4 MB
- Estimated disk space required: 53 MB
- Estimated build time: 0.7 SBU

## libgnomeui Dependencies

### Required

LibBonoboUI-2.24.5, libgnome-keyring-3.6.0, and Xorg Libraries

### Optional

GTK-Doc-1.18

## 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)/lib/libgnomeui &&
make
```

This package's testsuite is only intended to be used by the maintainer to check i18n files.

Now, as the root user:

```
make install
```

## Command Explanations

`--prefix=$(pkg-config --variable=prefix ORBit-2.0)`: Setting the prefix using this parameter instead of with `$GNOME_PREFIX` will ensure that the prefix is consistent with the installation environment and the package will be installed in the correct location.

--libexecdir=\$(pkg-config --variable=prefix ORBit-2.0)/lib/libgnomeui: This parameter causes the libexec files to be installed in the preferred location of \$GNOME\_PREFIX/lib/libgnomeui instead of \$GNOME\_PREFIX/libexec.

--disable-static: This switch prevents the static libraries being installed.

--enable-gtk-doc: Use this parameter if GTK-Doc is installed and you wish to rebuild and install the API documentation.

## Contents

<b>Installed Programs:</b>	None
<b>Installed Libraries:</b>	libgnomeui-2.{so,a} and libgnome.{so,a} Glade library
<b>Installed Directories:</b>	/usr/include/libgnomeui-2.0/libgnomeui, /usr/share/gtk-doc/html/libgnomeui

## Short Descriptions

libgnomeui-2.{so,a} are the GUI portion of the GNOME libraries.

## **Part IX. Xfce**

## Chapter 33. Xfce Desktop

Xfce is a desktop environment that aims to be fast and low on system resources, while still being visually appealing and user friendly.

Xfce embodies the traditional UNIX philosophy of modularity and re-usability. It consists of a number of components that provide the full functionality one can expect of a modern desktop environment. They are packaged separately and you can pick among the available packages to create the optimal personal working environment.

Build Xfce core packages in the order presented in the book for the easiest resolution of dependencies.

# libxfce4util-4.10.1

## Introduction to libxfce4util

The libxfce4util package is a basic utility library for the Xfce desktop environment.

This package is known to build and work properly using an LFS-7.3 platform.

## Package Information

- Download (HTTP): <http://archive.xfce.org/src/xfce/libxfce4util/4.10/libxfce4util-4.10.1.tar.bz2>
- 
- Download MD5 sum: 11eec87e8eda2bc62512c2416cb807a1
- Download size: 444 KB
- Estimated disk space required: 6.2 MB
- Estimated build time: 0.1 SBU

## libxfce4util Dependencies

### Required

GLib-2.34.3 and Intltool-0.50.2

### Optional

GTK-Doc-1.18

## Installation of libxfce4util

Install libxfce4util 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: Use this parameter if GTK-Doc is installed and you wish to rebuild and install the API documentation.

## Contents

**Installed Program:** xfce4-kiosk-query

**Installed Library:** libxfce4util.so

**Installed Directories:** /usr/include/xfce4 and /usr/share/gtk-doc/html/libxfce4util

## Short Descriptions

<b>xfce4-kiosk-query</b>	Queries the given capabilities of <module> for the current user and reports whether the user has the capabilities or not. This tool is mainly meant for system administrators to test their Kiosk setup.
<b>libxfce4util.so</b>	contains basic utility functions for the Xfce desktop environment.

# Xfconf-4.10.0

## Introduction to Xfconf

Xfconf is the configuration storage system for Xfce.

This package is known to build and work properly using an LFS-7.3 platform.

## Package Information

- Download (HTTP): <http://archive.xfce.org/src/xfce/xfconf/4.10/xfconf-4.10.0.tar.bz2>
- 
- Download MD5 sum: 4ed48150a03fb5f42b455494307b7f28
- Download size: 508 KB
- Estimated disk space required: 8.7 MB
- Estimated build time: 0.1 SBU

## Xfconf Dependencies

### Required

D-Bus GLib Bindings-0.100.2 and libxfce4util-4.10.1

### Optional

GTK-Doc-1.18 and Glib-1.280

## Installation of Xfconf

Install Xfconf by running the following commands:

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

This package does not come with a test suite.

Now, as the root user:

```
make install
```

## Command Explanations

**--disable-static:** This switch prevents installation of static versions of the libraries.

**--enable-gtk-doc:** Use this parameter if GTK-Doc is installed and you wish to rebuild and install the API documentation.

## Contents

**Installed Program:** xfconf-query

**Installed Library:** libxfconf.so

**Installed Directories:** /usr/include/xfconf-0, /usr/lib/xfce4 and /usr/share/gtk-doc/html/xfconf

## Short Descriptions

**xfconf-query** is a commandline utility to view or change any setting stored in Xfconf.

**libxfconf.so** contains basic functions for Xfce configuration.

# libxfce4ui-4.10.0

## Introduction to libxfce4ui

The libxfce4ui package contains GTK+ 2 widgets that are used by other Xfce applications.

This package is known to build and work properly using an LFS-7.3 platform.

## Package Information

- Download (HTTP): <http://archive.xfce.org/src/xfce/libxfce4ui/4.10/libxfce4ui-4.10.0.tar.bz2>
- 
- Download MD5 sum: 6df1ce474a3d4885aee31cda9dbc9192
- Download size: 536 KB
- Estimated disk space required: 9.5 MB
- Estimated build time: 0.2 SBU

## libxfce4ui Dependencies

### Required

GTK+-2.24.17 and Xfconf-4.10.0

### Recommended

startup-notification-0.12

### Optional

GTK-Doc-1.18

## Installation of libxfce4ui

Install libxfce4ui 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

**--disable-static**: This switch prevents installation of static versions of the libraries.

**--enable-gtk-doc**: Use this parameter if GTK-Doc is installed and you wish to rebuild and install the API documentation.

## Contents

<b>Installed Programs:</b>	None
<b>Installed Libraries:</b>	libxfce4kbd-private-2.so and libxfce4ui-1.so
<b>Installed Directories:</b>	/etc/xdg/xfce4, /usr/include/xfce4/libxfce4kbd-private-2, /usr/include/xfce4/libxfce4ui-1 and /usr/share/gtk-doc/html/libxfce4ui

## Short Descriptions

`libxfce4kbd-private-2.so` is a private Xfce library for sharing code between Xfwm4 and Xfce4 Settings.  
`libxfce4ui-1.so` contains widgets that are used by other Xfce applications.

# Exo-0.10.2

## Introduction to Exo

Exo is a support library used in the Xfce desktop. It also has some helper applications that are used throughout Xfce. This package is known to build and work properly using an LFS-7.3 platform.

### Package Information

- Download (HTTP): <http://archive.xfce.org/src/xfce/exo/0.10/exo-0.10.2.tar.bz2>
- 
- Download MD5 sum: c70f2a217811bfba2e62f938d4b8f748
- Download size: 1.2 MB
- Estimated disk space required: 26 MB
- Estimated build time: 0.3 SBU

## Exo Dependencies

### Required

libxfc4ui-4.10.0, libxfc4util-4.10.1 and URI-1.60

### Optional

GTK-Doc-1.18

## Installation of Exo

Install Exo 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

--enable-gtk-doc: Use this parameter if GTK-Doc is installed and you wish to rebuild and install the API documentation.

## Contents

<b>Installed Programs:</b>	exo-csource, exo-desktop-item-edit, exo-open and exo-preferred-applications
<b>Installed Libraries:</b>	libexo-1.so
<b>Installed Directories:</b>	/etc/xdg/xfce4, /usr/include/exo-1, /usr/lib/xfce4/exo-1, /usr/share/doc/exo-0.10.2, /usr/share/gtk-doc/html/exo-1, /usr/share/pixmaps/exo-1 and /usr/share/xfce4

## Short Descriptions

<b>exo-csource</b>	is a small utility that generates C code containing arbitrary data, useful for compiling texts or other data directly into programs.
<b>exo-desktop-item-edit</b>	is a command line utility to create or edit icons on the desktop.
<b>exo-open</b>	is a command line frontend to the Xfce Preferred Applications framework. It can either be used to open a list of urls with the default URL handler or launch the preferred application for a certain category.
<b>exo-preferred-applications</b>	is a command line utility to edit the preferred application that is used to handle a particular type of file or URI.
<b>libexo-1.so</b>	contains additional widgets, a framework for editable toolbars, light-weight session management support and functions to automatically synchronise object properties (based on GObject Binding Properties).

# Garcon-0.2.1

## Introduction to Garcon

The Garcon package contains a freedesktop.org compliant menu implementation based on GLib and GIO. This package is known to build and work properly using an LFS-7.3 platform.

### Package Information

- Download (HTTP): <http://archive.xfce.org/src/xfce/garcon/0.2/garcon-0.2.1.tar.bz2>
- 
- Download MD5 sum: c3cf89c836be0ddb281c81e4808fb68b
- Download size: 444 KB
- Estimated disk space required: 8.0 MB
- Estimated build time: 0.1 SBU

## Garcon Dependencies

### Required

libxfc4util-4.10.1

### Optional

GTK-Doc-1.18

## Installation of Garcon

Install Garcon 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

**--enable-gtk-doc:** Use this parameter if GTK-Doc is installed and you wish to rebuild and install the API documentation.

## Contents

<b>Installed Programs:</b>	None
<b>Installed Library:</b>	libgarcon-1.so
<b>Installed Directory:</b>	/usr/share/gtk-doc/html/garcon

## Short Descriptions

**libgarcon-1.so** contains functions that provide a freedesktop.org compliant menu implementation based on GLib and GIO.

# gtk-xfce-engine-3.0.1

## Introduction to GTK Xfce Engine

The GTK Xfce Engine package contains several GTK+ 2 and GTK+ 3 themes and libraries needed to display them. This is useful for customising the appearance of your Xfce desktop.

This package is known to build and work properly using an LFS-7.3 platform.

### Package Information

- Download (HTTP): <http://archive.xfce.org/src/xfce/gtk-xfce-engine/3.0/gtk-xfce-engine-3.0.1.tar.bz2>
- 
- Download MD5 sum: 174e774d0debb052ec457640275f065d
- Download size: 364 KB
- Estimated disk space required: 7.3 MB
- Estimated build time: 0.1 SBU

### GTK Xfce Engine Dependencies

#### Required

GTK+-2.24.17

#### Recommended

GTK+-3.6.4

## Installation of GTK Xfce Engine

Install GTK Xfce Engine 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

<b>Installed Programs:</b>	None
<b>Installed Library:</b>	libxfce.so (in /usr/lib/gtk-2.0/2.10.0/engines and /usr/lib/gtk-3.0/3.0.0/theming-engines)
<b>Installed Directories:</b>	Xfce, Xfce-4.0, Xfce-4.2, Xfce-4.4, Xfce-4.6, Xfce-b5, Xfce-basic, Xfce-cadmium, Xfce-curve, Xfce-dawn, Xfce-dusk, Xfce-kde2, Xfce-kolors, Xfce-light, Xfce-orange, Xfce-redmondxp, Xfce-saltlake, Xfce-smooth, Xfce-stellar, Xfce-winter in /usr/share/themes

## Short Descriptions

**libxfce.so** contains functions that allow Xfce to apply and change GTK+ 2 and GTK+ 3 themes.

# libwnck-2.30.7

## Introduction to libwnck

The libwnck package contains a Window Navigator Construction Kit.

This package is known to build and work properly using an LFS-7.3 platform.

## Package Information

- Download (HTTP): <http://ftp.gnome.org/pub/gnome/sources/libwnck/2.30/libwnck-2.30.7.tar.xz>
- Download (FTP): <ftp://ftp.gnome.org/pub/gnome/sources/libwnck/2.30/libwnck-2.30.7.tar.xz>
- Download MD5 sum: 3d20f26105a2fd878899d6ecdbe9a082
- Download size: 612 KB
- Estimated disk space required: 16 MB
- Estimated build time: 0.2 SBU

## libwnck Dependencies

### Required

GTK+-2.24.17 and Intltool-0.50.2

### Recommended

startup-notification-0.12

### Optional

gobject-introspection-1.34.2 and GTK-Doc-1.18

## Installation of libwnck

Install libwnck by running the following commands:

```
./configure --prefix=/usr \
            --disable-static \
            --program-suffix=-1 &&
make GETTEXT_PACKAGE=libwnck-1
```

This package does not come with a test suite.

Now, as the root user:

```
make GETTEXT_PACKAGE=libwnck-1 install
```

## Command Explanations

`--disable-static`: This switch prevents installation of static versions of the libraries.

`--program-suffix=-1`: This option adds -1 to the end of the names of the installed programs to avoid overwriting the programs installed by libwnck-3.4.4.

*GETTEXT\_PACKAGE=libwnck-1:* This parameter adds -1 to the end of the names of the gettext files installed by the package to avoid overwriting the files installed by libwnck-3.4.4.

*--enable-gtk-doc:* Use this parameter if GTK-Doc is installed and you wish to rebuild and install the API documentation.

## Contents

**Installed Programs:** wnckprop-1 and wnck-urgency-monitor-1

**Installed Library:** libwnck-1.so

**Installed Directories:** /usr/include/libwnck-1.0 and /usr/share/gtk-doc/html/libwnck-1.0

## Short Descriptions

**wnckprop-1** Print or modify the properties of a screen/workspace/window, or interact with it.

**libwnck-1.so** contains functions for writing pagers and task lists.

# libxfcegui4-4.10.0

## Introduction to libxfcegui4

The libxfcegui4 package provides the basic GUI functions used by Xfce.

This package is known to build and work properly using an LFS-7.3 platform.

## Package Information

- Download (HTTP): <http://archive.xfce.org/src/xfce/libxfcegui4/4.10/libxfcegui4-4.10.0.tar.bz2>
- 
- Download MD5 sum: 4025b9d6811f051c914cdd700d437e61
- Download size: 676 KB
- Estimated disk space required: 29 MB
- Estimated build time: 0.3 SBU

## libxfcegui4 Dependencies

### Required

libglade-2.6.4 and libxfc4util-4.10.1

### Optional

GTK-Doc-1.18

## Installation of libxfcegui4

Install libxfcegui4 by running the following commands:

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

This package does not come with a test suite.

Now, as the root user:

```
make install
```

## Command Explanations

**--disable-static:** This switch prevents installation of static versions of the libraries.

**--enable-gtk-doc:** Use this parameter if GTK-Doc is installed and you wish to rebuild and install the API documentation.

## Contents

<b>Installed Programs:</b>	None
<b>Installed Libraries:</b>	libxfcegui4.so and libxfc4.so
<b>Installed Directories:</b>	/usr/include/xfc4/libxfcegui4 and /usr/share/gtk-doc/html/libxfcegui4

## Short Descriptions

`libxfcegui4.so` contains the basic GUI functions used by Xfce.

# xfce4-panel-4.10.1

## Introduction to Xfce4 Panel

The Xfce4 Panel package contains the Xfce4 Panel.

This package is known to build and work properly using an LFS-7.3 platform.

### Package Information

- Download (HTTP): <http://archive.xfce.org/src/xfce/xfce4-panel/4.10/xfce4-panel-4.10.1.tar.bz2>
- 
- Download MD5 sum: 8a1f8371fc725ba00f4594c5c0f81c59
- Download size: 1.1 MB
- Estimated disk space required: 40 MB
- Estimated build time: 0.8 SBU

## Xfce4 Panel Dependencies

### Required

Exo-0.10.2, Garcon-0.2.1, libwnck-2.30.7 and libxfce4ui-4.10.0

### Optional

GTK-Doc-1.18

## Installation of Xfce4 Panel

Install Xfce4 Panel 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

--enable-gtk-doc: Use this parameter if GTK-Doc is installed and you wish to rebuild and install the API documentation.

## Contents

<b>Installed Programs:</b>	xfce4-panel, xfce4-popup-directorymenu, xfce4-popup-applicationsmenu and xfce4-popup-windowmenu
<b>Installed Library:</b>	libxfce4panel-1.0.so
<b>Installed Directories:</b>	/etc/xdg/xfce4/panel, /usr/include/xfce4/libxfce4panel-1.0, /usr/lib/xfce4/panel, /usr/share/gtk-doc/html/libxfce4panel-1.0 and /usr/share/xfce4/panel

## Short Descriptions

**xfce4-panel**

is the Xfce panel.

**xfce4-popup-applicationsmenu**

is a shell script that uses D-Bus and Xfce Panel to display a popup menu of the installed applications.

**xfce4-popup-directorymenu**

is a shell script that uses D-Bus and Xfce Panel to display a popup menu of your home folder and its subdirectories.

**xfce4-popup-windowmenu**

is a shell script that uses DBus to display the Xfwm4 a popup menu.

**libxfce4panel-1.0.so**

contains the Xfce Panel API functions.

# Thunar-1.6.3

## Introduction to Thunar

Thunar is the Xfce file manager, a GTK+ 2 GUI to organise the files on your computer.

This package is known to build and work properly using an LFS-7.3 platform.

## Package Information

- Download (HTTP): <http://archive.xfce.org/src/xfce/thunar/1.6/Thunar-1.6.3.tar.bz2>
- 
- Download MD5 sum: 4f10d5d5576ce5127308d6badbac3afa
- Download size: 1.9 MB
- Estimated disk space required: 60 MB
- Estimated build time: 0.7 SBU

## Thunar Dependencies

### Required

Exo-0.10.2 and libxfc4ui-4.10.0

### Recommended

libnotify-0.7.5, startup-notification-0.12, udev-Installed LFS Version or udev-extras (from systemd) (for GUdev) and xfce4-panel-4.10.1

### Optional

libexif-0.6.21

## Installation of Thunar

Install Thunar by running the following commands:

```
./configure --prefix=/usr \
            --sysconfdir=/etc \
            --docdir=/usr/share/doc/Thunar-1.6.3 &&
make
```

This package does not come with a test suite.

Now, as the root user:

```
make install
```

## Command Explanations

--enable-gtk-doc: Use this parameter if GTK-Doc is installed and you wish to rebuild and install the API documentation.

## Contents

<b>Installed Programs:</b>	Thunar, thunar and thunar-settings
<b>Installed Library:</b>	libthunarl-2.so
<b>Installed Directories:</b>	/etc/xdg/Thunar, /usr/include/thunarl-2, /usr/lib/Thunar, /usr/lib/thunarl-2, /usr/share/doc/Thunar-1.6.3, /usr/share/gtk-doc/html/thunarl, /usr/share/pixmaps/Thunar and /usr/share/Thunar

## Short Descriptions

<b>Thunar</b>	is the Xfce file manager.
<b>thunar</b>	is a symbolic link to Thunar.
<b>thunar-settings</b>	is a shell script that launches a dialog box to allow you to alter the behaviour of Thunar.
<b>libthunarl-2.so</b>	contains the Thunar extension library which permits adding new features to the Thunar file manager.

# thunar-volman-0.8.0

## Introduction to the Thunar Volume Manager

The Thunar Volume Manager is an extension for the Thunar file manager, which enables automatic management of removable drives and media.

This package is known to build and work properly using an LFS-7.3 platform.

### Package Information

- Download (HTTP): <http://archive.xfce.org/src/xfce/thunar-volman/0.8/thunar-volman-0.8.0.tar.bz2>
- 
- Download MD5 sum: 250af757ea629c7c27f554d17119080c
- Download size: 404 KB
- Estimated disk space required: 6.6 MB
- Estimated build time: 0.1 SBU

### Thunar Volume Manager Dependencies

#### Required

Exo-0.10.2, libxfc4ui-4.10.0 and udev-Installed LFS Version or udev-extras (from systemd) (for GUdev)

#### Recommended

libnotify-0.7.5 and startup-notification-0.12

#### Recommended Runtime Dependencies

Gvfs-1.14.2 and polkit-gnome-0.105

## Installation of the Thunar Volume Manager

Install the Thunar Volume Manager 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

<b>Installed Programs:</b>	thunar-volman and thunar-volman-settings
<b>Installed Libraries:</b>	None
<b>Installed Directories:</b>	None

## Short Descriptions

### thunar-volman

is the Thunar Volume Manager, a command line utility to automatically mount or unmount removable media.

**thunar-volman-settings**

is a small GTK+ 2 application for changing Thunar Volume Manager settings.

# Tumbler-0.1.29

## Introduction to Tumbler

The Tumbler package contains a D-Bus thumbnailing service based on the thumbnail management D-Bus specification. This is useful for generating thumbnail images of files.

This package is known to build and work properly using an LFS-7.3 platform.

## Package Information

- Download (HTTP): <http://archive.xfce.org/src/xfce/tumbler/0.1/tumbler-0.1.29.tar.bz2>
- 
- Download MD5 sum: f844215c5e3918eae58abdd85f146780
- Download size: 500 KB
- Estimated disk space required: 14 MB
- Estimated build time: 0.2 SBU

## Tumbler Dependencies

### Required

D-Bus GLib Bindings-0.100.2 and Intltool-0.50.2

### Optional

cURL-7.30.0, FFmpegThumbnailer, FreeType-2.4.12, gdk-pixbuf-2.26.5, gst-plugins-base-0.10.36, GTK-Doc-1.18, libjpeg-turbo-1.2.1, libgsf-1.14.26, libopenraw, libpng-1.6.2 and Poppler-0.22.4

## Installation of Tumbler

Install Tumbler 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
```

## Contents

<b>Installed Programs:</b>	None
<b>Installed Library:</b>	libtumbler-1.so
<b>Installed Directories:</b>	/usr/include/tumbler-1, /usr/lib/tumbler-1 and /usr/share/gtk-doc/html/tumbler

## Short Descriptions

**libtumbler-1.so** contains functions that the Tumbler daemon uses to create thumbnail images.

# xfce4-appfinder-4.10.1

## Introduction to Xfce4 Appfinder

Xfce4 Appfinder is a tool to find and launch installed applications by searching the .desktop files installed on your system.

This package is known to build and work properly using an LFS-7.3 platform.

### Package Information

- Download (HTTP): <http://archive.xfce.org/src/xfce/xfce4-appfinder/4.10/xfce4-appfinder-4.10.1.tar.bz2>
- 
- Download MD5 sum: bea253956638e2df2dd950343b3b1b7b
- Download size: 436 KB
- Estimated disk space required: 6.6 MB
- Estimated build time: 0.1 SBU

### Xfce4 Appfinder Dependencies

#### Required

Garcon-0.2.1 and libxfce4ui-4.10.0

## Installation of Xfce4 Appfinder

Install Xfce4 Appfinder 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

<b>Installed Programs:</b>	xfce4-appfinder and xfrun4
<b>Installed Libraries:</b>	None
<b>Installed Directories:</b>	None

## Short Descriptions

<b>xfce4-appfinder</b>	Is a GTK+ 2 application that enables you to quickly search through the .desktop files installed on your system looking for an application.
------------------------	--

# xfce4-power-manager-1.2.0

## Introduction to Xfce4 Power Manager

The Xfce4 Power Manager is a power manager for the Xfce desktop, Xfce power manager manages the power sources on the computer and the devices that can be controlled to reduce their power consumption (such as LCD brightness level, monitor sleep, CPU frequency scaling). In addition, Xfce4 Power Manager provides a set of freedesktop-compliant DBus interfaces to inform other applications about current power level so that they can adjust their power consumption.

This package is known to build and work properly using an LFS-7.3 platform.

### Package Information

- Download (HTTP): <http://archive.xfce.org/src/xfce/xfce4-power-manager/1.2/xfce4-power-manager-1.2.0.tar.bz2>
- 
- Download MD5 sum: 935599b7114b0a4b0e2c9a5d6c72524c
- Download size: 1 MB
- Estimated disk space required: 19 MB
- Estimated build time: 0.2 SBU

### Xfce4 Power Manager Dependencies

#### Required

libnotify-0.7.5, UPower-0.9.20 and xfce4-panel-4.10.1

## Installation of Xfce4 Power Manager

Install Xfce4 Power Manager 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 docdir=/usr/share/doc/xfce4-power-manager-1.2.0 \
      imagesdir=/usr/share/doc/xfce4-power-manager-1.2.0/images install
```

## Contents

<b>Installed Programs:</b>	xfce4-power-information, xfce4-power-manager, xfce4-power-manager-settings and xfpm-power-backlight-helper
<b>Installed Libraries:</b>	None
<b>Installed Directories:</b>	None

## Short Descriptions

### xfce4-power-information

is a GTK+ 2 application that displays information about installed devices. It uses DBus to communicate with UPower which is required at runtime for **xfce4-power-information** to give any meaningful output.

**xfce4-power-manager**

is the Xfce Power Manager.

**xfce4-power-manager-settings**

is a utility that comes with the Xfce Power Manager to access/change its configuration.

**xfpm-power-backlight-helper**

is a command line utility to get or set the brightness of your screen.

# xfce4-settings-4.10.1

## Introduction to Xfce4 Settings

The Xfce4 Settings package contains a collection of programs that are useful for adjusting your Xfce preferences. This package is known to build and work properly using an LFS-7.3 platform.

### Package Information

- Download (HTTP): <http://archive.xfce.org/src/xfce/xfce4-settings/4.10/xfce4-settings-4.10.1.tar.bz2>
- 
- Download MD5 sum: eaa86dd86ef0dad9cf7af1ee2c831972
- Download size: 760 KB
- Estimated disk space required: 20 MB
- Estimated build time: 0.3 SBU

### Xfce4 Settings Dependencies

#### Required

Exo-0.10.2 and libxfc4ui-4.10.0

#### Recommended

libcanberra-0.30, libnotify-0.7.5 and libxklavier-5.3

## Installation of Xfce4 Settings

Install Xfce4 Settings 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

**--enable-sound-settings**: Use this switch to enable sound settings in GUI.

**--enable-pluggable-dialogs**: Use this switch to enable support for embedded settings dialogs.

## Contents

<b>Installed Programs:</b>	xfce4-accessibility-settings, xfce4-appearance-settings, xfce4-display-settings, xfce4-keyboard-settings, xfce4-mime-settings, xfce4-mouse-settings, xfce4-settings-editor, xfce4-settings-manager and xfsettingsd
<b>Installed Libraries:</b>	None
<b>Installed Directories:</b>	None

## Short Descriptions

<b>xfce4-accessibility-settings</b>	is a GTK+ 2 GUI to allow you to change some of your keyboard and mouse preferences.
<b>xfce4-appearance-settings</b>	is a GTK+ 2 GUI to allow you to change some of your theme, icon and font preferences.
<b>xfce4-display-settings</b>	is a GTK+ 2 GUI to allow you to change some of your screen preferences.
<b>xfce4-keyboard-settings</b>	is a GTK+ 2 GUI to allow you to change some of your keyboard preferences.
<b>xfce4-mime-settings</b>	is a GTK+ 2 GUI to allow you to change which applications are used to handle different mime types.
<b>xfce4-mouse-settings</b>	is a GTK+ 2 GUI to allow you to change some of your mouse preferences.
<b>xfce4-settings-editor</b>	is a GTK+ 2 GUI to allow you to change your preferences stored in Xfconf.
<b>xfce4-settings-manager</b>	is a GTK+ 2 GUI to allow you to change many of your Xfce preferences.
<b>xfsettingsd</b>	is the Xfce settings daemon.

# Xfdesktop-4.10.2

## Introduction to Xfdesktop

Xfdesktop is a desktop manager for the Xfce Desktop Environment. Xfdesktop sets the background image / color, creates the right click menu and window list and displays the file icons on the desktop using Thunar libraries.

This package is known to build and work properly using an LFS-7.3 platform.

## Package Information

- Download (HTTP): <http://archive.xfce.org/src/xfce/xfdesktop/4.10/xfdesktop-4.10.2.tar.bz2>
- 
- Download MD5 sum: 54a84ce63046c279fc3ec3f436d2f1b0
- Download size: 1.1 MB
- Estimated disk space required: 20 MB
- Estimated build time: 0.2 SBU

## Xfdesktop Dependencies

### Required

Exo-0.10.2, libwnck-2.30.7 and libxfce4ui-4.10.0

### Recommended

libnotify-0.7.5, startup-notification-0.12 and Thunar-1.6.3

## Installation of Xfdesktop

Install Xfdesktop 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

<b>Installed Programs:</b>	xfdesktop and xfdesktop-settings
<b>Installed Libraries:</b>	None
<b>Installed Directories:</b>	/usr/share/backgrounds/xfce and /usr/share/pixmaps/xfdesktop

## Short Descriptions

### xfdesktop

is the Xfce Desktop Environment's desktop manager.

### xfdesktop-settings

is a GTK+ 2 application that allows you to change your desktop background, some preferences for the righ click menu and what icons are displayed on the desktop.

# Xfwm4-4.10.1

## Introduction to Xfwm4

Xfwm4 is the window manager for Xfce.

This package is known to build and work properly using an LFS-7.3 platform.

### Package Information

- Download (HTTP): <http://archive.xfce.org/src/xfce/xfwm4/4.10/xfwm4-4.10.1.tar.bz2>
- 
- Download MD5 sum: 10de50c79ed944ccb9c87741062c2a76
- Download size: 1.1 MB
- Estimated disk space required: 30 MB
- Estimated build time: 0.3 SBU

## Xfwm4 Dependencies

### Required

libwnck-2.30.7, libxfc4ui-4.10.0 and libxfc4util-4.10.1

### Recommended

startup-notification-0.12

## Installation of Xfwm4

Install Xfwm4 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

<b>Installed Programs:</b>	xfwm4, xfwm4-settings, xfwm4-tweaks-settings and xfwm4-workspace-settings
<b>Installed Libraries:</b>	None
<b>Installed Directories:</b>	/usr/share/themes/Daloa, /usr/share/themes/Default, /usr/share/themes/Kokodi, /usr/share/themes/Moheli and /usr/share/xfwm4

## Short Descriptions

### xfwm4

is the Xfce window manager.

### xfwm4-settings

is a GTK+ 2 application that allows you to set some preferences such as your theme, keyboard shortcuts and mouse focus behaviour.

**xfwm4-tweaks-settings**

is a GTK+ 2 application that allows you to set some more preferences for Xfwm4.

**xfwm4-workspace-settings**

is a GTK+ 2 application that allows you to set your workspace preferences.

# xfce4-session-4.10.1

## Introduction to Xfce4 Session

Xfce4 Session is a session manager for Xfce. Its task is to save the state of your desktop (opened applications and their location) and restore it during a next startup. You can create several different sessions and choose one of them on startup.

This package is known to build and work properly using an LFS-7.3 platform.

## Package Information

- Download (HTTP): <http://archive.xfce.org/src/xfce/xfce4-session/4.10/xfce4-session-4.10.1.tar.bz2>
- 
- Download MD5 sum: 1757657c1d590aa6274b7b7cbba33352
- Download size: 1.3 MB
- Estimated disk space required: 21 MB
- Estimated build time: 0.3 SBU

## Xfce4 Session Dependencies

### Required

libwnck-2.30.7, libxfce4ui-4.10.0 and which-2.20

## Installation of Xfce4 Session

Install Xfce4 Session by running the following commands:

```
./configure --prefix=/usr \
            --sysconfdir=/etc \
            --disable-legacy-sm &&
make
```

This package does not come with a test suite.

Now, as the root user:

```
make install
```

## Command Explanations

--disable-legacy-sm: This switch disables legacy session management which isn't necessary on modern systems.

## Configuring Xfce4 Session

There are several optional run time dependencies for Xfce4: ConsoleKit-0.4.6, GnuPG-2.0.20, hicolor-icon-theme-0.12 and OpenSSH-6.2p1

To launch Xfce4 use the command **startxfce4**. If you have ConsoleKit-0.4.6 installed, use **startxfce4 --with-ck-launch**. ConsoleKit is required to perform any task that requires administrative access, including shut down and reboot.

## Contents

<b>Installed Programs:</b>	xfce4-session, xfce4-session-logout, xfce4-session-settings and xfce4-tips
<b>Installed Library:</b>	libxfsm-4.6.so
<b>Installed Directories:</b>	/usr/include/xfce4/xfce4-session-4.6, /usr/share/xfce4/tips and /usr/share/doc/xfce4-session-4.10.1

## Short Descriptions

<b>xfce4-session</b>	starts up the Xfce Desktop Environment.
<b>xfce4-session-logout</b>	logs out from Xfce.
<b>xfce4-session-settings</b>	is a GTK+ 2 GUI which allows you to alter your preferences for your Xfce Session.
<b>xfce4-tips</b>	is a GTK+ 2 GUI which displays tips when you log in to an Xfce Session.
<b>libxfsm-4.6.so</b>	contains the Xfce Session API functions.

## Chapter 34. Xfce Applications

This is a small collection of optional applications that add extra capabilities to your Xfce desktop.

# Midori-0.5.2

## Introduction to Midori

Midori is a lightweight web browser that uses WebKitGTK+.

This package is known to build and work properly using an LFS-7.3 platform.

## Package Information

- Download (HTTP): <http://archive.xfce.org/src/apps/midori/0.5/midori-0.5.2.tar.bz2>
- 
- Download MD5 sum: e2c1e0b617397ec9f9eef4fdb47b3565
- Download size: 1.1 MB
- Estimated disk space required: 50 MB (9 MB installed)
- Estimated build time: 0.3 SBU

## Midori Dependencies

### Required

WebKitGTK+-1.10.2 (configured --with-gtk=2.0) or WebKitGTK+-1.10.2 (configured --with-gtk=3.0) and Vala-0.18.1

### Recommended

libnotify-0.7.5 and librsvg-2.36.4

### Optional

*GNO*ME Keyring (2.x) or Gcr-3.6.2, GTK-Doc-1.18, libunique-1.1.6 or libunique-3.0.2 and libzeitgeist-0.3.18

## Installation of Midori

Install Midori by running the following commands:

```
./configure --prefix=/usr --docdir=/usr/share/doc/midori-0.5.2 &&
make
```

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

Now, as the root user:

```
make install
```

## Command Explanations

--enable-gtk3: Use this switch if you want to build Midori with GTK+ 3 dependencies.

--enable-apidocs: Use this switch if GTK-Doc is installed and you wish to build and install the API documentation.

**export NOCOLOR=1**: This prevents the build process outputting colored text. Colored text is fine if you're running the commands in a terminal, but if you compile it with a script and pipe the output to a log file the control characters that color the text can make the log file difficult to read with a text editor.

## Contents

<b>Installed Program:</b>	midori
<b>Installed Libraries:</b>	None
<b>Installed Directories:</b>	/etc/xdg/midori, /usr/include/midori-0.5, /usr/lib/midori, /usr/share/doc/midori-0.5.2 and /usr/share/midori

## Short Descriptions

**midori** is a lightweight WebKitGTK+ browser.

# Parole-0.5.0

## Introduction to Parole

Parole is a DVD/CD/music player for Xfce that uses GStreamer.

This package is known to build and work properly using an LFS-7.3 platform.

## Package Information

- Download (HTTP): <http://archive.xfce.org/src/apps/parole/0.5/parole-0.5.0.tar.bz2>
- 
- Download MD5 sum: d8adad20ee95dfca3082812ca44be122
- Download size: 632 KB
- Estimated disk space required: 18 MB
- Estimated build time: 0.3 SBU

## Parole Dependencies

### Required

gst-plugins-base-0.10.36 or gst-plugins-base-1.0.7 and libxfce4ui-4.10.0

### Recommended

libnotify-0.7.5 and taglib-1.8

## Installation of Parole

Install Parole 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-gstreamer=1.0`: Use this switch if you want to use gst-plugins-base-1.0.7 instead of gst-plugins-base-0.10.36.

## Using Parole

If you have installed GStreamer Plugins Ugly with support for libdvdnav and libdvdread and would like to use Parole to play a DVD, click Media> Open location and enter dvd:// into the box.

Similarly, to play a CD, click Media> Open location and enter cdda:// into the box.

## Contents

**Installed Program:** parole  
**Installed Libraries:** None  
**Installed Directories:** /usr/include/parole, /usr/lib/parole-0 and /usr/share/parole

## Short Descriptions

**parole** is a GTK+ 2 media player that uses GStreamer.

# gtksourceview-2.10.5

## Introduction to GtkSourceView

The GtkSourceView package contains libraries used for extending the GTK+ 2 text functions to include syntax highlighting.

This package is known to build and work properly using an LFS-7.2 platform.

## Package Information

- Download (HTTP): <http://ftp.gnome.org/pub/gnome/sources/gtksourceview/2.10/gtksourceview-2.10.5.tar.gz>
- Download (FTP): <ftp://ftp.gnome.org/pub/gnome/sources/gtksourceview/2.10/gtksourceview-2.10.5.tar.gz>
- Download MD5 sum: 220db5518e3f7fa06c980f057b22ba62
- Download size: 2.0 MB
- Estimated disk space required: 31 MB
- Estimated build time: 0.3 SBU

## GtkSourceView Dependencies

### Required

GTK+-2.24.17 and Intltool-0.50.2

### Optional

GTK-Doc-1.18

## Installation of GtkSourceView

Install GtkSourceView 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**: Use this parameter if GTK-Doc is installed and you wish to rebuild and install the API documentation.

## Contents

<b>Installed Programs:</b>	None
<b>Installed Library:</b>	libgtksourceview-2.0.so
<b>Installed Directories:</b>	/usr/include/gtksourceview-2.0, /usr/share/gtk-doc/html/gtksourceview-2.0 and /usr/share/gtksourceview-2.0

## Short Descriptions

`libgtksourceview-2.0.so` contains function extensions for the GtkTextView widget.

# Mousepad-0.3.0

## Introduction to Mousepad

Mousepad is a simple GTK+ 2 text editor for the Xfce desktop environment.

This package is known to build and work properly using an LFS-7.2 platform.

## Package Information

- Download (HTTP): <http://archive.xfce.org/src/apps/mousepad/0.3/mousepad-0.3.0.tar.bz2>
- 
- Download MD5 sum: dcfcdfaa8a19c89f35d5f6f64753e6e1
- Download size: 472 KB
- Estimated disk space required: 9.6 MB
- Estimated build time: 0.1 SBU

## Mousepad Dependencies

### Required

D-Bus GLib Bindings-0.100.2 and gtksourceview-2.10.5

## Installation of Mousepad

Install Mousepad 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

<b>Installed Program:</b>	mousepad
<b>Installed Libraries:</b>	None
<b>Installed Directories:</b>	None

## Short Descriptions

**mousepad** is a simple GTK+ 2 text editor.

# Vte-0.28.2

## Introduction to Vte

Vte is a library (libvte) implementing a terminal emulator widget for GTK+ 2, and a minimal demonstration application (vte) that uses libvte.

This package is known to build and work properly using an LFS-7.2 platform.

## Package Information

- Download (HTTP): <http://ftp.gnome.org/pub/gnome/sources/vte/0.28/vte-0.28.2.tar.xz>
- Download (FTP): <ftp://ftp.gnome.org/pub/gnome/sources/vte/0.28/vte-0.28.2.tar.xz>
- Download MD5 sum: 497f26e457308649e6ece32b3bb142ff
- Download size: 940 KB
- Estimated disk space required: 33 MB
- Estimated build time: 0.5 SBU

## Vte Dependencies

### Required

GTK+-2.24.17 and Intltool-0.50.2

### Optional

gobject-introspection-1.34.2, GTK-Doc-1.18 and PyGTK-2.24.0

## Installation of Vte

Install Vte by running the following commands:

```
./configure --prefix=/usr \
            --libexecdir=/usr/lib/vte \
            --disable-static  &&
make
```

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

Now, as the root user:

```
make install
```

## Command Explanations

**--disable-static**: This switch prevents installation of static versions of the libraries.

## Contents

<b>Installed Program:</b>	vte
<b>Installed Library:</b>	libvte.so
<b>Installed Directories:</b>	/usr/include/vte-0.0, /usr/lib/vte, /usr/share/gtk-doc/html/vte-0.0 and /usr/share/vte

## Short Descriptions

**vte** is a simple terminal emulator.  
**libvte.so** contains the Vte API functions.

# xfce4-terminal-0.6.2

## Introduction to Xfce4 Terminal

Xfce4 Terminal is a GTK+ 2 terminal emulator. This is useful for running commands or programs in the comfort of an Xorg window; you can drag and drop files into the Xfce4 Terminal or copy and paste text with your mouse.

This package is known to build and work properly using an LFS-7.3 platform.

## Package Information

- Download (HTTP): <http://archive.xfce.org/src/apps/xfce4-terminal/0.6/xfce4-terminal-0.6.2.tar.bz2>
- 
- Download MD5 sum: d5cdb302bd770c9f2d30262c26639006
- Download size: 824 KB
- Estimated disk space required: 15 MB
- Estimated build time: 0.2 SBU

## Xfce4 Terminal Dependencies

### Required

libxfce4ui-4.10.0 and Vte-0.28.2

## Installation of Xfce4 Terminal

Install Xfce4 Terminal 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

<b>Installed Program:</b>	xfce4-terminal
<b>Installed Libraries:</b>	None
<b>Installed Directory:</b>	/usr/share/xfce4/terminal

## Short Descriptions

**xfce4-terminal** is a GTK+ 2 terminal emulator.

# Xfburn-0.4.3

## Introduction to Xfburn

Xfburn is a GTK+ 2 GUI frontend for Libisoburn. This is useful for creating CDs and DVDs from files on your computer or ISO images downloaded from elsewhere.

This package is known to build and work properly using an LFS-7.3 platform.

## Package Information

- Download (HTTP): <http://archive.xfce.org/src/apps/xfburn/0.4/xfburn-0.4.3.tar.bz2>
- 
- Download MD5 sum: 147cdc2d909e751125be16103b8dc81f
- Download size: 640 KB
- Estimated disk space required: 17 MB
- Estimated build time: 0.3 SBU

## Xfburn Dependencies

### Required

Exo-0.10.2, libxfcegui4-4.10.0 and libisoburn-1.3.0

## Installation of Xfburn

Install Xfburn by running the following commands:

```
sed -i '/<glib.h>/a#include <glib-object.h>' xfburn/xfburn-settings.h &&
./configure --prefix=/usr --disable-static &&
make
```

This package does not come with a test suite.

Now, as the root user:

```
make install
```

## Command Explanations

**sed -i '/<glib.h>/a#include <glib-object.h>' xfburn/xfburn-settings.h:** This sed is needed to compile with Glib 2.32 installed.

**--disable-static:** This switch prevents installation of static versions of the libraries.

## Contents

<b>Installed Program:</b>	xfburn
<b>Installed Libraries:</b>	None
<b>Installed Directory:</b>	/usr/share/xfburn

## Short Descriptions

**xfburn** is a GTK+ 2 application for creating CDs and DVDs.

# Ristretto-0.6.3

## Introduction to Ristretto

Ristretto is a fast and lightweight image viewer for the Xfce desktop.

This package is known to build and work properly using an LFS-7.2 platform.

## Package Information

- Download (HTTP): <http://archive.xfce.org/src/apps/ristretto/0.6/ristretto-0.6.3.tar.bz2>
- 
- Download MD5 sum: 6b8c9a5d7ed319e4c84a9fefaa18792c
- Download size: 488 KB
- Estimated disk space required: 11 MB
- Estimated build time: 0.2 SBU

## Ristretto Dependencies

### Required

libexif-0.6.21 and libxfce4ui-4.10.0

## Installation of Ristretto

Install Ristretto 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

<b>Installed Program:</b>	ristretto
<b>Installed Libraries:</b>	None
<b>Installed Directories:</b>	None

## Short Descriptions

**ristretto** is a fast and lightweight image viewer.

# libunique-1.1.6

## Introduction to libunique

The libunique package contains a library for writing single instance applications.

This package is known to build and work properly using an LFS-7.2 platform.

## Package Information

- Download (HTTP): <http://ftp.gnome.org/pub/gnome/sources/libunique/1.1/libunique-1.1.6.tar.bz2>
- Download (FTP): <ftp://ftp.gnome.org/pub/gnome/sources/libunique/1.1/libunique-1.1.6.tar.bz2>
- Download MD5 sum: 7955769ef31f1bc4f83446dbb3625e6d
- Download size: 328 KB
- Estimated disk space required: 7.0 MB
- Estimated build time: 0.2 SBU

## Additional Downloads

- Required patch: [http://www.linuxfromscratch.org/patches/blfs/svn/libunique-1.1.6-upstream\\_fixes-1.patch](http://www.linuxfromscratch.org/patches/blfs/svn/libunique-1.1.6-upstream_fixes-1.patch)

## libunique Dependencies

### Required

GTK+-2.24.17

### Optional

gobject-introspection-1.34.2 and GTK-Doc-1.18

## Installation of libunique

Install libunique by running the following commands:

```
patch -Np1 -i ../libunique-1.1.6-upstream_fixes-1.patch &&
autoreconf -fi &&
./configure --prefix=/usr \
            --disable-dbus \
            --disable-static &&
make
```

This package does not come with a test suite.

Now, as the root user:

```
make install
```

## Command Explanations

**--disable-dbus**: This switch disables D-Bus backend in favor of the GDBus backend.

**--disable-static**: This switch prevents installation of static versions of the libraries.

--enable-gtk-doc: Use this parameter if GTK-Doc is installed and you wish to rebuild and install the API documentation.

## Contents

<b>Installed Programs:</b>	None
<b>Installed Library:</b>	libunique-1.0.so
<b>Installed Directories:</b>	/usr/include/unique-1.0 and /usr/share/gtk-doc/html/unique

## Short Descriptions

**libunique-1.0.so** contains the libunique API functions for single instance support.

# xfce4-mixer-4.10.0

## Introduction to Xfce4 Mixer

Xfce4 Mixer is a volume control application for the Xfce desktop based on GStreamer.

This package is known to build and work properly using an LFS-7.2 platform.

### Package Information

- Download (HTTP): <http://archive.xfce.org/src/apps/xfce4-mixer/4.10/xfce4-mixer-4.10.0.tar.bz2>
- 
- Download MD5 sum: e47d5b3e873fdee3fa80d309a5f53e9c
- Download size: 452 KB
- Estimated disk space required: 9.3 MB
- Estimated build time: 0.2 SBU

## Xfce4 Mixer Dependencies

### Required

gst-plugins-base-0.10.36, libunique-1.1.6 and xfce4-panel-4.10.1

### Optional

*Keybinder*

## Installation of Xfce4 Mixer

Install Xfce4 Mixer 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

<b>Installed Program:</b>	xfce4-mixer
<b>Installed Libraries:</b>	None
<b>Installed Directories:</b>	/usr/share/pixmaps/xfce4-mixer and /usr/share/xfce4-mixer

## Short Descriptions

**xfce4-mixer** is an audio mixer which allows you to adjust input and output volume levels on your sound cards.

# xfce4-notifyd-0.2.4

## Introduction to the Xfce4 Notification Daemon

The Xfce4 Notification Daemon is a small program that implements the "server-side" portion of the Freedesktop desktop notifications specification. Applications that wish to pop up a notification bubble in a standard way can use Xfce4-Notifyd to do so by sending standard messages over D-Bus using the org.freedesktop.Notifications interface.

This package is known to build and work properly using an LFS-7.3 platform.

### Package Information

- Download (HTTP): <http://archive.xfce.org/src/apps/xfce4-notifyd/0.2/xfce4-notifyd-0.2.4.tar.bz2>
- 
- Download MD5 sum: 094be6f29206aac8299f27084e284e88
- Download size: 356 KB
- Estimated disk space required: 5.3 MB
- Estimated build time: 0.2 SBU

## The Xfce4 Notification Daemon Dependencies

### Required

libnotify-0.7.5 and libxfc4ui-4.10.0

## Installation of the Xfce4 Notification Daemon

Install the Xfce4 Notification Daemon 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
```

You can test the notification daemon with the command **notify-send**:

```
notify-send -i info Information "Hi ${USER}, This is a Test"
```

## Contents

<b>Installed Program:</b>	xfce4-notifyd-config
<b>Installed Libraries:</b>	None
<b>Installed Directories:</b>	/usr/share/themes/Default/xfce-notify-4.0, /usr/share/themes/Smoke/xfce-notify-4.0 and /usr/share/themes/ZOMG-PONIES!/xfce-notify-4.0

## Short Descriptions

<b>xfce4-notifyd-config</b>	is a GTK+ 2 GUI that allows you to change some of your preferences (theme and screen position) for the notifications that the Xfce4 Notification Daemon displays.
-----------------------------	---

## **Part X. X Software**

## Chapter 35. Office Programs

This chapter is a collection of programs that are useful for viewing or editing office documents. Some specialise in doing one thing (such as word processing or manipulating a spreadsheet). Libre Office is a suite of programs that can manipulate many different formats including powerpoint presentations.

# AbiWord-2.9.4

## Introduction to AbiWord

AbiWord is a word processor which is useful for writing reports, letters and other formatted documents.

This package is known to build and work properly using an LFS-7.2 platform.

## Package Information

- Download (HTTP): <http://www.abisource.com/downloads/abiword/2.9.4/source/abiword-2.9.4.tar.gz>
- 
- Download MD5 sum: 62e59bea4279c7ec48de8824aea8dc58
- Download size: 10 MB
- Estimated disk space required: 1.8 GB (160 MB installed)
- Estimated build time: 6.6 SBU

## Additional Downloads

- AbiWord Docs: <http://www.abisource.com/downloads/abiword/2.9.4/source/abiword-docs-2.9.4.tar.gz>
- AbiWord Docs MD5 sum: 1.4 MB
- AbiWord Docs size: 4e694a7ba6bf8294b3498118f2b6eb27

## AbiWord Dependencies

### Required

Boost-1.53.0, FriBidi-0.19.5, GOffice-0.10.2 and wv-1.2.9

### Recommended

enchant-1.6.0

### Optional

*Aiksaurus, D-Bus GLib Bindings-0.100.2, evolution-data-server-3.6.4, gobject-introspection-1.34.2, GtkMathView, libchamplain, libgcrypt-1.5.2, libical-1.0, libsoup-2.40.3, libwmf, libwpd, libwpg, libwps, Link Grammar Parser, Loudmouth, Redland-1.0.16, telepathy-glib-0.20.2, OTS Psiconv and Valgrind*



### Note

To enable many of the optional dependencies, review the information from **./configure --help** for the necessary switches you must pass to the **configure** script.

## Installation of AbiWord

Install AbiWord by running the following commands:

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

This program does not come with a functional test suite.

Now, as the root user:

```
make install
```

If you wish to install the local help files, untar and build them first

```
tar -xf ..abiword-docs-2.9.4.tar.gz &&
cd abiword-docs-2.9.4 &&
./configure --prefix=/usr &&
make
```

and then, as the root user:

```
make install
```

## Command Explanations

--disable-collab-backend-telepathy: This switch disables Telepathy Colab backend which causes build to fail when using recent versions of telepathy-glib-0.20.2.

--without-evolution-data-server: This switch disables AbiWord Evolution Data Server support which is known to fail when using recent versions of evolution-data-server-3.6.4.

--enable-plugins="collab openxml goffice grammar": Build some or all of the collab plugins. The openxml plugin enables Abiword to open some .docx files. The grammar plugin requires *Link Grammar Parser*

## Configuring AbiWord

### Config File

~/.AbiSuite/templates/normal.awt

### Configuration Information

Choose the right template for your language and locale from the list produced by the following command:

```
ls /usr/share/abiword-2.9/templates
```

Create the folder ~/.AbiSuite/templates then copy the normal.awt you want into it:

```
install -v -m750 -d ~/.AbiSuite/templates &&
install -v -m640      /usr/share/abiword-2.9/templates/normal.awt-<lang> \
                           ~/.AbiSuite/templates/normal.awt
```

Change <lang> by the above command to fit the name of the file you want.

If you are using multiple languages, you may need to edit the template to use a font with greater coverage (e.g. one of the *DejaVu fonts*), because Abiword does not use fontconfig and can only display glyphs that are provided in the chosen font.

If you have desktop-file-utils-0.21 installed, you should run the **update-desktop-database** command to update the mimeinfo cache and allow the Help system to work.

## Contents

**Installed Program:** abiword  
**Installed Library:** libabiword-2.9.so  
**Installed Directories:** /usr/include/abiword-2.9, /usr/lib/abiword-2.9 and /usr/share/abiword-2.9

## Short Descriptions

**abiword** is the word processor, a wrapper for the functions in libabiword-2.9 - it can also be used on the command line, see **man 1 abiword**.  
**libabiword-2.9.so** provides functions to access MS Word documents.

# Gnumeric-1.12.2

## Introduction to Gnumeric

The Gnumeric package contains a spreadsheet program which is useful for mathematical analysis.

This package is known to build and work properly using an LFS-7.3 platform.

### Package Information

- Download (HTTP): <http://ftp.gnome.org/pub/gnome/sources/gnumeric/1.12/gnumeric-1.12.2.tar.xz>
- Download (FTP): <ftp://ftp.gnome.org/pub/gnome/sources/gnumeric/1.12/gnumeric-1.12.2.tar.xz>
- Download MD5 sum: 711daa98da0138203fb2f8dc4dcddb3c
- Download size: 15 MB
- Estimated disk space required: 290 MB
- Estimated build time: 2.6 SBU

## Gnumeric Dependencies

### Required

GOOffice-0.10.2

### Optional

*dbletter* (for PDF docs), gobject-introspection-1.34.2, Guile-2.0.9, *libgda*, *Mono*, *pxlib*, *Psiconv* and PyGObject-3.4.2



### Note

Though only a run-time dependency, if you don't install the Yelp-3.6.2 package, the built-in help functionality in Gnumeric will not be available.

## Installation of Gnumeric

Install Gnumeric by running the following commands:

```
sed -e "s@zz-application/zz-winassoc-xls;@@" -i gnumeric.desktop.in &&
./configure --prefix=/usr &&
make
```

This package requires that it is installed before the test suite is run.

Now, as the root user:

```
make install
```

To test the results, issue **make check**. All 13 tests should pass (many tests are skipped because the xls files don't exist).

## Command Explanations

**sed -e "s@zz-application/zz-winassoc-xls;@@" ...:** This sed removes invalid mime type from the .desktop file.

**--enable-pdfdocs:** Use this switch if you have installed dbletter and wish to create PDF docs.

## Contents

<b>Installed Programs:</b>	gnumeric, gnumeric-1.12.2, ssconvert, ssgrep and ssindex
<b>Installed Libraries:</b>	libsspreadsheet.so
<b>Installed Directories:</b>	/usr/include/libsspreadsheet-1.10, /usr/lib/gnumeric, /usr/lib/goffice/0.10/plugins/gnumeric, /usr/share/gnome/help/gnumeric, /usr/share/gnumeric and /usr/share/omf/gnumeric

## Short Descriptions

<b>gnumeric</b>	is a symlink to <b>gnumeric-1.12.2</b> .
<b>gnumeric-1.12.2</b>	is GNOME's spreadsheet application.
<b>ssconvert</b>	is a command line utility to convert spreadsheet files between various spreadsheet file formats.
<b>ssgrep</b>	is a command line utility to search spreadsheets for strings.
<b>ssindex</b>	is a command line utility to generate index data for spreadsheet files.

# GnuCash-2.4.11

## Introduction to GnuCash

GnuCash is a personal finance manager.

This package is known to build and work properly using an LFS-7.2 platform.

## Package Information

- Download (HTTP): <http://downloads.sourceforge.net/gnucash/gnucash-2.4.11.tar.bz2>
- 
- Download MD5 sum: e59f94a8c4cf41f47a9e74ba725bde45
- Download size: 9 MB
- Estimated disk space required: 207 MB
- Estimated build time: 2.0 SBU

## Additional Downloads

- Required patch: [http://www.linuxfromscratch.org/patches/blfs/svn/gnucash-2.4.11-guile-2\\_fixes-1.patch](http://www.linuxfromscratch.org/patches/blfs/svn/gnucash-2.4.11-guile-2_fixes-1.patch)
- Optional Help documentation: <http://downloads.sourceforge.net/gnucash/gnucash-docs-2.4.1.tar.gz>
- Download MD5 sum: 38daeb3b15f296726ee8124122040f08
- Download size: 32.5 MB
- Estimated disk space required: 27 MB
- Estimated build time: 0.5 SBU

## GnuCash Dependencies

### Required

Guile-2.0.9, libgnomeui-2.24.5, gnome-vfs-2.24.4, SLIB-3b3 and GOffice-0.8.17.

WebKitGTK+-1.10.2 (configured --with-gtk=2.0).

### Optional

*libdbi* (and *libdbi drivers*) and *Guile-www*

### Optional (Required for the Help System)

Rarian-0.8.1 and Yelp-3.6.2 (run-time requirement to view the Help documents).

### Optional (for On-Line Banking)

*LibOFX* (requires OpenSP-1.5.2 and cURL-7.30.0), *KtoBlzCheck* and *AqBanking* (requires *Gwenhywfar* and *libchipcard3*)

## Installation of GnuCash

Install GnuCash by running the following commands:

```
patch -Np1 -i ../gnucash-2.4.11-guile-2_fixes-1.patch &&
./configure --prefix=/usr \
            --sysconfdir=/etc/gnome \
            --disable-dbi \
            --with-html-engine=webkit &&
make
```

If you wish to create the API documentation in HTML format, you must have Doxygen-1.8.4 and Graphviz-2.30.1 installed, then issue:

```
make doc
```

If you wish to create the API Design Guide in several formats, you must have texlive-20120701 installed and issue:

```
make -C src/doc/design html pdf ps
```

The test suite is currently broken due to problems with Guile 2.

Now, as the root user:

```
make install
```

If you want to install the Help documentation system, you must have Yelp-3.6.2 and Rarian-0.8.1 installed in order to view the Help documents. Unpack the additional tarball, change into the gnucash-docs-2.4.1 source directory and issue the following commands as an unprivileged user:

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

HTML versions of the Users Guide can be created if the DocBook XML tools are installed (libxslt-1.1.28, docbook-xml-4.5 and docbook-xsl-1.77.1). A PDF version of the Users Guide can be created if you have DocBook-utils-0.6.14, and fop-1.1 installed. Issue the following commands to create the documentation:

```
make -C guide html &&
make -C guide pdf
```

Now, as the root user:

```
make install
```

If you built the Users Guide, install it as the root user:

```
mkdir -p /usr/share/doc/gnucash-2.4.1 &&
cp -v -R guide/C/gnucash-guide/* /usr/share/doc/gnucash-2.4.1 &&
cp -v guide/C/gnucash-guide.pdf /usr/share/doc/gnucash-2.4.1
```

## Command Explanations

`--sysconfdir=/etc/gnome`: This installs configuration files in `/etc/gnome/gnucash` instead of `/usr/etc/gnucash`.

--with-html-engine=webkit: Use WebKitGTK+-1.10.2 (configured --with-gtk=2.0) instead of gtkhtml: the default is Gtkhtml-3 which does not build on current Glib2 without various changes, and GtkHTML-4.6.4 is not recognised by this application.

--disable-dbi: Add this option if you've not installed libdbi and one or more of its database drivers.

## Configuring GnuCash

### Configuration Information

If you wish to use GnuCash to retrieve stock price quotes, you'll need to install the following Perl modules: libwww-perl-6.04, Date::Manip-6.38, HTML::Parser-3.69, HTML::TableExtract-2.11, Crypt::SSLeay-0.64 and Finance::Quote-1.18. Alternatively, you can run the **gnc-fq-update** script as the `root` user.

## Contents

<b>Installed Programs:</b>	gnc-fq-check, gnc-fq-dump, gnc-fq-helper, gnc-fq-update, gnucash, gnucash-env, gnucash-make-guids, gnucash-valgrind and update-gnucash-gconf
<b>Installed Libraries:</b>	libgnc-backend-sql.so, libgnc-backend-xml-utils.so, libgnc-business-ledger.so, libgnc-core-utils.so, libgnc-gnome.so, libgnc-module.so, libgnc-qof.so and numerous support libraries installed in /usr/lib/gnucash
<b>Installed Directories:</b>	/opt/gnome/gnucash, /usr/include/gnucash, /usr/lib/gnucash, /usr/libexec/gnucash and /usr/share/doc/gnucash-2.4.11.

## Short Descriptions

**gnucash** is a personal finance manager.

# LibreOffice-4.0.3

## Introduction to LibreOffice

LibreOffice is a full-featured office suite. It is largely compatible with Microsoft Office and is descended from OpenOffice.org.

This package is known to build and work properly using an LFS-7.3 platform.

## Package Information

- Core Download: <http://download.documentfoundation.org/libreoffice/src/4.0.3/libreoffice-4.0.3.3.tar.xz>
- Core Download MD5 sum: 7bcde561375f3bbce08f6d05451c8ad7
- Core Download size: 100 MB
- Estimated disk space required: 6.6 GB (450 MB installed)
- Estimated build time: 80 SBU

## Additional Downloads

- Dictionaries: <http://download.documentfoundation.org/libreoffice/src/4.0.3/libreoffice-dictionaries-4.0.3.3.tar.xz>
- Dictionaries MD5 sum: c2f0ce1e9e08a068dc270989054920ae
- Dictionaries size: 35 MB
- Help Files: <http://download.documentfoundation.org/libreoffice/src/4.0.3/libreoffice-help-4.0.3.3.tar.xz>
- Help Files MD5 sum: 994b1f3015668335c30b53ddd3d60dc8
- Help Files size: 1.8 MB
- Translations: <http://download.documentfoundation.org/libreoffice/src/4.0.3/libreoffice-translations-4.0.3.3.tar.xz>
- Translations MD5 sum: 05b9ba0e86181bda3afeadcaba9202a3
- Translations size: 123 MB

## Additional Downloads

- Required patch: [http://www.linuxfromscratch.org/patches/blfs/svn/libreoffice-4.0.3.3-system\\_boost-1.patch](http://www.linuxfromscratch.org/patches/blfs/svn/libreoffice-4.0.3.3-system_boost-1.patch)

## LibreOffice Dependencies

### Required

Gperf-3.0.4, GTK+-2.24.17, Perl Modules Archive::Zip-1.30 and XML::Parser-2.41, UnZip-6.0, Wget-1.14, which-2.20 and Zip-3.0

### Recommended



#### Note

Most of these packages are recommended because if they're not installed, the build process will compile and install its own (often older) version.

Boost-1.53.0, Cups-1.6.2, cURL-7.30.0, D-Bus-1.6.10, expat-2.1.0, gst-plugins-base-0.10.36 or gst-plugins-base-1.0.7, ICU-51.1, Little CMS-2.4, librsvg-2.36.4, libxml2-2.9.1 and libxslt-1.1.28, MesaLib-9.1.3, neon-0.29.6, NSS-3.14.3, OpenLDAP-2.4.35 (client only), OpenSSL-1.0.1e, Poppler-0.22.4, Python-3.3.2 (used to build the translations), Redland-1.0.16 and unixODBC-2.3.1

**Optional**

BlueZ-4.101, Cppunit, Graphite2, GTK+-3.6.4, Hunspell, Hyphen, kdelibs-4.10.3, libwpd, libwpg, libwps, MySQL-5.6.11, Mythes, PostgreSQL-9.2.4, SANE-1.0.23 and Zenity-3.6.0

**Installation of LibreOffice****Warning**

Untarring the libreoffice-4.0.3.3 tarball as `root` has the curious effect of changing the ownership of the *parent* directory to a user with numerical id 11012 and with the permissions set to allow read, write and execute for that user only! If you untarred as `root` in your home folder you could end up unable to log in again. If you untarred it in `/usr` you would find your user account unable to access any file in `/usr`.

You can avoid this unpleasantness by *not* untarring it as `root`. If you must untar it as `root` pass the option `--no-overwrite-dir` to `tar`. This is the default when you untar as a user but has to be passed as an option when untaring as `root`:

```
tar -xf libreoffice-4.0.3.3.tar.xz --no-overwrite-dir &&
cd libreoffice-4.0.3.3
```

Unpack the dictionaries and help files and create symlinks to tarballs from the source directory so they won't get downloaded again:

```
install -dm755 src &&

tar -xvf ../libreoffice-dictionaries-4.0.3.3.tar.xz --no-overwrite-dir --strip-components=1 &&
tar -xvf ../libreoffice-help-4.0.3.3.tar.xz --no-overwrite-dir --strip-components=1 &&

ln -sv ../../libreoffice-dictionaries-4.0.3.3.tar.xz src/ &&
ln -sv ../../libreoffice-help-4.0.3.3.tar.xz src/
```

If you have downloaded the translations tarball, unpack it:

```
tar -xvf ../libreoffice-translations-4.0.3.3.tar.xz --no-overwrite-dir --strip-components=1 &&
ln -sv ../../libreoffice-translations-4.0.3.3.tar.xz src/
```

**Note**

During the build process, some packages will be downloaded (including the ones listed as recommended and optional dependencies) if they are not present on the system. Doing so, build time may be different for everyone.

Prepare LibreOffice for compilation by running the following commands:

```
sed -e "/gzip -f/d" \
-e "s|.gz|.1|g" \
-i bin/distro-install-desktop-integration &&
sed -e "/distro-install-file-lists/d" -i Makefile.top &&
patch -Np1 -i ../libreoffice-4.0.3.3-system_boost-1.patch &&
./autogen.sh --prefix=/usr \
--sysconfdir=/etc \
--with-vendor="BLFS" \
--with-lang="" \
--with-alloc=system \
--without-java \
--disable-gconf \
--disable-odk \
--disable-postgresql-sdbc \
--enable-python=system \
--with-system-boost \
--with-system-cairo \
--with-system-curl \
--with-system-expat \
--with-system-icu \
--with-system-jpeg \
--with-system-lcms2 \
--with-system-libpng \
--with-system-libxml \
--with-system-mesa-headers \
--with-system-neon \
--with-system-nss \
--with-system-odbc \
--with-system-openldap \
--with-system-openssl \
--with-system-poppler \
--with-system-redland \
--with-system-zlib \
--with-parallelism=$(getconf _NPROCESSORS_ONLN)
```

The instructions below will only build the package without running any unit tests. If you prefer to run the unit tests, replace **make build** with **make**

Build the package:

```
make build
```

Now, as the root user:

```
make distro-pack-install
```

## Command Explanations

**sed -e ...:** First sed prevents compression of the manual pages and the second one prevents a script that causes install to fail from running.

**--with-vendor=BLFS:** This switch sets BLFS as the vendor which is mentioned when you click "About" on the toolbar.

**--with-lang="en-US pt-BR":** This switch sets what languages to support. en-US is always needed. To list several languages, separate them with a space. For all languages, use --with-lang=ALL

For a list of the available languages, run: **ls translations/source** after you have extracted the translations tarball.

**--with-alloc=system:** This switch tells LibreOffice to use system allocator instead of the internal one.

**--without-java:** This switch disables Java support in LibreOffice.

**--disable-gconf:** This switch disables compiling LibreOffice with the deprecated GNOME configuration system support.

**--disable-odk:** This switch disables installing the office development kit. Remove if you want to develop a LibreOffice based application.

**--disable-postgresql-sdbc:** This switch disables compiling LibreOffice with the ability to connect to a PostgreSQL database. Remove it if you would like LibreOffice to be able to connect to a PostgreSQL database. If you have installed PostgreSQL on your system and would like LibreOffice to use that rather than compile its own copy, use the --with-system-postgresql switch.

**--enable-python=system:** This switch tells LibreOffice to use installed Python 3 to build the translations instead of the bundled one. If you don't need to build any translations, you can use --disable-python instead.

**--with-system-\*:** These switches prevent LibreOffice from trying to compile its own versions of these dependencies. If you've not installed some of the dependencies, remove the corresponding switches.

**--with-parallelism=\$(getconf \_NPROCESSORS\_ONLN):** This switch tells LibreOffice to use all your CPUs to compile in parallel and speed up the build.

**--disable-cups:** Use this switch if you don't need printing support.

**--disable-gstreamer-0.10:** Use this switch if you've not installed gst-plugins-base-0.10.36.

**--enable-gstreamer:** Use this switch if you want to use gst-plugins-base-1.0.7 instead of gst-plugins-base-0.10.36 for the avmedia module.

**--enable-gtk3:** Use this switch if you want to build the GTK+ 3 integration module.

**--enable-kde4:** Use this switch if you want to build the KDE integration module.

## Contents

**Installed Programs:** libreoffice, lobase, locale, lodraw, loffice, lofromtemplate, loiimpress, lomath, loweb, lowriter, soffice and unopkg

**Installed Libraries:** None

**Installed Directory:** /usr/lib/libreoffice

## Short Descriptions

**lobase** is a database manager.

<b>locale</b>	is a spreadsheet program.
<b>lodraw</b>	is a vector graphics editor and diagramming tool.
<b>loimpress</b>	can edit and display PowerPoint presentations.
<b>lomath</b>	is a mathematical formula editor.
<b>lowriter</b>	is a word processor.
<b>unopkg</b>	is a tool to manage LibreOffice extensions from the command line.

## Chapter 36. 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.

# SeaMonkey-2.13.2

## Introduction to SeaMonkey

SeaMonkey is a browser suite, the Open Source sibling of Netscape. It includes the browser, composer, mail and news clients, and an IRC client. It is the follow-on to the Mozilla browser suite.

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 Firefox-21.0 and Thunderbird-17.0.6. Both are based on the Mozilla source code.

This package is known to build and work properly using an LFS-7.2 platform.

## Package Information

- Download (HTTP): <http://ftp.mozilla.org/pub.mozilla.org/seamonkey/releases/2.13.2/source/seamonkey-2.13.2-source.tar.bz2>
- Download (FTP): <ftp://ftp.mozilla.org/pub.mozilla.org/seamonkey/releases/2.13.2/source/seamonkey-2.13.2-source.tar.bz2>
- Download MD5 sum: eda9307817dfb0e726e13d336cdb6440
- Download size: 107 MB
- Estimated disk space required: 1.2 GB (47 MB installed)
- Estimated build time: 28 SBU

## SeaMonkey Dependencies

### Required

alsa-lib-1.0.27, GTK+-2.24.17, Zip-3.0 and UnZip-6.0.

### Recommended

yasm-1.2.0 or libvpx-1.1.0 (to allow SeaMonkey to play webm videos).

### Optional

D-Bus GLib Bindings-0.100.2, startup-notification-0.12, SQLite-3.7.16.2, Hunspell, libevent-2.0.21, Doxygen-1.8.4, gnome-vfs-2.24.4 and libgnomeui-2.24.5 (for integration with Gnome 2), libnotify-0.7.5, NSPR-4.9.6, NSS-3.14.3, Wireless Tools-29, Valgrind (only for testing the jemalloc code) and Wget-1.14

## Installation of SeaMonkey

The configuration of SeaMonkey is accomplished by creating a `mozconfig` file containing the desired configuration options. A default `mozconfig` file is created below. To see the entire list of available configuration options (and an abbreviated description of each one), issue `./configure --help`. You may also wish to review the entire file and uncomment any other desired options. Create the file by issuing the following command:

```
cat > mozconfig << EOF
# If you have a multicore machine you can speed up the build by running
# several jobs at once, but if you have a single core, delete this line:
```

```

mk_add_options MOZ_MAKE_FLAGS="-j$(getconf _NPROCESSORS_ONLN)"

# If you have installed Yasm delete this option:
ac_add_options --disable-webm

# If you have installed DBus-Glib delete this option:
ac_add_options --disable-dbus

# If you have installed wireless-tools delete this option:
ac_add_options --disable-necko-wifi

# If you have installed libnotify delete this option:
ac_add_options --disable-libnotify

# Uncomment these if you have installed them:
# ac_add_options --enable-startup-notification
# ac_add_options --enable-system-hunspell
# ac_add_options --enable-system-sqlite
# ac_add_options --with-system-libevent
# ac_add_options --with-system-libvpx
# ac_add_options --with-system-nspr
# ac_add_options --with-system-nss

mk_add_options MOZ_OBJDIR=@TOPSRCDIR@/moz-build-dir
ac_add_options --disable-crashreporter
ac_add_options --disable-debug
ac_add_options --disable-debug-symbols
ac_add_options --disable-installer
ac_add_options --disable-static
ac_add_options --disable-tests
ac_add_options --disable-updater
ac_add_options --enable-application=suite
ac_add_options --enable-shared
ac_add_options --enable-system-ffi
ac_add_options --prefix=/usr
ac_add_options --with-pthreads
ac_add_options --with-system-jpeg
ac_add_options --with-system-png
ac_add_options --with-system-zlib
EOF

```

Compile SeaMonkey by running the following command:

```

make -f client.mk &&
make -C moz-build-dir/suite/installer

```

This package does not come with a test suite. However, if X is running it can be launched from the build directory before installing with the command line: **moz-build-dir/mozilla/dist/seamonkey/seamonkey**

Install SeaMonkey by issuing the following commands as the `root` user:

```
rm -rf      /usr/lib/seamonkey-2.13.2 &&
mkdir -pv /usr/lib/seamonkey-2.13.2 &&

tar -xf moz-build-dir/mozilla/dist/seamonkey-2.13.2.en-US.linux-$(uname -m).tar.bz2 -C /usr/lib/seamonkey-2.13.2 --strip-components=1 &&

ln -sfv ..../lib/seamonkey-2.13.2/seamonkey /usr/bin &&

mkdir -pv /usr/lib/mozilla/plugins &&
ln -sfv ../../mozilla/plugins /usr/lib/seamonkey-2.13.2 &&

cp -v moz-build-dir/mozilla/dist/man/man1/seamonkey.1 /usr/share/man/man1
```

## NPAPI Headers

The above instructions just install the parts you need to run SeaMonkey. If you want to compile gnash-0.8.10, the open source version of Flash, copy some headers that Gnash needs into `/usr/include`, as the `root` user:

```
rm -rf      /usr/include/npapi &&
mkdir -v /usr/include/npapi &&
cp -v mozilla/dom/plugins/base/*.h /usr/include/npapi
```

## All the Development Libraries and Headers

If you want to install the full SeaMonkey development environment, as the `root` user:

```
make -C moz-build-dir install
```

## Command Explanations

**make -f client.mk:** Mozilla products are packaged to allow the use of a configuration file which can be used to pass the configuration settings to the **configure** command. **make** uses the `client.mk` file to get initial configuration and setup parameters.

**make -C moz-build-dir/suite/installer:** this creates a tarball of the finished SeaMonkey.

**tar xf moz-build-dir/mozilla/dist/seamonkey-2.13.2.en-US.linux-\$(uname -m).tar.bz2 -C /usr/lib/seamonkey-2.13.2 --strip-components=1:** this untars SeaMonkey into `/usr/lib/seamonkey-2.13.2`.

**ln -s ../../mozilla/plugins /usr/lib/seamonkey-2.13.2:** this creates a symlink to `/usr/lib/mozilla/plugins` for the sake of compatibility, to keep all your plugins in the place mozilla plugins are normally found.

## Configuring SeaMonkey

If you deleted the `--disable-webm` option from your `mozconfig`, your SeaMonkey can play most youtube videos without the need for the flash plugin. To enable this, go to <http://www.youtube.com/html5> and click on 'Join the HTML5 Trial' (needs cookies enabled).

For installing various SeaMonkey plugins, refer to *Mozdev's PluginDoc Project*.

Along with using the “Preferences” menu to configure SeaMonkey’s options and preferences to suit individual tastes, finer grain control of many options is only available using a tool not available from the general menu system. To access this tool, you’ll need to open a browser window and enter `about:config` in the address bar. This will display a list of the configuration preferences and information related to each one. You can use the “Filter:” bar to enter search criteria and narrow down the listed items. Changing a preference can be done using two methods. One, if the preference has a boolean value (True/False), simply double-click on the preference to toggle the value and two, for other preferences simply right-click on the desired line, choose “Modify” from the menu and change the value. Creating new preference items is accomplished in the same way, except choose “New” from the menu and provide the desired data into the fields when prompted.



### Tip

There is a multitude of configuration parameters you can tweak to customize SeaMonkey. A very extensive list of these parameters can be found at <http://preferential.mozdev.org/preferences.html>.

If you use a desktop environment like Gnome or KDE you may wish to create a `seamonkey.desktop` file so that SeaMonkey appears in the panel’s menus. If you didn’t enable Startup-Notification in your `mozconfig` change the `StartupNotify` line to false. As the root user:

```
mkdir -pv /usr/share/{applications,pixmaps} &&
cat > /usr/share/applications/seamonkey.desktop << "EOF" &&
[Desktop Entry]
Encoding=UTF-8
Type=Application
Name=SeaMonkey
Comment=The Mozilla Suite
Icon=seamonkey
Exec=seamonkey
Categories=Network;GTK;Application;Email;Browser;WebBrowser;News;
StartupNotify=true
Terminal=false
EOF

ln -sfv /usr/lib/seamonkey-2.13.2/chrome/icons/default/seamonkey.png \
/usr/share/pixmaps
```

## Contents

<b>Installed Programs:</b>	seamonkey
<b>Installed Libraries:</b>	Numerous libraries, browser, and email/newsgroup components, plugins, extensions, and helper modules installed in <code>/usr/lib/seamonkey-2.13.2</code>
<b>Installed Directories:</b>	<code>/usr/include/npapi</code> and <code>/usr/lib/seamonkey-2.13.2</code> .

## Short Descriptions

**seamonkey** is the Mozilla browser/email/newsgroup/chat client suite.

# Firefox-21.0

## Introduction to Firefox

Firefox is a stand-alone browser based on the Mozilla codebase.

This package is known to build and work properly using an LFS-7.3 platform.

## Package Information

- Download (HTTP): <http://releases.mozilla.org/pub.mozilla.org/firefox/releases/21.0/source/firefox-21.0.source.tar.bz2>
- Download (FTP): <ftp://ftp.mozilla.org/pub.mozilla.org/firefox/releases/21.0/source/firefox-21.0.source.tar.bz2>
- Download MD5 sum: 6e2510e9466b280c367de0e4c05a8840
- Download size: 101 MB
- Estimated disk space required: 4.1 GB (45 MB installed) (or 730 MB and 4.0 MB if using Xulrunner)
- Estimated build time: 35 SBU (0.4 SBU if using Xulrunner)

## Firefox Dependencies

### Required

alsa-lib-1.0.27, GTK+-2.24.17, Zip-3.0, and UnZip-6.0

### Recommended

libevent-2.0.21, libvpx-1.1.0, NSPR-4.9.6, NSS-3.14.3, SQLite-3.7.16.2 and yasm-1.2.0



### Note

If you don't install recommended dependencies, then internal copies of those packages will be used. They might be tested to work, but they can be out of date or contain security holes.

### Optional

cURL-7.30.0, D-Bus GLib Bindings-0.100.2, Doxygen-1.8.4, gnome-vfs-2.24.4 and libgnomeui-2.24.5 (for integration with the old version of GNOME), Hunspell, libnotify-0.7.5, startup-notification-0.12, Wget-1.14, Wireless Tools-29 and Xulrunner-21.0

## Installation of Firefox

There are two major methods for building Firefox. In the standard case, the entire suite of libraries is built and installed. In the other, most of the system is built using the procedures found in Xulrunner-21.0. This is advantageous if you are planning to build other related packages such as IcedTea-Web-1.3. With either build method, you need to run the main build procedure below with the appropriate options in the `mozconfig` file. Then use the appropriate install instructions depending on the chosen build method.

The configuration of Firefox is accomplished by creating a `mozconfig` file containing the desired configuration options. A default `mozconfig` is created below. To see the entire list of available configuration options (and an abbreviated description of each one), issue `./configure --help`. You may also wish to review the entire file and

```

# Uncomment these lines if you have installed optional dependencies:
#ac_add_options --enable-system-hunspell
#ac_add_options --enable-startup-notification

# If you have not installed Yasm then uncomment this line:
#ac_add_options --disable-webm

# If you have installed xulrunner uncomment following two lines:
#ac_add_options --with-system-libxul
#ac_add_options --with-libxul-sdk=\$(pkg-config --variable=sdkdir libxul)

# Comment out following options if you have not installed
# recommended dependencies:
ac_add_options --enable-system-sqlite
ac_add_options --with-system-libevent
ac_add_options --with-system-libvpx
ac_add_options --with-system-nspr
ac_add_options --with-system-nss

# It is recommended not to touch anything below this line
ac_add_options --prefix=/usr
ac_add_options --enable-application=browser

ac_add_options --disable-crashreporter
ac_add_options --disable-installer
ac_add_options --disable-updater
ac_add_options --disable-debug
ac_add_options --disable-tests

ac_add_options --enable-optimize
ac_add_options --enable-strip
ac_add_options --enable-install-strip

ac_add_options --enable-gio
ac_add_options --enable-official-branding
ac_add_options --enable-safe-browsing
ac_add_options --enable-url-classifier

ac_add_options --enable-system-ffi
ac_add_options --enable-system-pixman

ac_add_options --with-pthreads

ac_add_options --with-system-bz2
ac_add_options --with-system-jpeg
ac_add_options --with-system-png
ac_add_options --with-system-zlib

mk_add_options MOZ_OBJDIR=@TOPSRCDIR@/firefox-build-dir
EOF

```

Compile Firefox by issuing the following commands:

```
sed -i 's@""@@' browser/base/Makefile.in &&
sed -i "/gre_path/s@DIST'\ ]@& + '/bin'@" toolkit/mozapps/installer/packager.py &&
make -f client.mk
```

This package does not come with a test suite.

If you have *not* linked Firefox against an installed Xulrunner:

```
make -C firefox-build-dir/browser/installer
```

Now, as the `root` user, if you have *not* linked Firefox against an installed Xulrunner, install the package:

```
rm -rf /usr/lib/firefox-21.0 &&
mkdir /usr/lib/firefox-21.0 &&

tar -xvf firefox-build-dir/dist/firefox-21.0.en-US.linux-$(uname -m).tar.bz2 \
-C /usr/lib/firefox-21.0 --strip-components=1 &&
chown -R -v root:root /usr/lib/firefox-21.0 &&
chmod -v 755 /usr/lib/firefox-21.0/libxpcom.so &&

ln -sfv ../lib/firefox-21.0/firefox /usr/bin &&

mkdir -pv /usr/lib/mozilla/plugins &&
ln -sfv ../mozilla/plugins /usr/lib/firefox-21.0
```

If you *have* linked against an already installed Xulrunner, as the `root` user:

```
make -C firefox-build-dir install &&
ln -sfv ../lib/firefox-21.0/firefox /usr/bin &&
ln -sfv ../xulrunner-21.0 /usr/lib/firefox-21.0/xulrunner &&

mkdir -pv /usr/lib/mozilla/plugins &&
ln -sfv ../mozilla/plugins /usr/lib/firefox-21.0
```

## NPAPI Headers

The above instructions just install the parts you need to run Firefox. If you want to compile gnash-0.8.10, the open source version of Flash, copy some headers that Gnash needs into `/usr/include`, as the `root` user:

```
rm -rf /usr/include/npapi &&
mkdir -v /usr/include/npapi &&
cp -v dom/plugins/base/*.h /usr/include/npapi
```



### Note

You don't need to install the headers if you have built Firefox against Xulrunner.

## Command Explanations

**sed -i 's@""@@' browser/base/Makefile.in:** This sed removes an unprintable control character from the title bar.

**sed -i "/gre\_path/s@DIST'@\]@ & + '/bin'@"** ...: This sed fixes build with Xulrunner.

**make -f client.mk** ...: Mozilla products are packaged to allow the use of a configuration file which can be used to pass the configuration settings to the **configure** command. **make** uses the **client.mk** file to get initial configuration and setup parameters.

**make -C firefox-build-dir/browser/installer**: this creates a Firefox tarball similar to the ones you can download from Mozilla.

**tar -xvf firefox-build-dir/dist** ...: This untars Firefox in /usr/lib. The **--strip-components=1** option removes the leading 'firefox' directory from the filenames, allowing us to untar it into a versioned directory.

**make -C firefox-build-dir install**: This runs **make install** in **firefox-build-dir**.

**ln -sfv ... /usr/bin/firefox**: This puts a symbolic link to the **firefox** executable in your PATH variable.

**mkdir -p /usr/lib/mozilla/plugins**: This checks that **/usr/lib/mozilla/plugins** exists.

**ln -sv ... /usr/lib/firefox-21.0**: This command creates a symbolic link to **/usr/lib/mozilla/plugins**. It's not really needed, as Firefox checks **/usr/lib/mozilla/plugins** by default, but the symbolic link is made to keep all the plugins installed in one folder.

## Configuring Firefox

If you deleted the **--disable-webm** option from your **mozconfig**, your Firefox can play most YouTube videos without the need for the flash plugin. To enable this, go to <http://www.youtube.com/html5> and click on 'Join the HTML5 Trial' (needs cookies enabled).

If you use a desktop environment like Gnome or KDE you may like to create a **firefox.desktop** file so that Firefox appears in the panel's menus. If you didn't enable startup-notification in your **mozconfig** change the **StartupNotify** line to false. As the **root** user:

```
mkdir -pv /usr/share/applications &&
mkdir -pv /usr/share/pixmaps &&

cat > /usr/share/applications/firefox.desktop << "EOF" &&
[Desktop Entry]
Encoding=UTF-8
Name=Firefox Web Browser
Comment=Browse the World Wide Web
GenericName=Web Browser
Exec=firefox %u
Terminal=false
Type=Application
Icon=firefox
Categories=GNOME;GTK;Network;WebBrowser;
MimeType=text/html;text/xml;application/xhtml+xml;application/vnd.mozilla.xul+xml
StartupNotify=true
EOF

ln -sfv /usr/lib/firefox-21.0/icons/mozicon128.png \
/usr/share/pixmaps/firefox.png
```

## Contents

**Installed Programs:** firefox

**Installed Libraries:** Numerous libraries, browser components, plugins, extensions, and helper modules installed in /usr/lib/firefox-21.0

**Installed Directories:** /usr/include/npapi and /usr/lib/firefox-21.0

## Short Descriptions

**firefox** is a GTK+ 2 internet browser that uses the Mozilla Gecko rendering engine.

## Chapter 37. Other X-based Programs

These programs use the X window system and don't fit easily into any of the other chapters.

# Balsa-2.4.12

## Introduction to Balsa

The Balsa package contains a GNOME-2 based mail client.

This package is known to build and work properly using an LFS-7.2 platform.

## Package Information

- Download (HTTP): <http://pawsa.fedorapeople.org/balsa/balsa-2.4.12.tar.bz2>
- 
- Download MD5 sum: 8b592b128521338ae3e108c363e178af
- Download size: 3.9 MB
- Estimated disk space required: 69 MB
- Estimated build time: 0.6 SBU

## Balsa Dependencies

### Required

libgnomeui-2.24.5, Rarian-0.8.1, GMime-2.6.15, and Aspell-0.60.6.1 or *GtkSpell* (*GtkSpell* provides on-the-fly as you type spell checking)

### Recommended

libESMTP-1.0.6 (required for outgoing SMTP service) and PCRE-8.32

### Optional

GtkHTML-4.6.4, gtksourceview-3.6.2, OpenSSL-1.0.1e, OpenLDAP-2.4.35, Compface-1.5.2, MIT Kerberos V5-1.11.2, libnotify-0.7.5, SQLite-3.7.16.2, and and MTA (that provides a **sendmail** command, note that it is only used if you didn't install the recommended libESMTP package)

### Optional to Build S/MIME Support

GPGME-1.4.1

## Installation of Balsa

Install Balsa by running the following commands:

```
./configure --prefix=/usr           \
            --sysconfdir=/etc/gnome \
            --localstatedir=/var/lib \
            --with-rubrica          \
            --without-html-widget    \
            --without-esmtp          \
            --without-libnotify       \
            --without-nm              \
            --without-gtkspell        \
            ENABLE_SK_FALSE='#'   &&
make
```

This package does not come with a test suite.

Now, as the root user:

```
make install
```

## Command Explanations

--with-rubrica: This parameter is used to provide Rubrica2 address book support.  
 --without-esmtp: Use this parameter if you don't have libESMTP installed.  
 --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-sqlite: Use this option to enable SQLite address book support if SQLite 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-2.x.x is installed.  
 ENABLE\_SK\_FALSE='#': This option bypasses an error in the configure code.

## Configuring Balsa

### Configuration Information

All configuration of Balsa is done through the Balsa menu system, with mailbox configuration done with the Settings —>Preferences menu.

If you are unable to connect to your ISP, they probably don't support APOP. Disable it in Settings/Preferences/POP3/advanced.

If you enable filters for your incoming POP3 mail, you must have Procmail-3.22 installed, as the incoming mail will be handed off to **procmail** for processing.

## Contents

<b>Installed Programs:</b>	balsa and balsa-ab
<b>Installed Libraries:</b>	None
<b>Installed Directories:</b>	The following subdirectories of \$GNOME_PREFIX/share/: {gnome/help, omf, sounds}/balsa

### Short Descriptions

**balsa** is a GNOME-2 based mail client.

# Blueman-1.23

## Introduction to Blueman

Blueman is full featured GTK+ Bluetooth manager.

This package is known to build using an LFS 7.2 platform but has not been tested.

## Package Information

- Download (HTTP): <http://download.tuxfamily.org/blueman/blueman-1.23.tar.gz>
- 
- Download MD5 sum: f0bee59589f4c23e35bf08c2ef8acaef
- Download size: 1.2 MB
- Estimated disk space required: 16 MB
- Estimated build time: 0.2 SBU

## Blueman Dependencies

### Required

BlueZ-4.101, D-Bus Python Bindings-1.1.1, GTK+-2.24.17, Notify Python-0.1.1, PyGTK-2.24.0 (with GTK+-2.24.17 support), Pyrex-0.9.9 and startup-notification-0.12

### Recommended

Polkit-0.111

### Optional

Nautilus-Sendto-3.6.1

### Required (Runtime)

obex-data-server-0.4.6 and polkit-gnome-0.105

## Installation of Blueman

Install Blueman by running the following commands:

```
./configure --prefix=/usr \
            --sysconfdir=/etc \
            --libexecdir=/usr/lib/blueman \
            --disable-static &&
make
```

This package does not come with a test suite.

Now, as the root user:

```
make install
```

## Command Explanations

**--disable-static**: This switch prevents installation of static versions of the libraries.

## Contents

**Installed Programs:**

blueman-adapters, blueman-applet, blueman-assistant, blueman-browse, blueman-manager, blueman-sendto and blueman-services

**Installed Libraries:**

None

**Installed Directories:**

/usr/lib/blueman, /usr/lib/python2.7/site-packages/blueman and /usr/share/blueman

## Short Descriptions

**blueman-adapters**

is an utility used to set adapter properties.

**blueman-applet**

is a tray applet used to manage bluetooth.

**blueman-assistant**

is an application used for configuring and pairing bluetooth devices.

**blueman-browse**

is used to start obex browser for specified device.

**blueman-manager**

is the bluetooth device manager.

**blueman-sendto**

is an application used for sending files to bluetooth devices.

**blueman-services**

is a graphical dialog used for configuring local bluetooth services.

# Ekiga-4.0.1

## Introduction to Ekiga

Ekiga is a VoIP, IP Telephony, and Video Conferencing application that allows you to make audio and video calls to remote users with SIP or H.323 compatible hardware and software. It supports many audio and video codecs and all modern VoIP features for both SIP and H.323. Ekiga is the first Open Source application to support both H.323 and SIP, as well as audio and video.

This package is known to build and work properly using an LFS-7.2 platform.

## Package Information

- Download (HTTP): <http://ftp.gnome.org/pub/gnome/sources/ekiga/4.0/ekiga-4.0.1.tar.xz>
- Download (FTP): <ftp://ftp.gnome.org/pub/gnome/sources/ekiga/4.0/ekiga-4.0.1.tar.xz>
- Download MD5 sum: 704ba532a8e3e0b5e3e2971dd2db39e4
- Download size: 8.0 MB
- Estimated disk space required: 315 MB
- Estimated build time: 3.5 SBU

## Ekiga Dependencies

### Required

Boost-1.53.0, D-Bus GLib Bindings-0.100.2, gnome-icon-theme-3.6.2, GTK+-2.24.17 and Opal-3.10.10

### Recommended

GConf-3.2.6 and libnotify-0.7.5

### Optional

Avahi-0.6.31, evolution-data-server-3.6.4, gnome-doc-utils-0.20.10 and OpenLDAP-2.4.35

## Installation of Ekiga

Install Ekiga by running the following commands:

```
./configure --prefix=/usr      \
            --sysconfdir=/etc \
            --disable-eds      \
            --disable-gdu      \
            --disable-ldap      \
            --disable-scrollkeeper &&
make
```

This package does not come with a test suite.

Now, as the root user:

```
make install
```

## Command Explanations

--disable-eds: This switch disables support for the Evolution Data Server. Remove if you have installed Evolution Data Server.

--disable-gdu: This switch disables documentation generation using GNOME Doc Utils. Remove if you have installed GNOME Doc Utils.

--disable-ldap: This switch disables LDAP support in Ekiga. Remove if you have installed OpenLDAP.

--disable-scrollkeeper: Use this parameter if you have installed Rarian but wish to disable the updates to the Scrollkeeper database.

--enable-avahi: This switch enables use of the Avahi with Ekiga. Use if you have installed Avahi.



### Note

If you have not installed recommended dependencies you will need additional switches passed to **configure**. Examine **./configure --help** output to see all available switches.

## Contents

<b>Installed Programs:</b>	ekiga, ekiga-config-tool and ekiga-helper
<b>Installed Libraries:</b>	None
<b>Installed Directories:</b>	/usr/lib/ekiga, /usr/share/gnome/help/ekiga, /usr/share/omf/ekiga, /usr/share/pixmaps/ekiga and /usr/share/sounds/ekiga

## Short Descriptions

**ekiga** is a SIP and H.323 VoIP, IP Telephony and Video Conferencing application which complies to the SIP and H.323 protocols.

# Gimp-2.8.4

## Introduction to Gimp

The Gimp package contains the GNU Image Manipulation Program which is useful for photo retouching, image composition and image authoring.

This package is known to build and work properly using an LFS-7.3 platform.

## Package Information

- Download (HTTP): <http://artfiles.org/gimp.org/gimp/v2.8/gimp-2.8.4.tar.bz2>
- Download (FTP): <ftp://ftp.gimp.org/pub/gimp/v2.8/gimp-2.8.4.tar.bz2>
- Download MD5 sum: 392592e8755d046317878d226145900f
- Download size: 20 MB
- Estimated disk space required: 680 MB (additonal 680 MB to run the test suite, the help files add from 267 MB (en only) to 1.3 GB (all), typically increasing by 60 MB per translation)
- Estimated build time: 4.9 SBU (additional 1.2 SBU to run the test suite, for the help files from 0.7 SBU (en only) to 29 SBU (all) - typically 1.5 SBU per translation)

## Additional Downloads

- Optional help files: <ftp://gimp.org/pub/gimp/help/gimp-help-2.8.0.tar.bz2>
- Download MD5 sum: d6e07a569fe4b3bb11aaf5630da2693b
- Download size: 127 MB
- Optional compressed patch for the help files: [ftp://anduin.linuxfromscratch.org/other/gimp-help-2.8.0-build\\_fixes-1.patch.xz](ftp://anduin.linuxfromscratch.org/other/gimp-help-2.8.0-build_fixes-1.patch.xz) (to build the Catalan translations).
- Compressed Patch MD5 sum: 5312793a67132131a6e3360e76f392e4
- Compressed Patch size: 486 KB

## Gimp Dependencies

### Required

gegl-0.2.0, GTK+-2.24.17 and Intltool-0.50.2

### Recommended

PyGTK-2.24.0 (including the gtk and pango modules)

### Optional

AAlib-1.4rc5, alsa-lib-1.0.27, cURL-7.30.0, D-Bus GLib Bindings-0.100.2, ghostscript-9.06 (with libgs installed), Gvfs-1.14.2, ISO Codes-3.42, JasPer-1.900.1, Little CMS-1.19, libexif-0.6.21, libmng-1.0.10, librsvg-2.36.4, libwmf, Poppler-0.22.4, an MTA (that provides a **sendmail** program), udev-Installed LFS Version or udev-extras (from systemd) (for GUdev), WebKitGTK+-1.10.2 (this must be compiled with the GTK+ 2 backend for the Gimp to use it as its help browser) and GTK-Doc-1.18

### Optional, for optimizing the PNG files in the help system

*pngnq* and *pngcrush*

## Installation of Gimp

Install Gimp by running the following commands:

```
./configure --prefix=/usr --sysconfdir=/etc --without-gvfs &&
make
```

To test the results (requires an X-Windowed terminal) issue: **make check**.

Now, as the `root` user:

```
make install
```

The `gimp-help` tarball contains images and English text help for help files, together with translations. It is "work in progress".

If you downloaded the `gimp-help` tarball, unpack it and change into the root of the newly created source tree. This release fails to build for its first language, Catalan ("ca") but those who wish to build the remaining languages can prepare for the build with the following command:

```
ALL_LINGUAS="da de el en en_GB es fi fr hr it ja ko lt nl nn pl ru sl sv zh_CN"
./configure --prefix=/usr &&
```

Remove from `ALL_LINGUAS` the codes for any languages which you do not wish to install.

Alternatively, if you wish to build languages including Catalan, apply the patch:

```
xzcat ../gimp-help-2.8.0-build_fixes-1.patch.xz \
| patch -p1 &&
./autogen.sh --prefix=/usr &&
```

Again, you can specify a subset of languages by specifying `ALL_LINGUAS` in front of `./autogen.sh`, but this time including "ca".

Now build the help files:

```
make
```

Issue the following commands as the `root` user to install the help files:

```
make install &&
chown -R root:root /usr/share/gimp/2.0/help
```



### Note

This package installs icon files into the `/usr/share/icons/hicolor` hierarchy and desktop files into the `/usr/share/applications` hierarchy. You can improve system performance and memory usage by updating `/usr/share/icons/hicolor/index.theme` and `/usr/share/applications/mimeinfo.cache`. To perform the update you must have `GTK+-2.24.17` or `GTK+-3.6.4` installed (for the icon cache) and `desktop-file-utils-0.21` (for the desktop cache) and issue the following commands as the `root` user:

```
gtk-update-icon-cache &&
update-desktop-database
```

## Command Explanations

**LINGUAS="ca da de en en\_GB ...":** by default, the help files will be rendered in all the available languages. Remove the codes of any languages you do not wish to build.

**--without-gvfs:** the choice of the backend to handle URI information, e.g., when dragging images from a browser into the Gimp, is made at compile time. This parameter will ensure that cURL is used at run-time, instead of Gvfs. You can omit this if you are installing Gvfs AND will be running **gvfsd**, e.g., in a GNOME desktop.

**--disable-python:** This option is necessary if you have not installed PyGTK.

**./autogen.sh --prefix=/usr:** In this case, using **autoreconf** to regenerate **configure** does not work, because of how the gimp-help developers chose to address problems with the autotools.

**xzcat ..../gimp-help-2.8.0-build\_fixes-1.patch.xz:** this patch is large, so it has been compressed with xz. You are encouraged to be suspicious of all patches until you have looked at them. Use **view** to read the compressed patch before you apply it.

**--enable-gtk-doc:** Use this parameter if GTK-Doc is installed and you wish to rebuild and install the API documentation.

## Configuring The Gimp

### Config Files

/etc/gimp/2.0/\* and ~/.gimp-2.8/gimprc

### Configuration Information

The Gimp executes a configuration wizard for each user upon their initial use of the program.

The Gimp executes the **firefox** web browser by default to view the help files. If you do not have Firefox, or prefer a different web browser, you can set a new system value in /etc/gimp/2.0/gimprc. Execute the following command as the **root** user, replacing **<browser>** with your preferred web browser:

```
echo '(web-browser "<browser> %s")' >> /etc/gimp/2.0/gimprc
```

## Contents

<b>Installed Programs:</b>	gimp, gimp-2.8, gimp-console, gimp-console-2.8 and gimptool-2.0
<b>Installed Libraries:</b>	libgimp-2.0.so, libgimpbase-2.0.so, libgimpcolor-2.0.so, libgimpconfig-2.0.so, libgimpmath-2.0.so, libgimpmodule-2.0.so, libgimpthumb-2.0.so, libgimpui-2.0.so and libgimpwidgets-2.0.so
<b>Installed Directories:</b>	/etc/gimp, /usr/include/gimp-2.0, /usr/lib/gimp, /usr/share/gimp, /usr/share/gtk-doc/html/libgimp, /usr/share/gtk-doc/html/libgimpbase, /usr/share/gtk-doc/html/libgimpcolor, /usr/share/gtk-doc/html/libgimpconfig, /usr/share/gtk-doc/html/libgimpmath, /usr/share/gtk-doc/html/libgimpmodule, /usr/share/gtk-doc/html/libgimpthumb and /usr/share/gtk-doc/html/libgimpwidgets

## Short Descriptions

**gimp**

is a symbolic link to **gimp-2.8**.

**gimp-2.8**

is the Gnu Image Manipulation Program. It works with a variety of image formats and provides a large selection of tools.

**gimp-console**

is a symbolic link to **gimp-console-2.8**.

**gimp-console-2.8**

is a console program that behaves as if The Gimp was called with the --no-interface command-line option.

**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 The Gimp was compiled with.

**libgimp-2.0.so**

provides C bindings for The Gimp's Procedural Database (PDB) which offers an interface to core functions and to functionality provided by plug-ins.

**libgimpbase-2.0.so**

provides the C functions for basic Gimp functionality such as determining enumeration data types, gettext translation, determining The Gimp's version number and capabilities, handling data files and accessing the environment.

**libgimpcolor-2.0.so**

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.

**libgimpconfig-2.0.so**

contains C functions for reading and writing config information.

**libgimpmath-2.0.so**

contains C functions which provide mathematical definitions and macros, manipulate 3x3 transformation matrices, set up and manipulate vectors and the MD5 message-digest algorithm.

**libgimpmodule-2.0.so**

provides the C functions which implements module loading using GModule and keeps a list of GimpModule's found in a given searchpath.

**libgimpthumb-2.0.so**

provides the C functions for handling The Gimp's thumbnail objects.

**libgimpui-2.0.so**

contains The Gimp's common user interface functions.

**libgimpwidgets-2.0.so**

contains The Gimp and GTK's widget creation and manipulation functions.

# gnash-0.8.10

## Introduction to gnash

Gnash is the GNU Flash movie player and browser plugin. This is useful for watching YouTube videos or simple flash animations.

This package is known to build and work properly using an LFS-7.3 platform.

## Package Information

- Download (HTTP): <http://ftp.gnu.org/pub/gnu/gnash/0.8.10/gnash-0.8.10.tar.bz2>
- Download (FTP): <ftp://ftp.gnu.org/pub/gnu/gnash/0.8.10/gnash-0.8.10.tar.bz2>
- Download MD5 sum: 63e9f79c41d93d48c5a2fa94856548c4
- Download size: 4.1 MB
- Estimated disk space required: 758 MB
- Estimated build time: 11.1 SBU

## Additional Downloads

- Required patch: <http://www.linuxfromscratch.org/patches/blfs/svn/gnash-0.8.10-CVE-2012-1175-1.patch>

## gnash Dependencies

### Required

agg-2.5, Boost-1.53.0, gst-ffmpeg-0.10.13, Firefox-21.0 or SeaMonkey-2.13.2 and giflib-4.1.6.

### Optional

cURL-7.30.0, DejaGnu-1.5.1, GConf-3.2.6, git-1.8.2.3, libogg-1.3.0, libvorbis-1.3.3, Qt-4.8.4, Speex-1.2rc1, Wget-1.14, SWFTools, Swfmill , Mtasc, Netcat, Csound, LibGSM and Libdc1394.

## Installation of gnash

Install gnash by running the following commands:

```
patch -Np1 -i ../gnash-0.8.10-CVE-2012-1175-1.patch &&
sed -i '/^LIBS/s/\(\.*\)/\1 -lboost_system/' \
    gui/Makefile.in utilities/Makefile.in &&
./configure --prefix=/usr --sysconfdir=/etc \
    --with-npapi-incl=/usr/include/npapi --enable-media=gst \
    --with-npapi-plugindir=/usr/lib/mozilla/plugins \
    --without-gconf &&
make
```

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

Now, as the root user:

```
make install &&
make install-plugin
```

## Command Explanations

**sed -i '/^LIBS/s/(.\*\)\1 -lboost\_system/' ...:** This fixes linking to the current boost libraries.

**--enable-media=gst:** This tells it to use Gstreamer for to play video and audio (**--enable-media=ffmpeg** is broken with FFmpeg-0.11.1).

**--with-npapi-incl=/usr/include/npapi:** This option tells it where to find some Mozilla headers that it needs. You should have installed these headers when you installed Firefox or SeaMonkey.

**--with-npapi-plugindir=/usr/lib/mozilla/plugins:** This option tells it to install the Mozilla browser plugin into /usr/lib/mozilla/plugins.

**--without-gconf:** Omit this switch if you have GConf installed and wish gnash to use it.

**make install-plugin:** This command installs the Mozilla browser plugin.

## Contents

**Installed Program:** gnash-gtk-launcher

**Installed Libraries:** 2 private libraries in /usr/lib/gnash and libgnashplugin.so.

**Installed Directories:** /usr/lib/gnash and /usr/share/gnash.

## Short Descriptions

**gnash-gtk-launcher** launches Gnash.

**libgnashplugin.so** is the Mozilla browser plugin.

# Gparted-0.16.1

## Introduction to Gparted

Gparted is the Gnome Partition Editor, a Gtk 2 GUI for other command line tools that can create, reorganise or delete disk partitions.

This package is known to build and work properly using an LFS-7.3 platform.

## Package Information

- Download (HTTP): <http://downloads.sourceforge.net/gparted/gparted-0.16.1.tar.bz2>
- 
- Download MD5 sum: 3f399bff031b5ce14d11a8c346f4b89c
- Download size: 1.9 MB
- Estimated disk space required: 110 MB
- Estimated build time: 1.2 SBU

## Gparted Dependencies

### Required

Gtkmm-2.24.2, Intltool-0.50.2 and parted-3.1

### Optional

gnome-doc-utils-0.20.10 and Rarian-0.8.1

## Installation of Gparted

Install Gparted by running the following commands:

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

This package does not come with a testsuite.

Now, as the root user:

```
make install
```

## Command Explanations

--disable-doc: This switch disables building of the optional documentation. Remove it if you have installed gnome-doc-utils-0.20.10.

## Using Gparted

To manipulate file systems Gparted has a run time dependency on various file system tools (you only need to install the tools for file systems you actually use): e2fsprogs (installed as part of LFS), jfsutils-1.1.15, ntfs-3g-2013.1.13, reiserfsprogs-3.6.21, xfsprogs-3.1.10, btrfs-progs, dosfstools, mtools (required to read and write FAT16/32 volume labels and UUIDs), hfsutils, hfsprogs, nilfs-utils and reiser4progs.

## Contents

<b>Installed Programs:</b>	gparted and gpartedbin
<b>Installed Libraries:</b>	None
<b>Installed Directories:</b>	/usr/share/gnome/help/gparted and /usr/share/omf/gparted

## Short Descriptions

<b>gparted</b>	is a shell script which sets up the environment before calling <b>gpartedbin</b> .
<b>gpartedbin</b>	is the Gparted binary.

# IcedTea-Web-1.3

## Introduction to IcedTea-Web

The IcedTea-Web package contains both a Java browser plugin, and a new webstart implementation, licensed under GPLv3.

This package is known to build and work properly using an LFS-7.2 platform.

### Package Information

- Download (HTTP): <http://icedtea.classpath.org/download/source/icedtea-web-1.3.tar.gz>
- 
- Download MD5 sum: a19661c0b31725fbf0e5e31303ac74fa
- Download size: 972 KB
- Estimated disk space required: 16 MB
- Estimated build time: 0.3 SBU

## IcedTea-Web Dependencies

### Required

OpenJDK-1.7.0.9, and Xulrunner-21.0

## Installation of IcedTea-Web

Install IcedTea-Web by running the following commands:

```
./configure --prefix=${JAVA_HOME}/jre      \
            --with-jdk-home=${JAVA_HOME} \
            --disable-docs           \
            --mandir=${JAVA_HOME}/man &&
make
```

This package does not come with a test suite.

Now, as the root user:

```
make install
```

## Command Explanations

`--with-jdk-home`: This switch provides the location of the installed JDK.

`--disable-docs`: This switch disables installation of additional developer-related documentation. Omit this switch if you would like to do development work on IcedTea-Web.

## Configuration Information

As the root user, create a symbolic link to the plugin from your browser(s) plugins directory, where `<arch>` is either i386 or amd64:

```
ln -s ${JAVA_HOME}/jre/lib/<arch>/IcedTeaPlugin.so \
      /usr/lib/mozilla/plugins/
```



## 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

<b>Installed Programs:</b>	itweb-settings, javaws, and pluginappletviewer
<b>Installed Libraries:</b>	IcedTeaPlugin.so, about.jar, netx.jar, plugin.jar
<b>Installed Directories:</b>	None

## Short Descriptions

<b>itweb-settings</b>	allows customization of the browser plugin and javaws.
<b>javaws</b>	launches Java application/applets hosted on a network.
<b>pluginappletviewer</b>	runs Java applets outside of the context of a browser.
<b>IcedTeaPlugin.so</b>	is the Java browser plugin.
<b>about.jar</b>	contains functions for the about dialog boxes.
<b>netx.jar</b>	contains functions for the IcedTea-Web webstart implementation (NetX).
<b>plugin.jar</b>	contains functions for the IcedTea-Web Java plugin.

# Inkscape-0.48.4

## Introduction to Inkscape

Inkscape is a what you see is what you get Scalable Vector Graphics editor. It is useful for creating, viewing and changing SVG images.

This package is known to build and work properly using an LFS-7.2 platform.

## Package Information

- Download (HTTP): <http://downloads.sourceforge.net/inkscape/inkscape-0.48.4.tar.bz2>
- 
- Download MD5 sum: 47bd8546e42ba396624eef9eb66b9b6c
- Download size: 19 MB
- Estimated disk space required: 2.0 GB
- Estimated build time: 18 SBU

## Inkscape Dependencies

### Required

Boost-1.53.0, GC-7.2d, Gsl-1.15 and Gtkmm-2.24.2

### Recommended

Little CMS-1.19

### Optional

Aspell-0.60.6.1, Doxygen-1.8.4, ImageMagick-6.8.5-6, libwpg, Poppler-0.22.4 and popt-1.16

### Optional Runtime Dependencies (for some of the Inkscape extensions)

XML::Parser-2.41, XML::XQL and python-lxml

## Installation of Inkscape

If Xorg is installed in a prefix other than /usr, the build will fail. Fix this by issuing the following command:

```
export LIBRARY_PATH=$XORG_PREFIX/lib
```

Install Inkscape by running the following commands:

```
sed -e "s@commands_toolbox,@commands_toolbox@" -i src/widgets/desktop-widget.h &&
./configure --prefix=/usr &&
make &&
unset LIBRARY_PATH
```

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

Now, as the root user:

```
make install
```



## Note

This package installs icon files into the `/usr/share/icons/hicolor` hierarchy and desktop files into the `/usr/share/applications` hierarchy. You can improve system performance and memory usage by updating `/usr/share/icons/hicolor/index.theme` and `/usr/share/applications/mimeinfo.cache`. To perform the update you must have GTK+-2.24.17 or GTK+-3.6.4 installed (for the icon cache) and `desktop-file-utils-0.21` (for the desktop cache) and issue the following commands as the root user:

```
gtk-update-icon-cache &&
update-desktop-database
```

## Command Explanations

`sed -e "s@commands_toolbox,@commands_toolbox@" ...`: This `sed` fixes building with GCC 4.8.

## Contents

<b>Installed Programs:</b>	inkscape and inkview
<b>Installed Libraries:</b>	None
<b>Installed Directory:</b>	<code>/usr/share/inkscape</code>

## Short Descriptions

<b>inkscape</b>	an SVG (Scalable Vector Graphics) editing program.
<b>inkview</b>	is a simple program for displaying SVG files.

# Pidgin-2.10.7

## Introduction to Pidgin

Pidgin is a Gtk+ 2 instant messaging client that can connect with a wide range of networks including AIM, ICQ, GroupWise, MSN, Jabber, IRC, Napster, Gadu-Gadu, SILC, Zephyr and Yahoo!

This package is known to build and work properly using an LFS-7.2 platform.

## Package Information

- Download (HTTP): <http://downloads.sourceforge.net/pidgin/pidgin-2.10.7.tar.bz2>
- 
- Download MD5 sum: ea88976b9952e80b702b030489f94393
- Download size: 9.6 MB
- Estimated disk space required: 315 MB
- Estimated build time: 2.0 SBU

## Pidgin Dependencies

### Required

GTK+-2.24.17 and XML::Parser-2.41

### Recommended

libgcrypt-1.5.2 and GnuTLS-3.2.0 or NSS-3.14.3

SSL support is required for the MSN Messenger, Yahoo!, Novel Groupwise and Google Talk protocol plugins. GnuTLS is the preferred method (the Mozilla NSS API is more likely to change and this can cause problems).

### Optional

Avahi-0.6.31 (required for the Bonjour plugin), Check-0.9.10 (only used during the test suite), Cyrus SASL-2.1.26, D-Bus GLib Bindings-0.100.2, evolution-data-server-3.6.4, *Farstream (Version 0.1)* (required for video and voice support), GConf-3.2.6, GStreamer-0.10.36 (required for audio support), *Gtkspell*, Intltool-0.50.2, libidn-1.26, *libgadu*, *Meanwhile* (required for Sametime protocol support), MIT Kerberos V5-1.11.2 (required for Kerberos support in the Zephyr module), NetworkManager-0.9.8.0, *SILC Client*, *SILC Toolkit*, startup-notification-0.12, SQLite-3.7.16.2 (required for the Contact Availability Prediction plugin), Tcl-8.6.0 and *Zephyr*

## Installation of Pidgin

Compile Pidgin by running the following commands:

```
./configure --prefix=/usr      \
            --sysconfdir=/etc \
            --disable-avahi \
            --disable-dbus \
            --disable-gtkspell \
            --disable-gstreamer \
            --disable-meanwhile \
            --disable-idn \
            --disable-nm \
            --disable-vv \
            --disable-tcl &&
make
```

If you have Doxygen-1.8.4 installed (Graphviz-2.30.1 can be used also) and you wish to create the API documentation, issue: **make docs**

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

Now, as the root user:

```
make install &&
mkdir -pv /usr/share/doc/pidgin-2.10.7 &&
cp -v README doc/gtkrc-2.0 /usr/share/doc/pidgin-2.10.7
```

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

```
mkdir -pv /usr/share/doc/pidgin-2.10.7/api &&
cp -v doc/html/* /usr/share/doc/pidgin-2.10.7/api
```

## Command Explanations

--disable-avahi: Remove this switch if you've installed Avahi-0.6.31.

--disable-dbus: Remove this switch if you've installed D-Bus-1.6.10.

--disable-gtkspell: Spellchecking. Remove this switch if you've installed *Gtkspell*.

--disable-gstreamer: Sounds. Remove this switch if you've installed GStreamer-0.10.36.

--disable-meanwhile: Remove this switch if you've installed *Meanwhile*.

--disable-idn: Remove this switch if you've installed libidn-1.26.

--disable-nm: Remove this switch if you've installed NetworkManager-0.9.8.0.

--disable-vv: Video and voice. Remove this switch if you've installed *Farstream (Version 0.1)*.

--disable-tcl: Remove this switch if you've installed Tcl-8.6.0.

--enable-cyrus-sasl: Use this switch if you've installed Cyrus SASL-2.1.26 and wish to build Pidgin with SASL support.

--disable-gnutls: Use this switch if you've got both GnuTLS-3.2.0 and NSS-3.14.3 installed, but want to use NSS-3.14.3 for the SSL support.

## Configuring Pidgin

### Config Files

~/.purple/\* and ~/.gtkrc-02

### Configuration Information

Most configuration can be accomplished by using the various preference settings inside the programs. Additionally, you can create a ~/.gtkrc-02 file which can store gtk+-2 theme settings that affect Pidgin and other Gtk+ 2 applications. Note that an example gtkrc-02 file was installed during the package installation and can be used as a starting point or reference.

## Contents

<b>Installed Programs:</b>	finch, pidgin, purple-client-example, purple-remote, purple-send, purple-send-async and purple-url-handler
<b>Installed Library:</b>	libgnt.so, libpurple.so and libpurple-client.so
<b>Installed Directories:</b>	/usr/include/finch, /usr/include/gnt, /usr/include/libpurple, /usr/include/pidgin, /usr/lib/finch, /usr/lib/gnt, /usr/lib/pidgin, /usr/lib/purple-2, /usr/share/doc/pidgin-2.10.7, /usr/share/pixmaps/pidgin, /usr/share/purple and /usr/share/sounds/purple

## Short Descriptions

<b>pidgin</b>	is a GTK+ 2 instant messaging client.
<b>finch</b>	is a text-based instant messaging client.

# Rox-Filer-2.11

## Introduction to Rox-Filer

rox-filer is a fast, lightweight, gtk2 file manager.

This package is known to build and work properly using an LFS-7.2 platform.

## Package Information

- Download (HTTP): <http://downloads.sourceforge.net/rox/rox-filer-2.11.tar.bz2>
- 
- Download MD5 sum: 0eebf05a67f7932367750ebf9faf215d
- Download size: 1.8 MB
- Estimated disk space required: 19 MB
- Estimated build time: 0.3 SBU

## rox-filer Dependencies

### Required

libglade-2.6.4 and shared-mime-info-1.1

## Kernel Configuration

If you want rox-filer to be able to update the contents of a directory when changes are made to the files by other applications (eg, if a script is running) you will need to enable dnotify support in your kernel. In **make menuconfig**:

```
Filesystems --->
  [*] Dnotify support
```

Save the new `.config` and then compile the kernel.

## Installation of Rox-Filer

Compile rox-filer with the following commands:

```
cd ROX-Filer
sed -i 's:g_strdup(getenv("APP_DIR")):"/usr/share/rox":' src/main.c &&

mkdir build &&
pushd build &&
../src/configure LIBS="-lm -ldl" &&
make &&
popd
```

Now install it as the root user:

```
mkdir -p /usr/share/rox &&
cp -av Help Messages Options.xml ROX images style.css .DirIcon /usr/share/rox &&

cp -av ../rox.1 /usr/share/man/man1 &&
cp -v ROX-Filer /usr/bin/rox &&
chown -Rv root:root /usr/bin/rox /usr/share/rox &&

cd /usr/share/rox/ROX/MIME &&
ln -sv text-x-{diff,patch}.png &&
ln -sv application-x-font-{afm,type1}.png &&
ln -sv application-xml{,-dtd}.png &&
ln -sv application-xml{,-external-parsed-entity}.png &&
ln -sv application-{,rdf+}xml.png &&
ln -sv application-x{ml,-xbel}.png &&
ln -sv application-{x-shell,java}script.png &&
ln -sv application-x-{bzip,xz}-compressed-tar.png &&
ln -sv application-x-{bzip,lzma}-compressed-tar.png &&
ln -sv application-x-{bzip-compressed-tar,lzo}.png &&
ln -sv application-x-{bzip,xz}.png &&
ln -sv application-x-{gzip,lzma}.png &&
ln -sv application-{msword,rtf}.png
```

## Command Explanations

**sed -i 's:g\_strdup(getenv("APP\_DIR")):"/usr/share/rox":' src/main.c:** This command hard codes /usr/share/rox as the directory for rox-filer's private files. Without this sed rox needs the environment variable \${APP\_DIR} to be set.

**ln -sv application-...:** These commands duplicate the icons for some common mime types. Without these links rox-filer would just display the default "unknown binary blob" icon.

## Configuring RoxFiler

### Configuration Information

Most of the configuration of rox-filer is achieved by right clicking on a rox-filer window and choosing "Options" from the menu. It stores its settings in ~/.config/rox.sourceforge.net.

A rox-filer feature is that if there is an executable file called AppRun in a directory rox-filer will first run AppRun before it opens the folder.

As an example of how this may be used, if you have ssh access to another computer (perhaps another computer on your local network) with ssh configured for passwordless logins and you have sshfs-fuse-2.4 installed you can use AppRun to mount the remote computer in a local folder using **sshfs**. For this example AppRun script to work the folder must have the same name as the hostname of the remote computer:

```
cat > /path/to/hostname/AppRun << "HERE_DOC"
#!/bin/bash

MOUNT_PATH="${0%/*}"
HOST=${MOUNT_PATH##*/}
export MOUNT_PATH HOST
sshfs -o nonempty ${HOST}:/ ${MOUNT_PATH}
rox -x ${MOUNT_PATH}
HERE_DOC

chmod 755 /path/to/hostname/AppRun
```

That works fine for mounting, but to unmount it the command **fusermount -u \${MOUNTPOINT}** is ran. You could set that as your default umount command in your rox preferences, but you would then be unable to unmount any normal mountpoints (that need umount). A script is needed that will unmount a Fuse mountpoint with **fusermount -u \${MOUNTPOINT}** and everything else with **umount**. As the root user:

```
cat > /usr/bin/myumount << "HERE_DOC" &&
#!/bin/bash
sync
if mount | grep "${@}" | grep -q fuse
then fusermount -u "${@}"
else umount "${@}"
fi
HERE_DOC

chmod 755 /usr/bin/myumount
```

Now, to make Rox use this simple script, open a Rox window, right click on it and choose Options from the menu. In the left hand list choose "Action windows" and then on the right hand side, where it says "Unmount command" change **umount** to **myumount**.

If you use a desktop environment like Gnome or KDE you may like to create a `rox.desktop` file so that rox-filer appears in the panel's menus. As the `root` user:

```
ln -s ../../rox/.DirIcon /usr/share/pixmaps/rox.png &&
mkdir -p /usr/share/applications &&

cat > /usr/share/applications/rox.desktop << "HERE_DOC"
[Desktop Entry]
Encoding=UTF-8
Type=Application
Name=Rox
Comment=The Rox File Manager
Icon=rox
Exec=rox
Categories=GTK;Utility;Application;System;Core;
StartupNotify=true
Terminal=false
HERE_DOC
```

## Contents

<b>Installed Programs:</b>	rox
<b>Installed Libraries:</b>	None
<b>Installed Directories:</b>	/usr/share/rox

## Short Descriptions

**rox** is the rox file manager.

# Thunderbird-17.0.6

## Introduction to Thunderbird

Thunderbird is a stand-alone mail/news client based on the Mozilla codebase. It uses the Gecko rendering engine to enable it to display and compose HTML emails.

This package is known to build and work properly using an LFS-7.3 platform.

## Package Information

- Download (HTTP): <http://releases.mozilla.org/pub.mozilla.org/thunderbird/releases/17.0.6/source/thunderbird-17.0.6.source.tar.bz2>
- Download (FTP): <ftp://ftp.mozilla.org/pub.mozilla.org/thunderbird/releases/17.0.6/source/thunderbird-17.0.6.source.tar.bz2>
- Download MD5 sum: e3be03513d038bbbcf8cca8a3652170b
- Download size: 109 MB
- Estimated disk space required: 3.2 GB (90 MB installed)
- Estimated build time: 35 SBU

## Thunderbird Dependencies

### Required

alsa-lib-1.0.27, GTK+-2.24.17, Zip-3.0 and UnZip-6.0

### Recommended

libevent-2.0.21, libvpx-1.1.0, NSPR-4.9.6, NSS-3.14.3, SQLite-3.7.16.2 and yasm-1.2.0



### Note

If you don't install recommended dependencies, then internal copies of those packages will be used. They might be tested to work, but they can be out of date or contain security holes.

### Optional

cURL-7.30.0, Cyrus SASL-2.1.26, D-Bus GLib Bindings-0.100.2, Doxygen-1.8.4, gnome-vfs-2.24.4 and libgnomeui-2.24.5 (for integration with the old version of GNOME), Hunspell, libnotify-0.7.5, startup-notification-0.12, Wget-1.14 and Wireless Tools-29

```
# If you have installed libnotify comment out this line:  
ac_add_options --disable-libnotify  
  
# Uncomment these lines if you have installed optional dependencies:  
#ac_add_options --enable-system-hunspell  
#ac_add_options --enable-startup-notification  
  
# If you have not installed Yasm then uncomment this line:  
#ac_add_options --disable-webm  
  
# If you want to compile the Mozilla Calendar, uncomment this line:  
#ac_add_options --enable-calendar  
  
# Comment out following options if you have not installed  
# recommended dependencies:  
ac_add_options --enable-system-sqlite  
ac_add_options --with-system-libevent  
ac_add_options --with-system-libvpx  
ac_add_options --with-system-nspr  
ac_add_options --with-system-nss  
  
# It is recommended not to touch anything below this line  
ac_add_options --prefix=/usr  
  
ac_add_options --disable-crashreporter  
ac_add_options --disable-installer  
ac_add_options --disable-updater  
ac_add_options --disable-debug  
ac_add_options --disable-tests  
  
ac_add_options --enable-optimize  
ac_add_options --enable-strip  
ac_add_options --enable-install-strip  
  
ac_add_options --enable-gio  
ac_add_options --enable-official-branding  
ac_add_options --enable-safe-browsing  
ac_add_options --enable-url-classifier  
  
ac_add_options --enable-system-ffi  
ac_add_options --enable-system-pixman  
  
ac_add_options --with-pthreads  
  
ac_add_options --with-system-bz2  
ac_add_options --with-system-jpeg  
ac_add_options --with-system-png  
ac_add_options --with-system-zlib  
  
mk_add_options MOZ_OBJDIR=@TOPSRCDIR@/thunderbuild  
EOF
```

Compile Thunderbird by issuing the following commands:

```
make -f client.mk &&
make -C thunderbuild/mail/installer
```

This package does not come with a test suite.

Install Thunderbird by running the following commands as the `root` user:

```
mkdir -pv /usr/lib/thunderbird-17.0.6 &&
tar -xvf thunderbuild/mozilla/dist/thunderbird-17.0.6.en-US.linux-$(uname -m).tar.xz -C /usr/lib/thunderbird-17.0.6 --strip-components=1 &&
ln -sfv ../../lib/thunderbird-17.0.6/thunderbird /usr/bin
```

The above instructions just install the parts you need to run Thunderbird. Alternatively, if you want to install the full Thunderbird development environment, run the following command as the `root` user:

```
make -C thunderbuild install
```

## Command Explanations

**make -f client.mk:** Mozilla products are packaged to allow the use of a configuration file which can be used to pass the configuration settings to the **configure** command. **make** uses the `client.mk` file to get initial configuration and setup parameters.

**make -C thunderbuild/mail/installer:** this runs make in the `thunderbuild/mail/installer` folder. This gathers together all the parts of Thunderbird and compresses them into a tarball.

**tar -xvf thunderbuild/mozilla/dist ...:** This untars Thunderbird, the `-C` option uncompresses the files in `/usr/lib/thunderbird-17.0.6`. The `--strip-components=1` option removes the leading 'thunderbird' directory from the filenames, allowing us to untar it into a versioned directory.

## Configuring Thunderbird

### Configuration Information

If your Window or Desktop Manager does not allow you to configure a default browser, you can add a configuration parameter to Thunderbird so that a browser will start when you click on an Internet/intranet/local URL. The procedure to check or modify any of the configuration parameters is quite simple and the instructions here can be used to view or modify any of the parameters.

First, open the configuration dialog by opening the “Edit” drop-down menu. Choose “Preferences” and then click on the “Advanced” icon on the top menu bar. Choose the “General” tab and click on the “Config Editor” button. This will display a list of the configuration preferences and information related to each one. You can use the “Filter:” bar to enter search criteria and narrow down the listed items. Changing a preference can be done using two methods. One, if the preference has a boolean value (True/False), simply double-click on the preference to toggle the value and two, for other preferences simply right-click on the desired line, choose “Modify” from the menu and change the value. Creating new preference items is accomplished in the same way, except choose “New” from the menu and provide the desired data into the fields when prompted.

The configuration preference item you need to check so that Thunderbird uses a specified browser is the `network.protocol-handler.app.http` which should be set to the path of the desired browser, e.g. `/usr/bin/firefox`.



## Tip

There is a multitude of configuration parameters you can tweak to customize Thunderbird. A very extensive, but not so up-to-date list of these parameters can be found at <http://preferential.mozdev.org/preferences.html>.

If you use a desktop environment like GNOME or KDE you may wish to create a `thunderbird.desktop` file so that Thunderbird appears in the panel's menus. If you didn't enable startup-notification in your `mozconfig` then change the `StartupNotify` line to false. Run the following commands as the `root` user:

```
mkdir -pv /usr/share/applications &&
mkdir -pv /usr/share/pixmaps &&

cat > /usr/share/applications/thunderbird.desktop << "EOF" &&
[Desktop Entry]
Encoding=UTF-8
Name=Thunderbird Mail
Comment=Send and receive mail with Thunderbird
GenericName=Mail Client
Exec=thunderbird %u
Terminal=false
Type=Application
Icon=thunderbird
Categories=Application;Network>Email;
MimeType=text/html;text/xml;application/xhtml+xml;application/xml;application/rss+xml
StartupNotify=true
EOF

ln -sfv /usr/lib/thunderbird-17.0.6/chrome/icons/default/default256.png \
/usr/share/pixmaps/thunderbird.png
```

## Contents

<b>Installed Program:</b>	thunderbird
<b>Installed Libraries:</b>	None
<b>Installed Directory:</b>	/usr/lib/thunderbird-17.0.6

## Short Descriptions

**thunderbird** is Mozilla's email and newsgroup client.

# Transmission-2.77

## Introduction to Transmission

Transmission is a cross-platform, open source BitTorrent client. This is useful for downloading large files (such as Linux ISOs) and reduces the need for the distributors to provide server bandwidth.

This package is known to build and work properly using an LFS-7.2 platform.

## Package Information

- Download (HTTP): <http://download.transmissionbt.com/files/transmission-2.77.tar.xz>
- 
- Download MD5 sum: 60c0e77a1852656215f7102a437b2a3d
- Download size: 2.9 MB
- Estimated disk space required: 250 MB
- Estimated build time: 0.8 SBU

## Transmission Dependencies

### Required

OpenSSL-1.0.1e, cURL-7.30.0, libevent-2.0.21 and Intltool-0.50.2

### Recommended (to build a GUI)

GTK+-3.6.4 or Qt-4.8.4

### Optional

Doxygen-1.8.4

## Installation of Transmission

Install Transmission by running the following commands:

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

If you have installed Qt-4.8.4 and would like to compile the Qt GUI, run the following commands:

```
pushd qt &&
qmake qtr.pro &&
make &&
popd
```

This package does not come with a test suite.

Now, as the root user:

```
make install
```

If you compiled the Qt GUI, install it by running the following commands as the `root` user:

```
INSTALL_ROOT=/usr make -C qt install &&
install -m644 qt/transmission-qt.desktop /usr/share/applications/transmission-qt.desktop
install -m644 qt/icons/transmission.png /usr/share/pixmaps/transmission-qt.png
```

## Command Explanations

`--without-gtk`: This switch disables building of the GTK+ interface.

## Contents

<b>Installed Programs:</b>	transmission-cli, transmission-create, transmission-daemon, transmission-edit, transmission-gtk, transmission-qt, transmission-remote and transmission-show
<b>Installed Libraries:</b>	None
<b>Installed Directory:</b>	/usr/share/transmission

## Short Descriptions

<b>transmission-cli</b>	is a lightweight, command-line BitTorrent client with scripting capabilities.
<b>transmission-create</b>	is a command line tool used to create .torrent files.
<b>transmission-daemon</b>	is a daemon-based Transmission session that can be controlled via RPC commands from transmission's web interface or <b>transmission-remote</b> .
<b>transmission-edit</b>	is a command-line utility to modify .torrent files' announce URLs.
<b>transmission-gtk</b>	is a GTK+ bittorrent client.
<b>transmission-qt</b>	is a Qt bittorrent client.
<b>transmission-remote</b>	is a remote control utility for transmission-daemon and transmission.
<b>transmission-show</b>	is a command line tool to display bittorrent .torrent file metadata.

# XChat-2.8.8

## Introduction to XChat

XChat is an IRC chat program. It allows you to join multiple IRC channels (chat rooms) at the same time, talk publicly, have private one-on-one conversations, etc. File transfers are also possible.

This package is known to build and work properly using an LFS-7.2 platform.

## Package Information

- Download (HTTP): <http://www.xchat.org/files/source/2.8/xchat-2.8.8.tar.bz2>
- Download (FTP): <ftp://mirror.ovh.net/gentoo-distfiles/distfiles/xchat-2.8.8.tar.bz2>
- Download MD5 sum: 6775c44f38e84d06c06c336b32c4a452
- Download size: 1.4 MB
- Estimated disk space required: 40 MB
- Estimated build time: 0.4 SBU

## Additional Downloads

- Required patch: <http://www.linuxfromscratch.org/patches/blfs/svn/xchat-2.8.8-glib-2.31-1.patch>

## XChat Dependencies

### Required

GLib-2.34.3

### Recommended

GTK+-2.24.17

### Optional

enchant-1.6.0 (runtime), D-Bus GLib Bindings-0.100.2, GConf-3.2.6, OpenSSL-1.0.1e, Python-2.7.5 and Tcl-8.6.0

## Installation of XChat

Install XChat by running the following commands:

```
patch -Np1 -i ../xchat-2.8.8-glib-2.31-1.patch &&
LIBS+=" -lgmodule-2.0" ./configure --prefix=/usr \
    --sysconfdir=/etc \
    --enable-shm &&
make
```

This package does not come with a test suite.

Now, as the root user:

```
make install &&
install -v -m755 -d /usr/share/doc/xchat-2.8.8 &&
install -v -m644 README faq.html \
    /usr/share/doc/xchat-2.8.8
```

## Command Explanations

**--sysconfdir=\$GNOME\_SYSCONFDIR:** Setting the sysconfdir using this parameter will ensure that the sysconfdir is consistent with the installation environment and the package will be installed in the correct location.

**--enable-shm:** This parameter is used to enable XShm for fast tinting.

**--enable-ipv6:** Enable IPv6 support in xchat.

## Contents

**Installed Programs:** xchat

**Installed Libraries:** XChat binding modules

**Installed Directories:** /usr/lib/xchat and /usr/share/doc/xchat-2.8.8

## Short Descriptions

**xchat** is a graphical Internet Relay Chat (IRC) client.

# xdg-utils-1.1.0-rc1

## Introduction to xdg-utils

xdg-utils is a set of command line tools that assist applications with a variety of desktop integration tasks. It is required for Linux Standards Base (LSB) conformance.

This package is known to build and work properly using an LFS-7.2 platform.

## Package Information

- Download (HTTP): <http://portland.freedesktop.org/download/xdg-utils-1.1.0-rc1.tar.gz>
- 
- Download MD5 sum: fadf5e7a08e0526fc60dbe3e5b7ef8d6
- Download size: 300 KB
- Estimated disk space required: 1.6 MB
- Estimated build time: less than 0.1 SBU

## Installation of xdg-utils

Compile xdg-utils with the following commands:

```
./configure --prefix=/usr --mandir=/usr/share/man
```



### Caution

The tests for the scripts must be made from a X-Window based session. There are several run-time requirements to run the tests including a browser and an MTA. Running the tests as root user is not recommended.

To run the tests, issue: **make test**.

Now install it as the root user:

```
make install
```

## Contents

<b>Installed Programs:</b>	xdg-desktop-menu, xdg-desktop-icon, xdg-mime, xdg-icon-resource, xdg-open, xdg-email, xdg-screensaver, xdg-settings
<b>Installed Libraries:</b>	None
<b>Installed Directories:</b>	None

## Short Descriptions

<b>xdg-desktop-menu</b>	is a command line tool for (un)installing desktop menu items.
<b>xdg-desktop-icon</b>	is a command line tool for (un)installing icons to the desktop.
<b>xdg-mime</b>	is a command line tool for querying information about file type handling and adding descriptions for new file types.
<b>xdg-icon-resource</b>	is a command line tool for (un)installing icon resources.

<b>xdg-open</b>	opens a file or URL in the user's preferred application.
<b>xdg-email</b>	opens the user's preferred e-mail composer in order to send a mail message.
<b>xdg-screensaver</b>	is a command line tool for controlling the screensaver.
<b>xdg-settings</b>	is a command line tool for managing various settings from the desktop environment.

## **Part XI. Multimedia**

# Chapter 38. 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-1.0.27

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-lib-1.0.27

## Introduction to ALSA Library

The ALSA Library package contains the ALSA library used by programs (including ALSA Utilities) requiring access to the ALSA sound interface.

This package is known to build and work properly using an LFS-7.3 platform.

## Package Information

- Download (HTTP): <http://alsa.cybermirror.org/lib/alsa-lib-1.0.27.tar.bz2>
- Download (FTP): <ftp://ftp.alsa-project.org/pub/lib/alsa-lib-1.0.27.tar.bz2>
- Download MD5 sum: f090c7dbd0fe57d786d82e411eac2d08
- Download size: 880 KB
- Estimated disk space required: 45 MB
- Estimated build time: 0.3 SBU

## Additional Downloads

- Required patch: [http://www.linuxfromscratch.org/patches/blfs/svn/alsa-lib-1.0.27-upstream\\_fixes-1.patch](http://www.linuxfromscratch.org/patches/blfs/svn/alsa-lib-1.0.27-upstream_fixes-1.patch)

## ALSA Library Dependencies

### Optional

Doxygen-1.8.4 and Python-2.7.5

## Kernel Configuration

In the Device Drivers  $\Rightarrow$  Sound card support  $\Rightarrow$  Advanced Linux Sound Architecture section of the kernel configuration, select the settings and drivers appropriate for your hardware. Ensure that the deprecated Device Drivers  $\Rightarrow$  Sound card support  $\Rightarrow$  Open Sound System is *not* selected. If necessary, recompile and install your new kernel.

## Installation of ALSA Library

Install ALSA Library by running the following commands:

```
patch -Npl -i ../alsa-lib-1.0.27-upstream_fixes-1.patch &&
./configure &&
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
```

To install the API documentation, run the following command as the `root` user:

```
install -v -d -m755 /usr/share/doc/alsa-lib-1.0.27/html &&
install -v -m644 doc/doxygen/html/* /usr/share/doc/alsa-1.0.27/html
```

## Configuring ALSA Library

### Config Files

`~/.asoundrc` and `/etc/asound.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 Program:**

`aserver`

**Installed Library:**

`libasound.so`

**Installed Directories:**

`/usr/include/alsa`, `/usr/lib/alsa-lib`, `/usr/share/alsa` and `/usr/share/doc/alsa-lib-1.0.27`

### Short Descriptions

**aserver** is the ALSA server.

**libasound.so** contains the ALSA API functions.

# alsa-plugins-1.0.27

## Introduction to ALSA Plugins

The ALSA Plugins package contains plugins for various audio libraries and sound servers.

This package is known to build and work properly using an LFS-7.3 platform.

### Package Information

- Download (HTTP): <http://alsa.cybermirror.org/plugins/alsa-plugins-1.0.27.tar.bz2>
- Download (FTP): <ftp://ftp.alsa-project.org/pub/plugins/alsa-plugins-1.0.27.tar.bz2>
- Download MD5 sum: ada0163e0e84c787bfc929ad0f3f5cb8
- Download size: 356 KB
- Estimated disk space required: 5.5 MB
- Estimated build time: less than 0.1 SBU

## ALSA Plugins Dependencies

### Required

alsa-lib-1.0.27

### Optional

FFmpeg-1.2.1, JACK, libsamplerate-0.1.8, PulseAudio-3.0 and Speex-1.2rc1

## Installation of ALSA Plugins

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

<b>Installed Programs:</b>	None
<b>Installed Libraries:</b>	Numerous libasound_module_<module>.so modules including ctl_oss, ctl_pulse, pcm_a52, pcm_jack, pcm_oss, pcm_pulse, pcm_upmix, pcm_usb_stream, pcm_vdownmix, rate_samplerate* and rate_speexrate*
<b>Installed Directories:</b>	None

## Short Descriptions

libasound_module_pcm_oss.so	Allows native ALSA applications to run on OSS.
libasound_module_pcm_upmix.so	Allows upmixing sound to 4 or 6 channels.

libasound_module_pcm_vdownmix.so	Allows downmixing sound from 4-6 channels to 2 channel stereo output.
libasound_module_pcm_jack.so	Allows native ALSA applications to work with <b>jackd</b> .
libasound_module_pcm_pulse.so	Allows native ALSA applications to access a PulseAudio sound daemon.
libasound_module_pcm_a52.so	Converts S16 linear sound format to A52 compressed format and sends it to an SPDIF output.
libasound_module_rate_samplerate.so	Provides an external rate converter through <code>libsamplerate</code> .

# alsa-utils-1.0.27

## Introduction to ALSA Utilities

The ALSA Utilities package contains various utilities which are useful for controlling your sound card.

This package is known to build and work properly using an LFS-7.3 platform.

### Package Information

- Download (HTTP): <http://alsa.cybermirror.org/utils/alsa-utils-1.0.27.tar.bz2>
- Download (FTP): <ftp://ftp.alsa-project.org/pub/utils/alsa-utils-1.0.27.tar.bz2>
- Download MD5 sum: cbfb21a24f63fb052b3392195639ce48
- Download size: 1.1 MB
- Estimated disk space required: 13 MB
- Estimated build time: 0.2 SBU

## ALSA Utilities Dependencies

### Required

alsa-lib-1.0.27

### Optional

*Dialog* and *xmllt-0.0.25*

## Additional Downloads

- Optional patch: [http://www.linuxfromscratch.org/patches/blfs/svn/alsa-utils-1.0.27-no\\_xmllt-1.patch](http://www.linuxfromscratch.org/patches/blfs/svn/alsa-utils-1.0.27-no_xmllt-1.patch)

## Installation of ALSA Utilities

If you have not installed the optional dependency *xmllt-0.0.25*, apply the following patch:

```
patch -Np1 -i ../alsa-utils-1.0.27-no_xmllt-1.patch
```

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

/var/lib/alsa/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-20130512` package.

```
make install-alsa
```

Note that all channels of your sound card are muted by default. You can use the `alsamixer` program to change this. Use `speaker-test` to check that your settings have been applied correctly. You should hear “pink noise” on your speakers.

The `alsactl` program is normally run from a standard udev rule. The first time it is run, it will complain that there is no state in `/var/lib/alsa/asound.state`. You can prevent this by running the following commands as the `root` user:

```
touch /var/lib/alsa/asound.state &&
alsactl store
```

The volume settings will be restored from the saved state by Udev when the device is detected (during boot or when plugged in for USB devices).

All sound devices are not accessible for any user except `root` and members of the `audio` group. Add any users that might use the sound devices to that group:

```
usermod -a -G audio <username>
```



### Note

You may need to log out and back in again to refresh your group memberships. '`su <username>`' should work as well.

## Contents

<b>Installed Programs:</b>	aconnect, alsacnf, alsactl, alsaloop, alsamixer, alsaucm, amidi, amixer, aplay, aplaymidi, arecord, arecordmidi, aseqdump, aseqnet, iecset and speaker-test
<b>Installed Libraries:</b>	None
<b>Installed Directories:</b>	/usr/share/sounds/alsa and /var/lib/alsa

## Short Descriptions

<b>aconnect</b>	is a utility for connecting and disconnecting two existing ports in the ALSA sequencer system.
<b>alsacnf</b>	is a configuration tool which tries to detect the sound cards on your system and write a suitable configuration file for ALSA. This program is incompatible with Udev.
<b>alsactl</b>	is used to control advanced settings for the ALSA sound card drivers.
<b>alsaloop</b>	allows creation of a PCM loopback between a PCM capture device and a PCM playback device.
<b>alsamixer</b>	is an Ncurses based mixer program for use with the ALSA sound card drivers.
<b>amidi</b>	is used to read from and write to ALSA RawMIDI ports.
<b>amixer</b>	allows command-line control of the mixers for the ALSA sound card drivers.
<b>aplay</b>	is a command-line soundfile player for the ALSA sound card drivers.

<b>aplaymidi</b>	is a command-line utility that plays the specified MIDI file(s) to one or more ALSA sequencer ports.
<b>arecord</b>	is a command-line soundfile recorder for the ALSA sound card drivers.
<b>arecordmidi</b>	is a command-line utility that records a standard MIDI file from one or more ALSA sequencer ports.
<b>aseqdump</b>	is a command-line utility that prints the sequencer events it receives as text.
<b>aseqnet</b>	is an ALSA sequencer client which sends and receives event packets over a network.
<b>iecset</b>	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.
<b>speaker-test</b>	is a command-line speaker test tone generator for ALSA.

# alsa-tools-1.0.27

## Introduction to ALSA Tools

The ALSA Tools package contains advanced tools for certain sound cards.

This package is known to build using an LFS 7.3 platform but has not been tested.

### Package Information

- Download (HTTP): <http://alsa.cybermirror.org/tools/alsa-tools-1.0.27.tar.bz2>
- Download (FTP): <ftp://ftp.alsa-project.org/pub/tools/alsa-tools-1.0.27.tar.bz2>
- Download MD5 sum: 1ea381d00a6069a98613aa7effa4cb51
- Download size: 1.6 MB
- Estimated disk space required: 25 MB
- Estimated build time: 0.5 SBU

## ALSA Tools Dependencies

### Required

alsa-lib-1.0.27

### Optional

GTK+-2.24.17 (to build **echomixer**, **envy24control** and **rmedigicontrol**), GTK+-3.6.4 (to build **hdajackretask**) and **FLTK** (to build **hdspconf** and **hdspmixer**)

## 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
```

This package does not come with a test suite.

Now, as the **root** user:

```
make install
```

## Contents

<b>Installed Programs:</b>	as10k1, cspctl, dl10k1, echomixer, envy24control, hdajackretask, hda-verb, hdspconf, hdsploader, hdspmixer, hwmixvolume, init_audigy, init_audigy_eq10, init_live, lo10k1, ld10k1, ld10k1d, mixartloader, pcxhrloader, qlo10k1, rmedigicontrol, sbiload, sscape_ctl, us428control, usx2yloader and vxloader
<b>Installed Library:</b>	liblo10k1.so
<b>Installed Directories:</b>	/usr/include/lo10k1, /usr/share/ld10k1 and /usr/share/sounds

## Short Descriptions

<b>as10k1</b>	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.
<b>cspctl</b>	is an SB16/AWE32 Creative Signal Processor (ASP/CSP) control program.
<b>echomixer</b>	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.
<b>envy24control</b>	is a control tool for Envy24 (ice1712) based sound cards.
<b>hdspconf</b>	is a GUI to control the Hammerfall HDSP Alsa Settings. Up to four hdsp cards are supported.
<b>hdsploader</b>	is used to load the firmware required by the Hammerfall HDSP sound cards.
<b>hdspmixer</b>	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.
<b>ld10k1</b>	is the server of a EMU10K{1,2} patch loader for ALSA.
<b>lo10k1</b>	is the client of a EMU10K{1,2} patch loader for ALSA.
<b>dl10k1</b>	loads config dumps generated by <b>lo10k1</b> and <b>ld10k1</b> .
<b>ld10k1d</b>	is an init script for the <b>ld10k1</b> patch loader.
<b>qlo10k1</b>	is a Qt GUI for the <b>ld10k1</b> patch loader.
<b>mixartloader</b>	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.
<b>pcxhrloader</b>	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.
<b>rmedigicontrol</b>	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.
<b>sbiload</b>	is an OPL2/3 FM instrument loader for the ALSA sequencer.
<b>sscape_ctl</b>	is an ALSA SoundScape control utility.
<b>us428control</b>	is a Tascam US-428 control program.
<b>usx2yloader</b>	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.
<b>vxloader</b>	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-1.0.27

## Introduction to ALSA Firmware

The ALSA Firmware package contains firmware for certain sound cards.

This package is known to build and work properly using an LFS-7.3 platform.

### Package Information

- Download (HTTP): <http://alsa.cybermirror.org/firmware/alsa-firmware-1.0.27.tar.bz2>
- Download (FTP): <ftp://ftp.alsa-project.org/pub/firmware/alsa-firmware-1.0.27.tar.bz2>
- Download MD5 sum: b373b350d5151dd7d64db2fc12936b04
- Download size: 3.8 MB
- Estimated disk space required: 34 MB
- Estimated build time: less than 0.1 SBU

## ALSA Firmware Dependencies

### Required

alsa-tools-1.0.27

### Optional

AS3I (for rebuilding the firmware from source)

## 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

<b>Installed Programs:</b>	None
<b>Installed Libraries:</b>	None
<b>Installed Directories:</b>	Several directories in /lib/firmware and /usr/share/alsa/firmware

# ALSA OSS-1.0.25

## 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.

This package is known to build and work properly using an LFS-7.3 platform.

## Package Information

- Download (HTTP): <http://alsa.cybermirror.org/oss-lib/alsa-oss-1.0.25.tar.bz2>
- Download (FTP): <ftp://ftp.alsa-project.org/pub/oss-lib/alsa-oss-1.0.25.tar.bz2>
- Download MD5 sum: 922ea177db15c72f1b5037181c73f934
- Download size: 247 KB
- Estimated disk space required: 3.0 MB
- Estimated build time: less than 0.1 SBU

## ALSA OSS Dependencies

### Required

alsa-lib-1.0.27

## Installation of ALSA OSS

Install ALSA OSS by running the following commands:

```
./configure --disable-static &&
make
```

This package does not come with a test suite.

Now, as the root user:

```
make install
```

## Command Explanations

*--disable-static*: This switch prevents installation of static versions of the libraries.

## Contents

<b>Installed Program:</b>	aoss
<b>Installed Libraries:</b>	libalsatoss.so, libaoss.so and libossredir.so
<b>Installed Directories:</b>	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.

# AudioFile-0.3.6

## Introduction to AudioFile

The AudioFile package contains the audio file libraries and two sound file support programs useful to support basic sound file formats.

This package is known to build and work properly using an LFS-7.3 platform.

### Package Information

- Download (HTTP): <http://ftp.gnome.org/pub/gnome/sources/audiofile/0.3/audiofile-0.3.6.tar.xz>
- Download (FTP): <ftp://ftp.gnome.org/pub/gnome/sources/audiofile/0.3/audiofile-0.3.6.tar.xz>
- Download MD5 sum: 235dde14742317328f0109e9866a8008
- Download size: 520 KB
- Estimated disk space required: 18 MB
- Estimated build time: 0.6 SBU

## AudioFile Dependencies

### Required

alsa-lib-1.0.27

### Recommended

FLAC-1.2.1

### Optional

*AsciiDoc* and *Valgrind*

## Installation of AudioFile

Install AudioFile by running the following commands:

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

To test the results, issue: **make check**. Note that the tests will fail if the --disable-static option is used.

Now, as the **root** user:

```
make install
```

## Command Explanations

**--disable-static**: This switch prevents installation of static versions of the libraries.

## Contents

<b>Installed Programs:</b>	sfconvert and sfinfo
<b>Installed Libraries:</b>	libaudiofile.so
<b>Installed Directories:</b>	None

## Short Descriptions

<b>sinfo</b>	displays the sound file format, audio encoding, sampling rate and duration for audio formats supported by this library.
<b>sfconvert</b>	converts sound file formats where the original format and destination format are supported by this library.
<b>libaudiofile.so</b>	contains functions used by programs to support AIFF, AIFF-compressed, Sun/NeXT, WAV and BIC audio formats.

# EsounD-0.2.41

## 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.

This package is known to build and work properly using an LFS-7.3 platform.

## Package Information

- Download (HTTP): <http://ftp.gnome.org/pub/gnome/sources/esound/0.2/esound-0.2.41.tar.bz2>
- Download (FTP): <ftp://ftp.gnome.org/pub/gnome/sources/esound/0.2/esound-0.2.41.tar.bz2>
- Download MD5 sum: 8d9aad3d94d15e0d59ba9dc0ea990c6c
- Download size: 392 KB
- Estimated disk space required: 5.3 MB
- Estimated build time: 0.3 SBU

## EsounD Dependencies

### Required

AudioFile-0.3.6

### Optional

alsa-lib-1.0.27 and DocBook-utils-0.6.14 (Required for building the html documentation)

## Installation of EsounD

Install EsounD by running the following commands:

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

This package does not come with a test suite.

Now, as the root user:

```
make install docdir=/usr/share/doc/esound-0.2.41
```

If you have DocBook-utils installed, still as the root user:

```
chown -v root:root /usr/share/doc/esound-0.2.41/*
```

## Command Explanations

*LIBS=-lm*: Make sure the linker uses the math library.

*--sysconfdir=/etc*: This switch puts configuration files in /etc instead of /usr/etc.

*--disable-static*: Prevent the static libraries being built.

# 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

<b>Installed Programs:</b>	esd, esdcat, esd-config, esdctl, esddsp, esdfilt, esdloop, esdmon, esdplay, esdrec, and esdsample
<b>Installed Libraries:</b>	libesd.{so,a} and libesddsp.{so,a}
<b>Installed Directory:</b>	/usr/share/doc/esound

## Short Descriptions

<b>esd</b>	is the Enlightened Sound Daemon.
<b>esdcat</b>	plays a RAW audio stream through the daemon.
<b>esd-config</b>	is used by <b>configure</b> to determine the compiler and linker flags that should be used to compile and link programs that use EsounD.
<b>esdctl</b>	controls certain aspects of the sound daemon.
<b>esddsp</b>	can allow non-esd applications to be routed through esd.
<b>esdfilt</b>	is an EsoundD filter.
<b>esdloop</b>	is test scaffolding for sample cache, loop and free.
<b>esdmon</b>	outputs the mixed stream from the daemon.
<b>esdplay</b>	plays the named file on EsoundD.
<b>esdrec</b>	outputs from the sound device's current input.
<b>esdsample</b>	is test scaffolding for sample cache, playback, and free.
<b>libesd.{so,a}</b>	contains functions used by the EsounD programs to read, write and play various sound format files.
<b>libesddsp.{so,a}</b>	contains functions used by other programs to read, write and play various sound format files.

# FAAC-1.28

## Introduction to FAAC

FAAC is an encoder for a lossy sound compression scheme specified in MPEG-2 Part 7 and MPEG-4 Part 3 standards and known as Advanced Audio Coding (AAC). This encoder is useful for producing files that can be played back on iPod. Moreover, iPod does not understand other sound compression schemes in video files.

This package is known to build and work properly using an LFS-7.3 platform.

## Package Information

- Download (HTTP): <http://downloads.sourceforge.net/faac/faac-1.28.tar.gz>
- Download (FTP): <ftp://mirror.ovh.net/gentoo-distfiles/distfiles/faac-1.28.tar.gz>
- Download MD5 sum: 80763728d392c7d789cde25614c878f6
- Download size: 663 KB
- Estimated disk space required: 20 MB
- Estimated build time: 0.4 SBU

## Additional Downloads

- Required patch: [http://www.linuxfromscratch.org/patches/blfs/svn/faac-1.28-glibc\\_fixes-1.patch](http://www.linuxfromscratch.org/patches/blfs/svn/faac-1.28-glibc_fixes-1.patch)

## FAAC Dependencies

### Optional

libmp4v2 from *mpeg4ip* (untested, as of 2007-09-28, development of the project is stopped; an internal version of the library is used if the external one is not found).

## Installation of FAAC

Install FAAC by running the following commands:

```
patch -Npl -i ../faac-1.28-glibc_fixes-1.patch &&
sed -i -e '/obj-type/d' -e '/Long Term/d' frontend/main.c &&
./configure --prefix=/usr &&
make
```

This package does not come with a test suite. However, basic functionality can be tested by encoding a sample WAV file (the sample file is installed by the alsa-utils-1.0.27 package):

```
./frontend/faac -o Front_Left.mp4 /usr/share/sounds/alsa/Front_Left.wav
```

Then, decode the result using the **faad** program from the FAAD2-2.7 package and play back the decoded file (requires the **aplay** program from the alsa-utils-1.0.27 package):

```
faad Front_Left.mp4
aplay Front_Left.wav
```

**aplay** should identify the file as “Signed 16 bit Little Endian, Rate 48000 Hz, Stereo”, and you should hear the words “front left”.

Now, as the root user:

```
make install
```

## Command Explanations

**sed -i ...**: This command removes documentation for the `--obj-type` parameter from the **faac --long-help** command output. This parameter is already disabled in FAAC-1.28 due to sound quality issues with object types other than “Low Complexity”.

**--enable-drm**: This option is supposed to enable support for encoding files for *Digital Radio Mondiale*, but actually breaks the base functionality of the package (e.g., the resulting **faac** program produces files that cannot be decoded by FAAD2-2.7, even if compiled with DRM support). Don't use it.

## Other AAC encoders

The quality of FAAC is not up to par with the best AAC encoders currently available. Also, it only supports AAC and not High Efficiency AAC (also known as aacPlus), which provides better quality at low bitrates by means of using the “spectral band replication” technology. There are the following alternative programs for producing AAC and HE-AAC streams:

- **Nero AAC Codec**: available only in the binary form, the command-line AAC and HE-AAC encoders for Linux are in the same archive as the Windows application.
- **3GPP Enhanced aacPlus general audio codec**: available in the source form, can encode only HE-AAC up to 48 kbps out of the box, but the maximum bitrate can be changed by editing the tuning table in the `FloatFR_sbrenclib/src/sbr_main.c` file.

Note, however, that iPod supports only Low Complexity AAC profile, which is the default in FAAC, but may not be the default in Nero AAC Encoder and is completely unavailable in the 3GPP encoder.

## Contents

<b>Installed Program:</b>	faac
<b>Installed Libraries:</b>	libfaac.{so,a} and libmp4v2.{so,a}
<b>Installed Directories:</b>	None

## Short Descriptions

<b>faac</b>	is a command-line AAC encoder.
<b>libfaac.{so,a}</b>	contains functions for encoding AAC streams.
<b>libmp4v2.{so,a}</b>	contains functions for creating and manipulating MP4 files.

# FAAD2-2.7

## Introduction to FAAD2

FAAD2 is a decoder for a lossy sound compression scheme specified in MPEG-2 Part 7 and MPEG-4 Part 3 standards and known as Advanced Audio Coding (AAC).

This package is known to build and work properly using an LFS-7.3 platform.

### Package Information

- Download (HTTP): <http://downloads.sourceforge.net/faac/faad2-2.7.tar.gz>
- Download (FTP): <ftp://mirror.ovh.net/gentoo-distfiles/distfiles/faad2-2.7.tar.gz>
- Download MD5 sum: ee1b4d67ea2d76ee52c5621bc6dbf61e
- Download size: 1.1 MB
- Estimated disk space required: 12 MB (without media player plugins)
- Estimated build time: 0.2 SBU (without media player plugins)

### Additional Downloads

- Sample AAC file: <http://www.nch.com.au/acm/sample.aac> (7 KB)

## Installation of FAAD2

Install FAAD2 by running the following commands:

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

This package does not come with a test suite. However, basic functionality can be tested by decoding the sample AAC file:

```
./frontend/faad -o sample.wav ../sample.aac
```

This should display a copyright message and the following information about the sample file:

```
sample.aac file info:
ADTS, 4.608 sec, 13 kbps, 16000 Hz

-----
| Config: 2 Ch |
-----
| Ch | Position |
-----
| 00 | Left front |
| 01 | Right front |
-----
```

Now play the result (requires the **aplay** program from the alsound-utils-1.0.27 package):

```
aplay sample.wav
```

**aplay** should identify the file as “Signed 16 bit Little Endian, Rate 16000 Hz, Stereo”, and you should hear some piano notes.

Now, as the root user:

```
make install
```

## Command Explanations

--with-drm: This option is supposed to enable support for decoding *Digital Radio Mondiale*, but actually breaks the base functionality of the package (e.g., the resulting **faad** program cannot decode the sample AAC file linked above). Don't use it.

## Contents

<b>Installed Program:</b>	faad
<b>Installed Library:</b>	libfaad.{so,a}
<b>Installed Directories:</b>	None

## Short Descriptions

<b>faad</b>	is a command-line utility for decoding AAC and MP4 files.
<b>libfaad.{so,a}</b>	contains functions for decoding AAC streams.

# Farstream-0.2.3

## Introduction to Farstream

The Farstream package contains libraries and a collection of GStreamer modules used for video conferencing. This package is known to build and work properly using an LFS-7.3 platform.

### Package Information

- Download (HTTP): <http://freedesktop.org/software/farstream/releases/farstream/farstream-0.2.3.tar.gz>
- 
- Download MD5 sum: a8971167068b69a6933d3eaaeb9ab448
- Download size: 1.2 MB
- Estimated disk space required: 30 MB
- Estimated build time: 0.2 SBU

## Farstream Dependencies

### Required

`gst-plugins-base-1.0.7` and `libnice-0.1.3`

### Recommended

`gobject-introspection-1.34.2`

### Recommended (Runtime)

`gst-plugins-bad-1.0.7` and `gst-plugins-good-1.0.7`

### Optional

`GTK-Doc-1.18`, `gupnp-igd` and `Valgrind`

## Installation of Farstream

Install Farstream 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`: Use this parameter if GTK-Doc is installed and you wish to rebuild and install the API documentation.

## Contents

<b>Installed Programs:</b>	None
<b>Installed Library:</b>	libfarstream-0.2.so
<b>Installed Directories:</b>	/usr/include/farstream-0.2, /usr/lib/farstream-0.2, /usr/share/farstream, /usr/share/gtk-doc/html/farstream-libs-1.0 and /usr/share/gtk-doc/html/farstream-plugins-0.2

## Short Descriptions

`libfarstream-0.2.so` contains the Farstream API functions.

# FLAC-1.2.1

## Introduction to FLAC

FLAC is an audio CODEC similar to MP3, but lossless, meaning that audio is compressed without losing any information.

This package is known to build and work properly using an LFS-7.3 platform.

## Package Information

- Download (HTTP): <http://downloads.sourceforge.net/flac/flac-1.2.1.tar.gz>
- 
- Download MD5 sum: 153c8b15a54da428d1f0fad756c22c7
- Download size: 1.9 MB
- Estimated disk space required: 205 MB (includes running the test suite)
- Estimated build time: 0.6 SBU (additional 8 SBU to run the test suite)

## FLAC Dependencies

### Optional

libogg-1.3.0, NASM-2.10.07, DocBook-utils-0.6.14, Doxygen-1.8.4 and Valgrind

## Installation of FLAC

Install FLAC by running the following commands:

```
sed -i 's/#include <stdio.h>/&\n#include <string.h>/' \
examples/cpp/encode/file/main.cpp &&

./configure --prefix=/usr \
--mandir=/usr/share/man \
--disable-thorough-tests &&
make
```

To test the results, issue: **make check**. Note that if you passed the **--enable-exhaustive-tests** and **--enable-valgrind-testing** parameters to **configure** and then run the test suite, it will take a *very* long time (up to 300 SBUs) and use about 375 MB of disk space.

Now, as the root user:

```
make install
```

## Command Explanations

**--disable-thorough-tests**: This parameter is used so that the test suite will complete in a reasonable amount of time. Remove it if you desire more extensive tests.

**--enable-sse**: This option is off by default and should be set on if your machine has SSE capability. One way to find out if you have SSE is to issue **cat /proc/cpuinfo** and see if **sse** is listed in the flags.

--disable-static: This switch prevents the static libraries from being built.

## Contents

<b>Installed Programs:</b>	flac and metaflac
<b>Installed Libraries:</b>	libFLAC.{so,a}, libFLAC++.{so,a} and libxmms-flac.{so,a}
<b>Installed Directories:</b>	/usr/include/FLAC, /usr/include/FLAC++ and /usr/share/doc/flac-1.2.1

## Short Descriptions

<b>flac</b>	is a command-line utility for encoding, decoding and converting FLAC files.
<b>metaflac</b>	is a program for listing, adding, removing, or editing metadata in one or more FLAC files.
<b>libFLAC{ ,++ } . { so ,a }</b>	these libraries provide native FLAC and Ogg FLAC C/C++ APIs for programs utilizing FLAC.
<b>libxmms-flac . { so ,a }</b>	is a plugin for XMMS.

# GStreamer-0.10.36

## Introduction to GStreamer

GStreamer is 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. After installing GStreamer, you'll likely need to install one or more of the `gst-plugins-bad-0.10.23`, `gst-plugins-good-0.10.31`, `gst-plugins-ugly-0.10.19` and `gst-ffmpeg-0.10.13` packages.

This package is known to build and work properly using an LFS-7.2 platform.



### Note

GStreamer 1.0 series is not API or ABI compatible with GStreamer 0.10 series and both can be installed on the same system.

## Package Information

- Download (HTTP): <http://ftp.gnome.org/pub/gnome/sources/gstreamer/0.10/gstreamer-0.10.36.tar.xz>
- Download (FTP): <ftp://ftp.gnome.org/pub/gnome/sources/gstreamer/0.10/gstreamer-0.10.36.tar.xz>
- Download MD5 sum: 15389c73e091b1dda915279c388b9cb2
- Download size: 2.9 MB
- Estimated disk space required: 90 MB
- Estimated build time: 1.2 SBU

## GStreamer Dependencies

### Required

`GLib-2.34.3` and `libxml2-2.9.1`

### Optional (Required if building GNOME)

`gobject-introspection-1.34.2`

### Optional

`Gsl-1.15`, `Valgrind` (optionally used during the unit regression tests)

### Optional (Required to rebuild the API Documentation)

`GTK-Doc-1.18` and `Python-2.7.5` (compiled against an XML Parser such as `expat-2.1.0`).

### Optional (Required to Build Manuals)

`DocBook-utils-0.6.14`, `ghostscript-9.06` `libxslt-1.1.28` and `texlive-20120701`

## Installation of GStreamer

Install GStreamer by running the following commands:

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

To test the results, issue: **make check**. There are many other Makefile targets you can specify for running the tests, issue **make -C tests/check help** to see the complete list.

Now, as the root user:

```
make install &&
install -v -m755 -d /usr/share/doc/gstreamer-0.10/design &&
install -v -m644 docs/design/*.txt \
          /usr/share/doc/gstreamer-0.10/design &&

if [ -d /usr/share/doc/gstreamer-0.10/faq/html ]; then
    chown -v -R root:root \
          /usr/share/doc/gstreamer-0.10/*/*html
fi
```

## Testing the Installation

To test the functionality of the GStreamer installation, you can run a simple test as an unprivileged user (you may have to run **ldconfig** as the root user before attempting the test).

```
gst-launch -v fakesrc num_buffers=5 ! fakesink
```

If the command outputs a series of messages from fakesrc and fakesink, everything is okay.

## Command Explanations

**--libexecdir=/usr/lib**: This parameter is used so that the GStreamer internal support programs are installed in the preferred location of /usr/lib/gstreamer-0.10 instead of /usr/libexec/gstreamer-0.10.

**--disable-static**: This switch prevents installation of static versions of the libraries.

**--enable-gtk-doc**: Use this parameter if GTK-Doc is installed and you wish to rebuild and install the API documentation.

**--enable-docbook**: This parameter is used to build HTML, PDF and PostScript versions of the GStreamer User's Manual, FAQ and Writer's Guide. Note that you must have all the listed dependencies installed.

**chown -v -R root:root ...**: The documentation is installed with the ownership of the user who untarred and built the package. This command changes the ownership of the installed documentation files to root:root, and is only executed if the documentation files were built and installed.

## Contents

**Installed Programs:** gst-feedback, gst-feedback-0.10, gst-inspect, gst-inspect-0.10, gst-launch, gst-launch-0.10, gst-typefind, gst-typefind-0.10, gst-xmlinspect, gst-xmlinspect-0.10, gst-xmllaunch and gst-xmllaunch-0.10

**Installed Libraries:** libgstbase-0.10.so, libgstcheck-0.10.so, libgstcontroller-0.10.so, libgstdataprotocol-0.10.so, libgstnet-0.10.so and libgstreamer-0.10.so

**Installed Directories:** /usr/include/gstreamer-0.10, /usr/lib/gstreamer-0.10, /usr/share/gtk-doc/html/gstreamer-0.10, /usr/share/gtk-doc/html/gstreamer-libs-0.10 and /usr/share/gtk-doc/html/gstreamer-plugins-0.10

## Short Descriptions

<b>gst-feedback-0.10</b>	generates debug info for GStreamer bug reports.
<b>gst-inspect-0.10</b>	prints information about a GStreamer plugin or element.
<b>gst-launch-0.10</b>	is a tool that builds and runs basic GStreamer pipelines.
<b>gst-typefind-0.10</b>	uses the GStreamer type finding system to determine the relevant GStreamer plugin to parse or decode a file, and determine the corresponding MIME type.
<b>gst-xmlinspect-0.10</b>	prints information about a GStreamer plugin or element in XML document format.
<b>gst-xmllaunch-0.10</b>	is used to build and run a basic GStreamer pipeline, loading it from an XML description.

# gst-plugins-base-0.10.36

## Introduction to GStreamer Base Plug-ins

The GStreamer Base Plug-ins is a well-groomed and well-maintained collection of GStreamer plug-ins and elements, spanning the range of possible types of elements one would want to write for GStreamer. It also contains helper libraries and base classes useful for writing elements. A wide range of video and audio decoders, encoders, and filters are included. Also see the `gst-plugins-bad-0.10.23`, `gst-plugins-good-0.10.31`, `gst-plugins-ugly-0.10.19`, and `gst-ffmpeg-0.10.13` packages.

This package is known to build and work properly using an LFS-7.3 platform.



### Note

GStreamer 1.0 series is not API or ABI compatible with GStreamer 0.10 series and both can be installed on the same system.

## Package Information

- Download (HTTP): <http://ftp.gnome.org/pub/gnome/sources/gst-plugins-base/0.10/gst-plugins-base-0.10.36.tar.xz>
- Download (FTP): <ftp://ftp.gnome.org/pub/gnome/sources/gst-plugins-base/0.10/gst-plugins-base-0.10.36.tar.xz>
- Download MD5 sum: 3d2337841b132fe996e5eb2396ac9438
- Download size: 2.3 MB
- Estimated disk space required: 105 MB
- Estimated build time: 1.7 SBU

## GStreamer Base Plug-ins Dependencies

### Required

GStreamer-0.10.36 and Pango-1.32.5

### Recommended

`alsa-lib-1.0.27`, `libogg-1.3.0`, `libtheora-1.1.1`, `libvorbis-1.3.3`, `udev`-Installed LFS Version or `udev-extras` (from `systemd`) (for `gudev`), and Xorg Libraries

### Optional (Required if building GNOME)

`gobject-introspection-1.34.2`

### Optional

`CDParanoia-III-10.2`, `GTK+-3.6.4` (required to build the examples), `libvisual`, `ORC`, `Check-0.9.10` (required to run the unit regression tests), and `Valgrind` (optionaly used during the unit regression tests)

### Optional (Required to Rebuild the API Documentation)

`GTK-Doc-1.18` and `Python-2.7.5` (compiled against an XML parser such as `expat-2.1.0`).

## Installation of GStreamer Base Plug-ins

Install GStreamer Base Plug-ins by running the following commands:

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

To run the unit regression tests, issue: **make check**. There are many other Makefile targets you can specify for running the tests, issue **make -C tests/check help** to see the complete list.

Now, as the root user:

```
make install
```

## Command Explanations

**--disable-static**: This switch prevents installation of static versions of the libraries.

**--enable-gtk-doc**: Use this parameter if GTK-Doc is installed and you wish to rebuild and install the API documentation.

## Contents

**Installed Programs:** gst-visualise-0.10

**Installed Libraries:**

libgstapp-0.10.so, libgstaudio-0.10.so, libgstcdda-0.10.so, libgstfft-0.10.so, libgstinterfaces-0.10.so, libgstnetbuffer-0.10.so, libgstopbutils-0.10.so, libgstriff-0.10.so, libgstrtp-0.10.so, libgstrtsp-0.10.so, libgstsdp-0.10.so, libgsttag-0.10.so and libgstvideo-0.10.so

**Installed Directories:**

/usr/include/gstreamer-0.10/gst/{app,audio,cdda,fft,floatcast,interfaces,netbuffer} /  
 /usr/include/gstreamer-0.10/gst/{pbutils,riff,rtp,rtsp,sdp,tag,video}, /usr/share/gst-plugins-base, /usr/share/gtk-doc/html/gst-plugins-base-libs-0.10 and /usr/share/gtk-doc/html/gst-plugins-base-plugins-0.10

## Short Descriptions

### **gst-visualise-0.10**

is used to run a basic GStreamer pipeline to display a graphical visualisation of an audio stream.

# gst-plugins-good-0.10.31

## Introduction to GStreamer Good Plug-ins

The GStreamer Good Plug-ins is a set of plug-ins considered by the GStreamer developers to have good quality code, correct functionality, and the preferred license (LGPL for the plug-in code, LGPL or LGPL-compatible for the supporting library). A wide range of video and audio decoders, encoders, and filters are included. Also see the `gst-plugins-ugly-0.10.19`, `gst-plugins-bad-0.10.23` and `gst-ffmpeg-0.10.13` packages.

This package is known to build and work properly using an LFS-7.3 platform.



### Note

GStreamer 1.0 series is not API or ABI compatible with GStreamer 0.10 series and both can be installed on the same system.

## Package Information

- Download (HTTP): <http://ftp.gnome.org/pub/gnome/sources/gst-plugins-good/0.10/gst-plugins-good-0.10.31.tar.xz>
- Download (FTP): <ftp://ftp.gnome.org/pub/gnome/sources/gst-plugins-good/0.10/gst-plugins-good-0.10.31.tar.xz>
- Download MD5 sum: 555845ceab722e517040bab57f9ace95
- Download size: 2.6 MB
- Estimated disk space required: 110 MB
- Estimated build time: 1.2 SBU

## GStreamer Good Plug-ins Dependencies

### Required

`gst-plugins-base-0.10.36`

### Recommended

`Cairo-1.12.14`, `FLAC-1.2.1`, `libjpeg-turbo-1.2.1`, `libpng-1.6.2` and Xorg Libraries

### Optional (Required if building GNOME)

`GConf-3.2.6` and `libsoup-2.40.3`

### Optional

`AAlib-1.4rc5`, `GTK+-3.6.4` (required to build the examples), `JACK`, `libavc1394` (requires `libraw1394`), `libcaca`, `libcdio`, `libdv-1.0.0`, `libiec61883`, `libshout`, `ORC`, `PulseAudio-3.0`, `Speex-1.2rc1`, `taglib-1.8`, `Video4Linux` and `WavPack`

### Optional, for the unit regression tests

`Valgrind`

### Optional (Required to Rebuild the API Documentation)

`GTK-Doc-1.18` and `Python-2.7.5` (compiled against an XML parser such as `expat-2.1.0`)

## Installation of GStreamer Good Plug-ins

Install GStreamer Good Plug-ins by running the following commands:

```
sed -i -e '/input:/d' sys/v4l2/gstv4l2bufferpool.c &&
./configure --prefix=/usr \
             --sysconfdir=/etc \
             --with-gtk=3.0 &&
make
```

To run the unit regression tests, issue: **make check**. There are many other Makefile targets you can specify for running the tests, issue **make -C tests/check help** to see the complete list.

Now, as the root user:

```
make install
```

If you did not rebuild the API documentation by passing **--enable-gtk-doc** to the **configure** script and you wish to install the pre-built documentation, issue the following command as the root user:

```
make -C docs/plugins install-data
```

## Command Explanations

**sed -i -e '/input:/d' sys/v4l2/gstv4l2bufferpool.c**: This **sed** fixes building with recent kernels.

**--enable-gtk-doc**: Use this parameter if GTK-Doc is installed and you wish to rebuild and install the API documentation.

## Contents

<b>Installed Programs:</b>	None
<b>Installed Libraries:</b>	None
<b>Installed Directory:</b>	/usr/share/gtk-doc/html/gst-plugins-good-plugins-0.10

# gst-plugins-bad-0.10.23

## Introduction to Gstreamer Bad Plug-ins

The GStreamer Bad Plug-ins package contains a set a set of plug-ins that aren't up to par compared to the rest. They might be close to being good quality, but they're missing something - be it a good code review, some documentation, a set of tests, a real live maintainer, or some actual wide use. Also see the `gst-plugins-good-0.10.31`, `gst-plugins-ugly-0.10.19` and `gst-ffmpeg-0.10.13` packages.

This package is known to build and work properly using an LFS-7.3 platform.



### Note

GStreamer 1.0 series is not API or ABI compatible with GStreamer 0.10 series and both can be installed on the same system.

## Package Information

- Download (HTTP): <http://gstreamer.freedesktop.org/src/gst-plugins-bad/gst-plugins-bad-0.10.23.tar.xz>
- 
- Download MD5 sum: e4822fa2cc933768e2998311a1565979
- Download size: 3.1 MB
- Estimated disk space required: 140 MB (depending on which optional dependencies are fulfilled)
- Estimated build time: 2.0 SBU

## GStreamer Bad Plug-ins Dependencies

### Required

`gst-plugins-base-0.10.36`

### Recommended

`FAAC-1.28`, `libpng-1.6.2`, `libvpx-1.1.0`, `OpenSSL-1.0.1e` and `XviD-1.3.2`

### Optional

`celt`, `cURL-7.30.0`, `Dirac`, `DirectFB`, `FAAC-1.28`, `FAAD2-2.7`, `Flite`, `Game Music Emu`, `GSM`, `JasPer-1.900.1`, `LADSPA`, `libass`, `libcdaudio`, `libdc1394`, `libdca`, `libiptcdata`, `libkate`, `libmimic`, `libmms`, `libmodplug`, `libmpcdec`, `libmusicbrainz-2.1.5`, `libofa`, `librsvg-2.36.4`, `libsndfile-1.0.25`, `libvdpau`, `MJPEG Tools`, `neon-0.29.6`, `OpenAL`, `ORC`, `rtmpdump`, `Schroedinger`, `SDL-1.2.15`, `SoundTouch`, `SpanDSP`, `VO AACENC`, `VO AMRWBENC`, `WildMidi`, `ZBAR` and `ZVBI`

### Optional, for the unit regression tests

`Valgrind`

## Installation of GStreamer Bad Plug-ins

Install Gstreamer Bad Plug-ins by running the following commands:

```
./configure --prefix=/usr --with-gtk=3.0 --disable-examples &&
make
```

To test the results, issue: **make check**. Note that tests for some of the items may fail.

Now, as the root user:

```
make install
```

## Command Explanations

*--with-gtk=3.0*: Build against GTK+ 3 instead of the default GTK+ 2; recommended for a GNOME Desktop.

*--disable-examples*: If the dependencies for the camera driver have been satisfied, the associated example code fails to build.

## Contents

<b>Installed Programs:</b>	None
<b>Installed Libraries:</b>	libgstbasecamerabinsrc-0.10.so, libgstbasevideo-0.10.so, libgstdcodecparsers-0.10.so, libgstphotography-0.10.so, libgstsignalprocessor-0.10.so and libgstvdp-0.10.so
<b>Installed Directories:</b>	/usr/include/gstreamer-0.10/gst/{basecamerabinsrc,codecparsers,interfaces}, /usr/include/gstreamer-0.10/gst/{signalprocessor,vdpau,video} and /usr/share/gtk-doc/gst-plugins-bad-libs-0.10

# gst-plugins-ugly-0.10.19

## Introduction to GStreamer Ugly Plug-ins

The GStreamer Ugly Plug-ins is a set of plug-ins considered by the GStreamer developers to have good quality and correct functionality, but distributing them might pose problems. The license on either the plug-ins or the supporting libraries might not be how the GStreamer developers would like. The code might be widely known to present patent problems. Also see the `gst-plugins-bad-0.10.23`, `gst-plugins-good-0.10.31` and `gst-ffmpeg-0.10.13` packages.

This package is known to build and work properly using an LFS-7.3 platform.



### Note

GStreamer 1.0 series is not API or ABI compatible with GStreamer 0.10 series and both can be installed on the same system.

## Package Information

- Download (HTTP): <http://gstreamer.freedesktop.org/src/gst-plugins-ugly/gst-plugins-ugly-0.10.19.tar.xz>
- 
- Download MD5 sum: ba26045c8c8c91f0d48d327ccf53ac0c
- Download size: 864 KB
- Estimated disk space required: 20 MB
- Estimated build time: 0.3 SBU

## Additional Downloads

- Required patch: [http://www.linuxfromscratch.org/patches/blfs/svn/gst-plugins-ugly-0.10.19-libcdio\\_fixes-1.patch](http://www.linuxfromscratch.org/patches/blfs/svn/gst-plugins-ugly-0.10.19-libcdio_fixes-1.patch)

## GStreamer Ugly Plug-ins Dependencies

### Required

`gst-plugins-base-0.10.36`

### Recommended

`LAME-3.99.5`, `libdvdnav-4.2.0` and `libdvdread-4.2.0`

### Optional

`liba52-0.7.4`, `libcdio`, `libmad-0.15.1b`, `libmpeg2-0.5.1`, `libsidplay`, `OpenCore AMR`, `ORC`, `TwoLAME` and `x264`

### Optional, for the unit regression tests

`Valgrind`

### Optional (Required to Rebuild the API Documentation)

`GTK-Doc-1.18` and `Python-2.7.5` (compiled against an XML parser such as `expat-2.1.0`)

## Installation of GStreamer Ugly Plug-ins

Install GStreamer Ugly Plug-ins by running the following commands:

```
patch -Np1 -i ../gst-plugins-ugly-0.10.19-libcdio_fixes-1.patch &&
./configure --prefix=/usr &&
make
```

To run the unit regression tests, issue: **make check**.

Now, as the **root** user:

```
make install
```

If you did not rebuild the API documentation by passing **--enable-gtk-doc** to the **configure** script and you wish to install the pre-built documentation, issue the following command as the **root** user:

```
make -C docs/plugins install-data
```

## Command Explanations

**--enable-gtk-doc**: Use this parameter if GTK-Doc is installed and you wish to rebuild and install the API documentation.

## Contents

<b>Installed Programs:</b>	None
<b>Installed Libraries:</b>	None
<b>Installed Directory:</b>	/usr/share/gtk-doc/html/gst-plugins-ugly-plugins-0.10

# gst-ffmpeg-0.10.13

## Introduction to Gst FFMpeg

The Gst FFMpeg contains GStreamer plugins for FFMpeg.

This package is known to build and work properly using an LFS-7.3 platform.



### Note

GStreamer 1.0 series is not API or ABI compatible with GStreamer 0.10 series and both can be installed on the same system.

## Package Information

- Download (HTTP): <http://gstreamer.freedesktop.org/src/gst-ffmpeg/gst-ffmpeg-0.10.13.tar.bz2>
- 
- Download MD5 sum: 7f5beacaf1312db2db30a026b36888c4
- Download size: 4.6 MB
- Estimated disk space required: 272 MB
- Estimated build time: 2.9 SBU

## Additional Downloads

- Required patch: <http://www.linuxfromscratch.org/patches/blfs/svn/gst-ffmpeg-0.10.13-gcc-4.7-1.patch>

## Gst FFMpeg Dependencies

### Required

gst-plugins-base-0.10.36 and yasm-1.2.0

### Optional

*ORC*

## Installation of Gst FFMpeg

Install Gst FFMpeg by running the following commands:

```
patch -p1 < ../gst-ffmpeg-0.10.13-gcc-4.7-1.patch &&
./configure --prefix=/usr &&
make
```

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

Now, as the root user:

```
make install
```

## Contents

Installed GStreamer Plugins:	libgstffmpeg.so, libgstffmpegscale.so and libgstpostproc.so
------------------------------	---

# GStreamer-1.0.7

## Introduction to GStreamer

GStreamer is a streaming media framework that enables applications to share a common set of plugins for things like video encoding and decoding, audio encoding and decoding, audio and video filters, audio visualisation, web streaming and anything else that streams in real-time or otherwise. This package only provides base functionality and libraries. You may need at least `gst-plugins-base-1.0.7` and one of Good, Bad, Ugly or Libav plugins.

This package is known to build and work properly using an LFS-7.3 platform.



### Note

GStreamer 1.0 series is not API or ABI compatible with GStreamer 0.10 series and both can be installed on the same system.

## Package Information

- Download (HTTP): <http://gstreamer.freedesktop.org/src/gstreamer/gstreamer-1.0.7.tar.xz>
- 
- Download MD5 sum: 8f6066a37c71a0d0ff5fe5f7687fea12
- Download size: 3.0 MB
- Estimated disk space required: 90 MB
- Estimated build time: 0.8 SBU

## GStreamer Dependencies

### Required

`GLib-2.34.3`

### Recommended

`gobject-introspection-1.34.2`

### Optional

`Gsl-1.15`, `GTK-Doc-1.18` and `Valgrind`

## Installation of GStreamer

Install GStreamer by running the following commands:

```
./configure --prefix=/usr \
            --libexecdir=/usr/lib \
            --with-package-name="GStreamer 1.0.7 BLFS" \
            --with-package-origin="http://www.linuxfromscratch.org/blfs/view/svn"
make
```

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

Now, as the root user:

```
make install
```

## Contents

**Installed Programs:**

gst-inspect-1.0, gst-launch-1.0 and gst-typefind-1.0

**Installed Libraries:**

libgstbase-1.0.so, libgstcheck-1.0.so, libgstcontroller-1.0.so, libgstnet-1.0.so and libgststreamer-1.0.so

**Installed Directories:**

/usr/include/gstreamer-1.0, /usr/lib/gstreamer-1.0, /usr/share/gtk-doc/html/gstreamer-1.0, /usr/share/gtk-doc/html/gstreamer-libs-1.0 and /usr/share/gtk-doc/html/gstreamer-plugins-1.0

## Short Descriptions

**gst-inspect-1.0**

is a tool that prints out information on available GStreamer plugins, information about a particular plugin, or information about a particular element.

**gst-launch-1.0**

is a tool that builds and runs basic GStreamer pipelines.

**gst-typefind-1.0**

uses the GStreamer type finding system to determine the relevant GStreamer plugin to parse or decode file, and the corresponding MIME type.

**libgstbase-1.0.so**

provides some base classes to be extended by elements and utility classes that are most useful for plugin developers.

**libgstcheck-1.0.so**

provides functionality for writing unit tests that use the check framework.

**libgstcontroller-1.0.so**

provides functionality to animate element properties over time.

**libgstnet-1.0.so**

provides network elements and objects.

**libgststreamer-1.0.so**

provides all the core GStreamer services, including initialization, plugin management and types, as well as the object hierarchy that defines elements and bins, along with some more specialized elements.

# gst-plugins-base-1.0.7

## Introduction to GStreamer Base Plug-ins

The GStreamer Base Plug-ins is a well-groomed and well-maintained collection of GStreamer plug-ins and elements, spanning the range of possible types of elements one would want to write for GStreamer. You will need at least one of Good, Bad, Ugly or Libav plugins for GStreamer applications to function properly.

This package is known to build and work properly using an LFS-7.3 platform.



### Note

GStreamer 1.0 series is not API or ABI compatible with GStreamer 0.10 series and both can be installed on the same system.

## Package Information

- Download (HTTP): <http://gstreamer.freedesktop.org/src/gst-plugins-base/gst-plugins-base-1.0.7.tar.xz>
- 
- Download MD5 sum: b5b43cfbf82b413ce2e07a190d87e68f
- Download size: 2.3 MB
- Estimated disk space required: 120 MB
- Estimated build time: 1.2 SBU

## GStreamer Base Plug-ins Dependencies

### Required

GStreamer-1.0.7 and libxml2-2.9.1

### Recommended

alsa-lib-1.0.27, gobject-introspection-1.34.2, ISO Codes-3.42, libogg-1.3.0, libtheora-1.1.1, libvorbis-1.3.3, Pango-1.32.5 and Xorg Libraries

### Optional

CDParanoia-III-10.2, GTK+-3.6.4, GTK-Doc-1.18, *libvisual*, ORC and Valgrind

## Installation of GStreamer Base Plug-ins

Install GStreamer Base Plug-ins by running the following commands:

```
./configure --prefix=/usr \
            --with-package-name="GStreamer Base Plugins 1.0.7 BLFS" \
            --with-package-origin="http://www.linuxfromscratch.org/blfs/view/svn
make
```

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

Now, as the root user:

```
make install
```

## Contents

**Installed Programs:**

**Installed Libraries:**

**Installed Directories:**

gst-discoverer-1.0 and gst-visualise-1.0

libgstapp-1.0.so, libgstaudio-1.0.so, libgstfft-1.0.so, libgstputils-1.0.so, libgstriff-1.0.so, libgstrtp-1.0.so, libgstrtsp-1.0.so, libgstsdp-1.0.so, libgsttag-1.0.so, libgstvideo-1.0.so and several plugins in /usr/lib/gstreamer-1.0

/usr/include/gstreamer-1.0/gst/app, /usr/include/gstreamer-1.0/gst/audio, /usr/include/gstreamer-1.0/gst/fft, /usr/include/gstreamer-1.0/gst/pbutils, /usr/include/gstreamer-1.0/gst/riff, /usr/include/gstreamer-1.0/gst/rtp, /usr/include/gstreamer-1.0/gst/rtsp, /usr/include/gstreamer-1.0/gst/sdp, /usr/include/gstreamer-1.0/gst/tag, /usr/include/gstreamer-1.0/gst/video, /usr/share/gst-plugins-base/1.0, /usr/share/gtk-doc/html/gst-plugins-base-libs-1.0 and /usr/share/gtk-doc/html/gst-plugins-base-plugins-1.0

## Short Descriptions

**gst-visualise-1.0**

is a tool that is used to run a basic GStreamer pipeline, to display a graphical visualisation of an audio stream.

# gst-plugins-good-1.0.7

## Introduction to GStreamer Good Plug-ins

The GStreamer Good Plug-ins is a set of plug-ins considered by the GStreamer developers to have good quality code, correct functionality, and the preferred license (LGPL for the plug-in code, LGPL or LGPL-compatible for the supporting library). A wide range of video and audio decoders, encoders, and filters are included.

This package is known to build and work properly using an LFS-7.3 platform.



### Note

GStreamer 1.0 series is not API or ABI compatible with GStreamer 0.10 series and both can be installed on the same system.

## Package Information

- Download (HTTP): <http://gstreamer.freedesktop.org/src/gst-plugins-good/gst-plugins-good-1.0.7.tar.xz>
- 
- Download MD5 sum: e4b1c825475a9b478fe29e8e9f34516f
- Download size: 2.6 MB
- Estimated disk space required: 120 MB
- Estimated build time: 1.2 SBU

## GStreamer Good Plug-ins Dependencies

### Required

`gst-plugins-base-1.0.7`

### Recommended

`Cairo-1.12.14`, `FLAC-1.2.1`, `gdk-pixbuf-2.26.5`, `libjpeg-turbo-1.2.1`, `libpng-1.6.2`, `libsoup-2.40.3`, `libvpx-1.1.0` and `Xorg Libraries`

### Optional

`AAlib-1.4rc5`, `libdv-1.0.0`, `PulseAudio-3.0`, `taglib-1.8`, `udev`-Installed LFS Version or `udev-extras` (from `systemd`) (for GUdev), `JACK`, `libcaca`, `libiec61883`, `libraw1394`, `libshout`, `ORC`, `Video4Linux` and `WavPack`

## Installation of GStreamer Good Plug-ins

Install GStreamer Good Plug-ins by running the following commands:

```
./configure --prefix=/usr \
            --with-package-name="GStreamer Good Plugins 1.0.7 BLFS" \
            --with-package-origin="http://www.linuxfromscratch.org/blfs/view/svn
make
```

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

Now, as the `root` user:

```
make install
```

## Contents

<b>Installed Programs:</b>	None
<b>Installed Libraries:</b>	Several plugins in /usr/lib/gstreamer-1.0
<b>Installed Directory:</b>	/usr/share/gstreamer-1.0/presets

# gst-plugins-bad-1.0.7

## Introduction to GStreamer Bad Plug-ins

The GStreamer Bad Plug-ins package contains a set a set of plug-ins that aren't up to par compared to the rest. They might be close to being good quality, but they're missing something - be it a good code review, some documentation, a set of tests, a real live maintainer, or some actual wide use.

This package is known to build and work properly using an LFS-7.3 platform.



### Note

GStreamer 1.0 series is not API or ABI compatible with GStreamer 0.10 series and both can be installed on the same system.

## Package Information

- Download (HTTP): <http://gstreamer.freedesktop.org/src/gst-plugins-bad/gst-plugins-bad-1.0.7.tar.xz>
- 
- Download MD5 sum: d1493d1219b836a8cbf54f4fba962420
- Download size: 3.0 MB
- Estimated disk space required: 110 MB
- Estimated build time: 0.8 SBU

## GStreamer Bad Plug-ins Dependencies

### Required

gst-plugins-base-1.0.7

### Recommended

libdvread-4.2.0, libdvdnav-4.2.0 and SoundTouch-1.7.1

### Optional

cURL-7.30.0, FAAC-1.28, FAAD2-2.7, GTK+-3.6.4, libexif-0.6.21, libmpeg2-0.5.1, MesaLib-9.1.3, mpg123-1.15.3, OpenSSL-1.0.1e, Xorg Libraries, *Celt*, *Flite*, *Game Music Emu*, *GSM*, *libass*, *libdca*, *libmimic*, *libmms*, *libvdpau*, *MJPEG Tools*, *ORC*, *RTMPDUMP*, *Schroedinger*, *VO AAC*, *VO AMRWB* and *ZBAR*

## Installation of GStreamer Bad Plug-ins

Install GStreamer Bad Plug-ins by running the following commands:

```
./configure --prefix=/usr \
            --with-package-name="GStreamer Bad Plugins 1.0.7 BLFS" \
            --with-package-origin="http://www.linuxfromscratch.org/blfs/view/svn
make
```

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

Now, as the root user:

```
make install
```

## Contents

**Installed Programs:**

None

**Installed Libraries:**

libgstbasecamerabinsrc-1.0.so, libgstbasevideo-1.0.so, libgstcodecparsers-1.0.so, libgstphotography-1.0.so, libgstsignalprocessor-1.0.so and several plugins in /usr/lib/gststreamer-1.0

**Installed Directories:**

/usr/include/gststreamer-1.0/gst/basecamerabinsrc, /usr/include/gststreamer-1.0/gst/codecparsers, /usr/include/gststreamer-1.0/gst/interfaces, /usr/include/gststreamer-1.0/gst/signalprocessor, /usr/include/gststreamer-1.0/gst/video, /usr/share/gststreamer-1.0/presets and /usr/share/gtk-doc/html/gst-plugins-bad-libs-1.0

# gst-plugins-ugly-1.0.7

## Introduction to GStreamer Ugly Plug-ins

The GStreamer Ugly Plug-ins is a set of plug-ins considered by the GStreamer developers to have good quality and correct functionality, but distributing them might pose problems. The license on either the plug-ins or the supporting libraries might not be how the GStreamer developers would like. The code might be widely known to present patent problems.

This package is known to build and work properly using an LFS-7.3 platform.



### Note

GStreamer 1.0 series is not API or ABI compatible with GStreamer 0.10 series and both can be installed on the same system.

## Package Information

- Download (HTTP): <http://gstreamer.freedesktop.org/src/gst-plugins-ugly/gst-plugins-ugly-1.0.7.tar.xz>
- 
- Download MD5 sum: 8754edf6c3be235f232fb75ad11708bb
- Download size: 808 KB
- Estimated disk space required: 20 MB
- Estimated build time: 0.2 SBU

## GStreamer Ugly Plug-ins Dependencies

### Required

gst-plugins-base-1.0.7

### Recommended

LAME-3.99.5 and libdvdread-4.2.0

### Optional

liba52-0.7.4, libmad-0.15.1b, libmpeg2-0.5.1, *libcdio*, *libsidplay*, *OpenCore AMR*, *ORC*, *TwoLame* and *x264*

## Installation of GStreamer Ugly Plug-ins

Install GStreamer Ugly Plug-ins by running the following commands:

```
./configure --prefix=/usr \
            --with-package-name="GStreamer Ugly Plugins 1.0.7 BLFS" \
            --with-package-origin="http://www.linuxfromscratch.org/blfs/view/svn
make
```

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

Now, as the root user:

```
make install
```

## Contents

<b>Installed Programs:</b>	None
<b>Installed Libraries:</b>	Several plugins in /usr/lib/gstreamer-1.0
<b>Installed Directory:</b>	/usr/share/gstreamer-1.0/presets

# gst-libav-1.0.7

## Introduction to GStreamer Libav

The GStreamer Libav package contains GStreamer plugins for Libav (a fork of FFmpeg).

This package is known to build and work properly using an LFS-7.3 platform.



### Note

GStreamer 1.0 series is not API or ABI compatible with GStreamer 0.10 series and both can be installed on the same system.

## Package Information

- Download (HTTP): <http://gstreamer.freedesktop.org/src/gst-libav/gst-libav-1.0.7.tar.xz>
- 
- Download MD5 sum: 68e1eb18a58907e21b81d26ce7db056a
- Download size: 4.1 MB
- Estimated disk space required: 320 MB
- Estimated build time: 3.0 SBU

## GStreamer Libav Dependencies

### Required

`gst-plugins-base-1.0.7` and `yasm-1.2.0`

### Optional

*ORC*

## Installation of GStreamer Libav

Install GStreamer Libav by running the following commands:

```
./configure --prefix=/usr \
            --with-package-name="GStreamer Libav Plugins 1.0.7 BLFS" \
            --with-package-origin="http://www.linuxfromscratch.org/blfs/view/svn
make
```

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

Now, as the root user:

```
make install
```

## Contents

<b>Installed Programs:</b>	None
<b>Installed Libraries:</b>	Several plugins in /usr/lib/gstreamer-1.0
<b>Installed Directories:</b>	None

# 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.

This package is known to build and work properly using an LFS-7.2 platform.

### Package Information

- Download (HTTP): <http://liba52.sourceforge.net/files/a52dec-0.7.4.tar.gz>
- 
- Download MD5 sum: caa9f5bc44232dc8aeea773fea56be80
- Download size: 236 KB
- Estimated disk space required: 2.5 MB
- Estimated build time: less than 0.1 SBU

### Optional

*djbfft*

## Installation of Liba52

Install liba52 by running the following commands:

```
./configure --prefix=/usr \
            --mandir=/usr/share/man \
            --enable-shared \
            --disable-static \
            CFLAGS="-g -O2 $([ $(uname -m) = x86_64 ] && echo -fPIC)" &&
make
```

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

Now, as the **root** user:

```
make install &&
cp liba52/a52_internal.h /usr/include/a52dec &&
install -v -m644 -D doc/liba52.txt \
        /usr/share/doc/liba52-0.7.4/liba52.txt
```

## Command Explanations

**CFLAGS="-g -O2 . . .**: This sets CFLAGS to -g -O2 (which is the default) but then on x86\_64 adds -fPIC. This is needed to compile liba52 on x86\_64.

**--disable-static**: This option stops it installing the static version of the library.

**cp liba52/a52\_internal.h ...**: Copying this header file into /usr/include/a52dec allows some other programs (such as xine-lib) to compile and link against a system installed liba52.

## Contents

**Installed Programs:** a52dec and extract\_a52  
**Installed Library:** liba52.so  
**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** provides functions for the programs dealing with ATSC A/52 streams.

# Libao-1.1.0

## 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), aRTS (analog Real-Time Synthesizer and PulseAudio (next generation GNOME sound architecture).

This package is known to build and work properly using an LFS-7.2 platform.

## Package Information

- Download (HTTP): <http://downloads.xiph.org/releases/ao/libao-1.1.0.tar.gz>
- Download (FTP): <ftp://mirror.ovh.net/gentoo-distfiles/distfiles/libao-1.1.0.tar.gz>
- Download MD5 sum: 2b2508c29bc97e4dc218fa162cf883c8
- Download size: 388 KB
- Estimated disk space required: 3.5 MB
- Estimated build time: less than 0.1 SBU

## Libao Dependencies

### Optional

X Window System, Esound-0.2.41, ALSA-1.0.27, and PulseAudio-3.0 (requires libatomic\_ops-7.2d on x86)

## 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 &&
install -v -m644 README /usr/share/doc/libao-1.1.0
```

## 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

<b>Installed Programs:</b>	None
<b>Installed Libraries:</b>	libao.so and plugins
<b>Installed Directories:</b>	/usr/include/ao, /usr/lib/ao and /usr/share/doc/libao-1.1.0

## Short Descriptions

`libao.so` provides functions for programs wishing to output sound over supported platforms.

# libcanberra-0.30

## Introduction to libcanberra

libcanberra is an implementation of the XDG Sound Theme and Name Specifications, for generating event sounds on free desktops, such as GNOME.

This package is known to build and work properly using an LFS-7.2 platform.

### Package Information

- Download (HTTP): <http://0pointer.de/lennart/projects/libcanberra/libcanberra-0.30.tar.xz>
- 
- Download MD5 sum: 34cb7e4430afaf6f447c4ebdb9b42072
- Download size: 312 KB
- Estimated disk space required: 7.5 MB
- Estimated build time: 0.1 SBU

## libcanberra Dependencies

### Required

libvorbis-1.3.3

### Recommended

alsa-lib-1.0.27, GStreamer-1.0.7 and GTK+-3.6.4

### Optional

GTK+-2.24.17, GTK-Doc-1.18, PulseAudio-3.0 and *tdb*

## Installation of libcanberra

Install libcanberra by running the following commands:

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

This package does not come with a test suite.

Now, as the root user:

```
make docdir=/usr/share/doc/libcanberra/0.30 install
```

## Command Explanations

--enable-gtk-doc: Use this parameter if GTK-Doc is installed and you wish to rebuild and install the API documentation.

## Contents

<b>Installed Programs:</b>	canberra-boot and canberra-gtk-play
<b>Installed Libraries:</b>	libcanberra-gtk.so, libcanberra-gtk3.so and libcanberra.so
<b>Installed Directories:</b>	/usr/lib/libcanberra-0.30, /usr/share/doc/libcanberra and /usr/share/gtk-doc/html/libcanberra

## Short Descriptions

<b>canberra-gtk-play</b>	is an application used for playing sound events.
<b>libcanberra-gtk.so</b>	contains the libcanberra bindings for GTK+ 2.
<b>libcanberra-gtk3.so</b>	contains the libcanberra bindings for GTK+ 3.
<b>libcanberra.so</b>	contains the libcanberra API functions.

# libdiscid-0.5.0

## Introduction to libdiscid

The libdiscid package contains a library for creating MusicBrainz DiscIDs from audio CDs. It reads a CD's table of contents (TOC) and generates an identifier which can be used to lookup the CD at MusicBrainz (<http://musicbrainz.org>). Additionally, it provides a submission URL for adding the DiscID to the database.

This package is known to build and work properly using an LFS-7.2 platform.

## Package Information

- Download (HTTP): <http://ftp.musicbrainz.org/pub/musicbrainz/libdiscid/libdiscid-0.5.0.tar.gz>
- 
- Download MD5 sum: a029355e53db1c2c24cc34a6d3e3b626
- Download size: 360 KB
- Estimated disk space required: 2.7 MB
- Estimated build time: less than 0.1 SBU

## Optional

Doxygen-1.8.4

## Installation of libdiscid

Install libdiscid by running the following commands:

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

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

Now, as the root user:

```
make install
```

## Command Explanations

**--disable-static**: This switch prevents installation of static versions of the libraries.

## Contents

<b>Installed Programs:</b>	None
<b>Installed Library:</b>	libdiscid.so
<b>Installed Directory:</b>	/usr/include/discid

## Short Descriptions

**libdiscid.so** contains the DiscID API functions.

# libdvdcss-1.2.13

## Introduction to libdvdcss

libdvdcss is a simple library designed for accessing DVDs as a block device without having to bother about the decryption.

This package is known to build and work properly using an LFS-7.2 platform.

## Package Information

- Download (HTTP): <http://www.videolan.org/pub/libdvdcss/1.2.13/libdvdcss-1.2.13.tar.bz2>
- 
- Download MD5 sum: 53fcf52a60a156763c425572e5179273
- Download size: 332 KB
- Estimated disk space required: 4.0 MB
- Estimated build time: less than 0.1 SBU

## libdvdcss Dependencies

### Optional (to Create Documentation)

Doxygen-1.8.4

## Installation of libdvdcss

Install libdvdcss 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

**--disable-static:** This switch prevents installation of static versions of the libraries.

## Contents

<b>Installed Programs:</b>	None
<b>Installed Library:</b>	libdvdcss.so
<b>Installed Directories:</b>	/usr/include/dvdcss and /usr/share/doc/libdvdcss-1.2.13

## Short Descriptions

**libdvdcss.so** provides the functionality that is required for transparent DVD access with CSS decryption.

# Libdvdread-4.2.0

## Introduction to Libdvdread

libdvdread is a library which provides a simple foundation for reading DVDs.

This package is known to build and work properly using an LFS-7.3 platform.

## Package Information

- Download (HTTP): <http://dvdnav.mplayerhq.hu/releases/libdvdread-4.2.0.tar.bz2>
- 
- Download MD5 sum: ab7a19d3ab1a437ae754ef477d6231a4
- Download size: 95 KB
- Estimated disk space required: 2 MB
- Estimated build time: 0.1 SBU

## Installation of Libdvdread

Install libdvdread by running the following commands:

```
./autogen.sh --prefix=/usr &&
make
```

This package does not come with a test suite.

Now, as the root user:

```
make install
```

## Command Explanations

**./autogen.sh**: This package does not come with the normal **configure** script, so the **autogen.sh** script is used to generate and run **configure**.

## Contents

<b>Installed Programs:</b>	None
<b>Installed Library:</b>	libdvdread.so
<b>Installed Directory:</b>	/usr/include/dvread

## Short Descriptions

**libdvdread.so** provides functionality required to access DVDs.

# Libdvdnav-4.2.0

## Introduction to Libdvdnav

libdvdnav is a library that allows easy use of sophisticated DVD navigation features such as DVD menus, multiangle playback and even interactive DVD games.

This package is known to build and work properly using an LFS-7.3 platform.

## Package Information

- Download (HTTP): <http://dvdnav.mplayerhq.hu/releases/libdvdnav-4.2.0.tar.bz2>
- 
- Download MD5 sum: 53be8903f9802e101929a3451203bbf6
- Download size: 112 KB
- Estimated disk space required: 4.5 MB
- Estimated build time: 0.1 SBU

## Libdvdnav Dependencies

### Required

libdvdread-4.2.0

## Installation of Libdvdnav

Install libdvdnav by running the following commands:

```
./autogen.sh --prefix=/usr &&
make
```

This package does not come with a test suite.

Now, as the root user:

```
make install
```

## Command Explanations

**./autogen.sh**: This package does not come with the normal **configure** script, so the **autogen.sh** script is used to generate and run **configure**.

## Contents

<b>Installed Programs:</b>	dvdnav-config
<b>Installed Library:</b>	libdvdnav.so and libdvdnavmini.so
<b>Installed Directory:</b>	/usr/include/dvdnav

## Short Descriptions

**libdvdnav.so** DVD navigation library.

**libdvdnavmini.so** DVD navigation mini library.

# Libdv-1.0.0

## Introduction to Libdv

The Quasar DV Codec (libdv) is a software CODEC for DV video, the encoding format used by most digital camcorders. It can be used to copy videos from camcorders using a firewire (IEEE 1394) connection.

This package is known to build and work properly using an LFS-7.3 platform.

## Package Information

- Download (HTTP): <http://downloads.sourceforge.net/libdv/libdv-1.0.0.tar.gz>
- 
- Download MD5 sum: f895162161cfa4bb4a94c070a7caa6c7
- Download size: 574 KB
- Estimated disk space required: 6.0 MB
- Estimated build time: 0.2 SBU

## Libdv Dependencies

### Optional

popt-1.16, pkg-config-0.28, SDL-1.2.15, and X Window System

## Installation of Libdv

Install libdv by running the following commands:

```
./configure --prefix=/usr \
            --disable-xv \
            --disable-static &&
make
```

This package does not come with a test suite.

Now, as the root user:

```
make install &&
install -v -m755 -d      /usr/share/doc/libdv-1.0.0 &&
install -v -m644 README* /usr/share/doc/libdv-1.0.0
```

## Command Explanations

**--disable-xv**: This parameter is required if an X Window System is not installed. It also prevents **configure** testing for libXv which is only used for an obsolete program **playdv** that will not be built with current linux headers and would also need other obsolete dependencies.

**--disable-static**: This switch prevents the static libraries being installed.

## Contents

<b>Installed Programs:</b>	dubdv, dvconnect, and encodeddv
<b>Installed Library:</b>	libdv.so
<b>Installed Directories:</b>	/usr/include/libdv and /usr/share/doc/libdv-1.0.0

## 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.
- libdv.so** provides functions for programs interacting with the Quasar DV CODEC.

# libmad-0.15.1b

## Introduction to libmad

libmad is a high-quality MPEG audio decoder capable of 24-bit output.

This package is known to build and work properly using an LFS-7.3 platform.

## Package Information

- Download (HTTP): <http://downloads.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: 491 KB
- Estimated disk space required: 4.2 MB
- Estimated build time: 0.1 SBU

## Installation of libmad

Install libmad by running the following commands:

```
sed -i '/-fforce-mem/d' configure &&
./configure --prefix=/usr &&
make
```

This package does not come with a test suite.

Now, as the root user:

```
make install
```

Some packages check for the pkg-config file for libmad. This file is particularly needed so that Cdrdao can recognize the installed libmad.

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: 0.15.1b
Libs: -L${libdir} -lmad
Cflags: -I${includedir}
EOF
```

## Command Explanations

**sed -i '/-fforce-mem/d':** This removes an obsolete compilation option that causes compilation to fail under GCC 4.4.x

## Contents

<b>Installed Programs:</b>	None
<b>Installed Library:</b>	libmad.{so,a}
<b>Installed Directories:</b>	None

## Short Descriptions

`libmad.{so,a}` is a MPEG audio decoder library.

# libmpeg2-0.5.1

## Introduction to libmpeg2

The libmpeg2 package contains a library for decoding MPEG-2 and MPEG-1 video streams. The library is able to decode all MPEG streams that conform to certain restrictions: “constrained parameters” for MPEG-1, and “main profile” for MPEG-2. This is useful for programs and applications needing to decode MPEG-2 and MPEG-1 video streams.

This package is known to build and work properly using an LFS-7.2 platform.

## Package Information

- Download (HTTP): <http://libmpeg2.sourceforge.net/files/libmpeg2-0.5.1.tar.gz>
- Download (FTP): <ftp://mirror.ovh.net/gentoo-distfiles/distfiles/libmpeg2-0.5.1.tar.gz>
- Download MD5 sum: 0f92c7454e58379b4a5a378485bbd8ef
- Download size: 513 KB
- Estimated disk space required: 6 MB
- Estimated build time: 0.1 SBU

## libmpeg2 Dependencies

### Optional

X Window System and SDL-1.2.15

## Installation of libmpeg2

Install libmpeg2 by running the following commands:

```
sed -i 's/static const/static/' libmpeg2/idct_mmx.c &&
./configure --prefix=/usr &&
make
```

To test the results, issue: **make check**. To perform a more comprehensive regression test, see the file **test/README** in the source tree.

Now, as the **root** user:

```
make install &&
install -v -m755 -d /usr/share/doc/mpeg2dec-0.5.1 &&
install -v -m644 README doc/libmpeg2.txt \
          /usr/share/doc/mpeg2dec-0.5.1
```

## Command Explanations

**sed -i ...**: This **sed** fixes problems with recent GCC compilers.

## Contents

<b>Installed Programs:</b>	corrupt_mpeg2, extract_mpeg2 and mpeg2dec
<b>Installed Libraries:</b>	libmpeg2.{so,a} and libmpeg2convert.{so,a}
<b>Installed Directories:</b>	/usr/include/mpeg2dec and /usr/share/doc/mpeg2dec-0.5.1

## Short Descriptions

<b>extract_mpeg2</b>	extracts MPEG video streams from a multiplexed stream.
<b>mpeg2dec</b>	decodes MPEG1 and MPEG2 video streams.
<b>libmpeg2.{so,a}</b>	contains API functions used to decode MPEG video streams.
<b>libmpeg2convert.{so,a}</b>	contains API functions used for color conversions of MPEG video streams.

# libMPEG3-1.8

## Introduction to libMPEG3

libMPEG3 supports advanced editing and manipulation of MPEG streams.

This package is known to build and work properly using an LFS-7.2 platform.

### Package Information

- Download (HTTP): <http://downloads.sourceforge.net/heroines/libmpeg3-1.8-src.tar.bz2>
- 
- Download MD5 sum: a9d0d34e8941a4437eb8e7dfe559eca1
- Download size: 2.4 MB
- Estimated disk space required: 13 MB
- Estimated build time: 0.1 SBU

### Additional Downloads

- Required Patch: [http://www.linuxfromscratch.org/patches/blfs/svn/libmpeg3-1.8-makefile\\_fixes-2.patch](http://www.linuxfromscratch.org/patches/blfs/svn/libmpeg3-1.8-makefile_fixes-2.patch)

### libMPEG3 Dependencies

#### Required

liba52-0.7.4 and NASM-2.10.07

## Installation of libMPEG3

Install libMPEG3 by running the following commands:

```
patch -Np1 -i ../../libmpeg3-1.8-makefile_fixes-2.patch &&
make
```

This package does not come with a test suite.

Now, as the root user:

```
make install
```

## Contents

<b>Installed Programs:</b>	mpeg3cat, mpeg3dump, mpeg3peek and mpeg3toc
<b>Installed Libraries:</b>	libmpeg3.{so,a}
<b>Installed Directories:</b>	/usr/include/audio and /usr/include/video

## Short Descriptions

<b>mpeg3cat</b>	concatenates elementary streams or demultiplexes a program stream (separates components of the stream).
<b>mpeg3dump</b>	dumps information or extracts audio to a 24 bit PCM file.
<b>mpeg3peek</b>	prints the byte offset of a given frame. It only works for video and requires a table of contents.

**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.

# libmusicbrainz-2.1.5

## Introduction to libmusicbrainz

The libmusicbrainz package contains a library which allows you to access the data held on the MusicBrainz server. This is useful for adding MusicBrainz lookup capabilities to other applications.

MusicBrainz is a community music metadatabase that attempts to create a comprehensive music information site. You can use the MusicBrainz data either by browsing the web site, or you can access the data from a client program — for example, a CD player program can use MusicBrainz to identify CDs and provide information about the CD, about the artist or other related information.

This package is known to build and work properly using an LFS-7.2 platform.

## Package Information

- Download (HTTP): <http://ftp.musicbrainz.org/pub/musicbrainz/libmusicbrainz-2.1.5.tar.gz>
- Download (FTP): <ftp://ftp.musicbrainz.org/pub/musicbrainz/libmusicbrainz-2.1.5.tar.gz>
- Download MD5 sum: d5e19bb77edd6ea798ce206bd05ccc5f
- Download size: 524 KB
- Estimated disk space required: 12 MB
- Estimated build time: 0.4 SBU

## Additional Downloads

- Required patch: <http://www.linuxfromscratch.org/patches/blfs/svn/libmusicbrainz-2.1.5-missing-includes-1.patch>

## libmusicbrainz Dependencies

### Required

expat-2.1.0

### Optional to Build the Python Bindings

Python-2.7.5

## Installation of libmusicbrainz

Install libmusicbrainz by running the following commands:

```
patch -Np1 -i ../libmusicbrainz-2.1.5-missing-includes-1.patch &&
./configure --prefix=/usr &&
make
```

If Python is installed, build the bindings with the following commands:

```
(cd python && python setup.py build)
```

This package does not come with a stand-alone test suite (to test you must have Python installed and perform the test after the package is installed).

Now, as the root user:

```
make install &&
install -v -m644 -D docs(mb_howto.txt \
/usr/share/doc/libmusicbrainz-2.1.5/mb_howto.txt
```

To test the Python bindings, issue the following: (**cd python && python setup.py test**).

If you built the Python bindings, issue the following commands as the root user to install them:

```
(cd python && python setup.py install)
```

## Contents

**Installed Programs:**

None

**Installed Library:**

libmusicbrainz.{so,a}

**Installed Directories:**

/usr/include/musicbrainz and /usr/share/doc/libmusicbrainz-2.1.5

## Short Descriptions

`libmusicbrainz.{so,a}` contains API functions to access the MusicBrainz database, both for looking up data and also for submitting new data.

# libmusicbrainz-3.0.3

## Introduction to libmusicbrainz

The libmusicbrainz package contains a library which allows you to access the data held on the MusicBrainz server. This is useful for adding MusicBrainz lookup capabilities to other applications.

libmusicbrainz version 3 is not backward compatible with version 2.

This package is known to build and work properly using an LFS-7.2 platform.

## Package Information

- Download (HTTP): <http://ftp.musicbrainz.org/pub/musicbrainz/libmusicbrainz-3.0.3.tar.gz>
- 
- Download MD5 sum: f4824d0a75bdeef1e45cc88de7bb58a
- Download size: 103 KB
- Estimated disk space required: 9 MB
- Estimated build time: less than 0.1 SBU

## libmusicbrainz Dependencies

### Required

CMake-2.8.11, libdiscid-0.5.0 and neon-0.29.6

### Optional

*cppunit* (Required to run the test suite)

## Installation of libmusicbrainz

Install libmusicbrainz by running the following commands:

```
cmake -DCMAKE_INSTALL_PREFIX=/usr . &&
make
```

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

Now, as the root user:

```
make install
```

## Contents

<b>Installed Programs:</b>	None
<b>Installed Library:</b>	libmusicbrainz3.so
<b>Installed Directory:</b>	/usr/include/musicbrainz3

## Short Descriptions

**libmusicbrainz3.so** contains API functions to access the MusicBrainz database, both for looking up data and also for submitting new data.

# libmusicbrainz-5.0.1

## Introduction to libmusicbrainz

The libmusicbrainz package contains a library which allows you to access the data held on the MusicBrainz server. This package is known to build and work properly using an LFS-7.2 platform.

### Package Information

- Download (HTTP): <https://github.com/downloads/metabrainz/libmusicbrainz/libmusicbrainz-5.0.1.tar.gz>
- 
- Download MD5 sum: a0406b94c341c2b52ec0fe98f57cadf3
- Download size: 108 KB
- Estimated disk space required: 7.0 MB
- Estimated build time: 0.2 SBU

### Additional Downloads

- Required patch: [http://www.linuxfromscratch.org/patches/blfs/svn/libmusicbrainz-5.0.1-build\\_system-1.patch](http://www.linuxfromscratch.org/patches/blfs/svn/libmusicbrainz-5.0.1-build_system-1.patch)

### libmusicbrainz Dependencies

#### Required

CMake-2.8.11 and neon-0.29.6

### Installation of libmusicbrainz

Install libmusicbrainz by running the following commands:

```
patch -Np1 -i ../libmusicbrainz-5.0.1-build_system-1.patch &&
mkdir build &&
cd build &&
cmake -DCMAKE_INSTALL_PREFIX=/usr .. &&
make
```

This package does not come with a test suite.

Now, as the root user:

```
make install
```

### Contents

<b>Installed Programs:</b>	None
<b>Installed Library:</b>	libmusicbrainz5.so
<b>Installed Directory:</b>	/usr/include/libmusicbrainz5

### Short Descriptions

libmusicbrainz5.so contains API functions for accessing the MusicBrainz database.

# libogg-1.3.0

## 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.

This package is known to build and work properly using an LFS-7.3 platform.

## Package Information

- Download (HTTP): <http://downloads.xiph.org/releases/ogg/libogg-1.3.0.tar.xz>
- 
- Download MD5 sum: 84a35715170f2cd4c77a4448772b95d5
- Download size: 288 KB
- Estimated disk space required: 4 MB
- Estimated build time: less than 0.1 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
```

## Command Explanations

**--disable-static**: prevent static libraries being built and installed.

## Contents

<b>Installed Programs:</b>	None
<b>Installed Library:</b>	libogg.{so,a}
<b>Installed Directories:</b>	/usr/include/ogg and /usr/share/doc/libogg-1.3.0

## Short Descriptions

**libogg.{so,a}** libraries provide the functions required for programs to read or write Ogg formatted bit streams.

# libquicktime-1.2.4

## Introduction to libquicktime

The libquicktime package contains the libquicktime library, various plugins and codecs, along with graphical and command line utilities used for encoding and decoding QuickTime files. This is useful for reading and writing files in the QuickTime format. The goal of the project is to enhance, while providing compatibility with the Quicktime 4 Linux library.

This package is known to build and work properly using an LFS-7.2 platform.

## Package Information

- Download (HTTP): <http://downloads.sourceforge.net/libquicktime/libquicktime-1.2.4.tar.gz>
- 
- Download MD5 sum: 81cfcebad9b7ee7e7cfbefc861d6d61b
- Download size: 1.0 MB
- Estimated disk space required: 20 MB
- Estimated build time: 0.7 SBU (includes building all codec modules)

## libquicktime Dependencies

### Optional

alsa-lib-1.0.27, FAAC-1.28, FAAD2-2.7, FFmpeg-1.2.1, GTK+-2.24.17, LAME-3.99.5, libdv-1.0.0, libjpeg-turbo-1.2.1, libpng-1.6.2, libvorbis-1.3.3, *Schroedinger*, *x264* and Xorg Libraries

## Installation of libquicktime

Install libquicktime by running the following commands:

```
./configure --prefix=/usr \
            --docdir=/usr/share/doc/libquicktime-1.2.4 \
            --enable-gpl \
            --without-doxygen &&
make
```

This package does not come with a test suite.

Now, as the root user:

```
make install &&
install -v -m755 -d /usr/share/doc/libquicktime-1.2.4 &&
install -v -m644      README doc/{*.txt,*.html,mainpage.incl} \
                     /usr/share/doc/libquicktime-1.2.4
```

## Command Explanations

--with-libdv: Build with libdv support. Not enabled by default.

--enable-gpl: Changes the licence to GPL. This enables some extra plugins, such as FAAC, FAAD2, and x264.

--without-doxxygen: This is necessary if you do not have Doxygen, omit this if installed.

## Contents

<b>Installed Programs:</b>	libquicktime_config, lqtplay, lqtremux, lqt_transcode, qt2text, qtdechunk, qtdump, qtinfo, qtchunk, qtstreamize and qtyuv4toyuv
<b>Installed Libraries:</b>	libquicktime.so and several plugin codec libraries
<b>Installed Directories:</b>	/usr/include/lqt, /usr/lib/libquicktime and /usr/share/doc/libquicktime-1.2.4

## Short Descriptions

<b>libquicktime_config</b>	is a graphical front end to examine and configure the available libquicktime audio and video codecs.
<b>lqtplay</b>	is a simple QuickTime movie player for X Window System.
<b>lqt_transcode</b>	is a command-line program used to encode video and/or audio files from one format to another.
<b>qtdechunk</b>	can take movies containing rgb frames and write them out as ppm images.
<b>qtchunk</b>	concatenates input frames into a QuickTime movie.
<b>qtyuv4toyuv</b>	is used to write a YUV4 encoded movie as a planar YUV 4:2:0 file.
<b>libquicktime.so</b>	is a library for reading and writing QuickTime files. It provides convenient access to QuickTime files with a variety of supported codecs. The library contains new functions integrated with all the original QuickTime 4 Linux library functions used to encode and decode QuickTime files.

# libsamplerate-0.1.8

## Introduction to libsamplerate

libsamplerate is a sample rate converter for audio.

This package is known to build and work properly using an LFS-7.3 platform.

## Package Information

- Download (HTTP): <http://www.mega-nerd.com/SRC/libsamplerate-0.1.8.tar.gz>
- 
- Download MD5 sum: 1c7fb25191b4e6e3628d198a66a84f47
- Download size: 4.1 MB
- Estimated disk space required: 23 MB
- Estimated build time: 0.2 SBU

## libsamplerate Dependencies

### Optional

*libsndfile-1.0.25*, and *libfftw3* (for tests)

## Installation of libsamplerate

Install libsamplerate by running the following commands:

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

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

Now, as the root user:

```
make install
```

## Contents

<b>Installed Program:</b>	sndfile-resample
<b>Installed Library:</b>	libsamplerate.so
<b>Installed Directory:</b>	/usr/share/doc/libsamplerate0-dev

## Short Descriptions

**sndfile-resample**      is a sample rate converter using libsndfile for file I/O.

# libsndfile-1.0.25

## Introduction to libsndfile

Libsndfile is a library of C routines for reading and writing files containing sampled audio data.

This package is known to build and work properly using an LFS-7.3 platform.

### Package Information

- Download (HTTP): <http://www.mega-nerd.com/libsndfile/files/libsndfile-1.0.25.tar.gz>
- 
- Download MD5 sum: e2b7bb637e01022c7d20f95f9c3990a2
- Download size: 1.1 MB
- Estimated disk space required: 19 MB
- Estimated build time: 0.3 SBU

## libsndfile Dependencies

### Optional

alsa-lib-1.0.27, FLAC-1.2.1, libogg-1.3.0, libvorbis-1.3.3 and SQLite-3.7.16.2

## Installation of libsndfile

Install libsndfile by running the following commands:

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

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

Now, as the root user:

```
makehtmldocdir=/usr/share/doc/libsndfile-1.0.25 install
```

## Contents

<b>Installed Programs:</b>	sndfile-cmp, sndfile-concat, sndfile-convert, sndfile-deinterleave, sndfile-info, sndfile-interleave, sndfile-metadata-get, sndfile-metadata-set, sndfile-play, sndfile-regtest and sndfile-salvage
<b>Installed Library:</b>	libsndfile.so
<b>Installed Directory:</b>	/usr/share/doc/libsndfile-1.0.25

## Short Descriptions

<b>sndfile-cmp</b>	compares two audio files.
<b>sndfile-concat</b>	concatenates two or more audio files.
<b>sndfile-convert</b>	converts a sound files from one format to another.
<b>sndfile-deinterleave</b>	splits a multi-channel into multiple single channel files.
<b>sndfile-info</b>	displays information about a sound file.

<b>sndfile-interleave</b>	converts multiple single channel files into a multi-channel file.
<b>sndfile-metadata-get</b>	retrieves metadata from a sound file.
<b>sndfile-metadata-set</b>	sets metadata in a sound file.
<b>sndfile-play</b>	plays a sound file.
<b>libsndfile.{so,a}</b>	contains the libsndfile API functions.

# libtheora-1.1.1

## Introduction to libtheora

Theora is a free and open video compression format.

This package is known to build and work properly using an LFS-7.3 platform.

## Package Information

- Download (HTTP): <http://downloads.xiph.org/releases/theora/libtheora-1.1.1.tar.bz2>
- 
- Download MD5 sum: 292ab65cedd5021d6b7ddd117e07cd8e
- Download size: 1.85 MB
- Estimated disk space required: 13.4 MB (without static libs or API docs and without installing the examples)
- Estimated build time: 0.2 SBU

## libtheora Dependencies

### Required

libogg-1.3.0

### Recommended

libvorbis-1.3.3

### Optional

SDL-1.2.15 and libpng-1.6.2 (both to build the example players), Doxygen-1.8.4, texlive-20120701, *BibTex*, and *Transfig* (all four to build the API documentation), *Valgrind*

## Installation of libtheora

Install libtheora by running the following commands:

```
sed -i 's/png_\(\sizeof\)/\1/g' examples/png2theora.c &&
./configure --prefix=/usr &&
make
```

If you wish to run the tests, issue: **make check**.

Now, as the root user:

```
make install
```

If you built the examples and wish to install them (so that you can hack on theora):

```
cd examples/.libs &&
for E in *; do
install -v -m755 $E /usr/bin/theora_${E}; done
```

## Command Explanations

**sed -i 's/png\_\(\sizeof\)/\1/g' examples/png2theora.c**: This sed fixes build with libpng 1.6.

--disable-static: This switch prevents building static libraries.

## Contents

<b>Installed Programs:</b>	None, unless you installed the examples
<b>Installed Libraries:</b>	libtheora.{so,a}, libtheoraenc.{so,a}, and libtheoradec.{so,a}
<b>Installed Directories:</b>	/usr/include/theora and /usr/share/doc/libtheora-1.1.1

## Short Descriptions

**libtheora\*.{so,a}** libraries provide the functions to read and write video files.

# libvorbis-1.3.3

## 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.

This package is known to build and work properly using an LFS-7.3 platform.

## Package Information

- Download (HTTP): <http://downloads.xiph.org/releases/vorbis/libvorbis-1.3.3.tar.xz>
- 
- Download MD5 sum: 71b649d3e08e63ece16649df906ce8b9
- Download size: 1.1 MB
- Estimated disk space required: 18 MB
- Estimated build time: 0.3 SBU

## libvorbis Dependencies

### Required

libogg-1.3.0

### Optional

Doxygen-1.8.4 and texlive-20120701 (specifically, pdflatex and htlatex) to build the PDF documentation

## Installation of libvorbis

Install libvorbis by running the following commands:

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

To test the results, issue: **make LIBS=-lm check**.

Now, as the root user:

```
make install &&
install -v -m644 doc/Vorbis* /usr/share/doc/libvorbis-1.3.3
```

## Command Explanations

**--disable-static**: This switch prevents installation of static versions of the libraries.

**--enable-docs**: This switch enables building the documentation in formats other than the supplied html.

## Contents

<b>Installed Programs:</b>	None
<b>Installed Libraries:</b>	libvorbis.so, libvorbisenc.so and libvorbisfile.so
<b>Installed Directories:</b>	/usr/include/vorbis and /usr/share/doc/libvorbis-1.3.3

## Short Descriptions

`libvorbis.so` provides the functions used to read and write sound files.

# libvpx-v1.1.0

## Introduction to libvpx

This package provides the reference implementation of the vp8 Codec from the WebM project, used in most current html5 video.

This package is known to build and work properly using an LFS-7.2 platform.

## Package Information

- Download (HTTP): <http://webm.googlecode.com/files/libvpx-v1.1.0.tar.bz2>
- 
- Download MD5 sum: 7ae163ac3196c79ec2f0904280078a45
- Download size: 1.6 MB
- Estimated disk space required: 15 MB (without the documentation)
- Estimated build time: 0.3 SBU

## libvpx Dependencies

### Required

yasm-1.2.0 (compiling with NASM-2.10.07 is currently broken) and which-2.20 (so **configure** can find yasm)

### Optional

Doxygen-1.8.4 and PHP-5.4.11 (to build the documentation).

## Installation of libvpx

Install libvpx by running the following commands:

```
mkdir ../libvpx-build &&
cd ../libvpx-build &&
../libvpx-v1.1.0/configure --prefix=/usr \
                           --enable-shared \
                           --disable-static &&
make
```

This package does not come with a test suite.

Now, as the root user:

```
make install
```

## Command Explanations

**mkdir .../libvpx-build && cd .../libvpx-build**: The libvpx developers recommend building in a dedicated build directory.

**--disable-static**: This switch prevents building of static versions of libraries.

## Contents

**Installed Programs:** vp8\_scalable\_patterns, vpxdec and vpxenc  
**Installed Libraries:** libvpx.so  
**Installed Directories:** /usr/include/vpx

## Short Descriptions

**vpxdec** is the WebM Project VP8 decoder.  
**vpxenc** is the WebM project VP8 encoder.  
**libvpx.so** provides functions to use the VP8 video codec.

# Opal-3.10.10

## Introduction to Opal

The Opal package contains a C++ class library for normalising the numerous telephony protocols into a single integrated call model.

This package is known to build and work properly using an LFS-7.2 platform.

## Package Information

- Download (HTTP): <http://ftp.gnome.org/pub/gnome/sources/opal/3.10/opal-3.10.10.tar.xz>
- Download (FTP): <ftp://ftp.gnome.org/pub/gnome/sources/opal/3.10/opal-3.10.10.tar.xz>
- Download MD5 sum: 6efa1b4c5e0ad6460019b4c6df0898d7
- Download size: 5.7 MB
- Estimated disk space required: 305 MB
- Estimated build time: 2.0 SBU

## Additional Downloads

- Required Patch: <http://www.linuxfromscratch.org/patches/blfs/svn/opal-3.10.10-ffmpeg-1.patch>

## Opal Dependencies

### Required

Ptlib-2.10.10

### Optional

*Celt*, FFmpeg-1.2.1, *GSM*, *ISDN4Linux*, libtheora-1.1.1, OpenJDK-1.7.0.9, Ruby-1.9.3-p429, *Spandsp*, Speex-1.2rc1 and *x264*

## Installation of Opal

Install Opal by running the following commands:

```
patch -Np1 -i ../opal-3.10.10-ffmpeg-1.patch &&
./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/libopal_s.a
```

## Contents

<b>Installed Programs:</b>	None
<b>Installed Libraries:</b>	libopal.so and libopal_s.a
<b>Installed Directories:</b>	/usr/include/opal and /usr/lib/opal-3.10.10

## Short Descriptions

`libopal.so` contains the Opal API functions.

# PulseAudio-3.0

## Introduction to PulseAudio

PulseAudio is a sound system for POSIX OSes, meaning that it is a proxy for sound applications. It allows you to do advanced operations on your sound data as it passes between your application and your hardware. Things like transferring the audio to a different machine, changing the sample format or channel count and mixing several sounds into one are easily achieved using a sound server.

This package is known to build and work properly using an LFS-7.3 platform.

## Package Information

- Download (HTTP): <http://freedesktop.org/software/pulseaudio/releases/pulseaudio-3.0.tar.xz>
- 
- Download MD5 sum: 47fd7eca8479c757822bee68a1feef25
- Download size: 1.4 MB
- Estimated disk space required: 105 MB
- Estimated build time: 1.6 SBU

## PulseAudio Dependencies

### Required

Intltool-0.50.2, JSON-C-0.11, libsndfile-1.0.25 and pkg-config-0.28

### Recommended

alsa-lib-1.0.27, D-Bus-1.6.10, libcap2-2.22, OpenSSL-1.0.1e, Speex-1.2rc1 and Xorg Libraries

### Optional (Required if building GNOME)

GConf-3.2.6, GLib-2.34.3 and GTK+-2.24.17

### Optional

Avahi-0.6.31, BlueZ-4.101 and SBC-1.1, Check-0.9.10, FFTW, JACK, libasynchns, libsamplerate-0.1.8, LIRC, ORC, TDB, Valgrind, WebRTC AudioProcessing and XEN

## Installation of PulseAudio

In order for PulseAudio to communicate properly with D-BUS, create a unique user. As the root user, run:

```
groupadd -g 58 pulse &&
groupadd -g 59 pulse-access &&
useradd -c "Pulseaudio User" -d /var/run/pulse -g pulse \
        -s /bin/false -u 58 pulse &&
usermod -a -G audio pulse
```

Install PulseAudio by running the following commands:

```
find . -name "Makefile.in" | xargs sed -i "s|(libdir)/@PACKAGE@|(libdir)/pulse|"
sed -i "s@json >= 0.9@json-c >= 0.11@g" configure &&
./configure --prefix=/usr \
    --sysconfdir=/etc \
    --localstatedir=/var \
    --libexecdir=/usr/lib \
    --with-module-dir=/usr/lib/pulse/modules &&
make
```

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

Now, as the root user:

```
make install
```

## Command Explanations

**find . -name Makefile.in ...:** This sed changes the build system to install PulseAudio private libraries into /usr/lib/pulse instead of /usr/lib/pulseaudio.

**sed -i "s@json >= 0.9@json-c >= 0.11@g" configure:** This sed fixes building with JSON-C 0.11.

**--with-module-dir=/usr/lib/pulse/modules:** This parameter ensures that PulseAudio modules are installed in /usr/lib/pulse/modules instead of /usr/lib/pulse-3.0/modules.

## Contents

<b>Installed Programs:</b>	esdcompat, pacat, pacmd, pactl, padsp, pamon, paplay, parec, parecord, pasuspender, pax11publish, pulseaudio, qpaeq, start-pulseaudio-kde and start-pulseaudio-x11
<b>Installed Libraries:</b>	libpulsecore-3.0.so, libpulse-mainloop-glib.so, libpulse-simple.so and libpulse.so
<b>Installed Directories:</b>	/etc/pulse, /usr/include/pulse, /usr/lib/cmake/PulseAudio, /usr/lib/pulse and /usr/share/pulseaudio

## Short Descriptions

<b>esdcompat</b>	is the PulseAudio ESD wrapper script.
<b>pacat</b>	Plays back or records raw or encoded audio streams on a PulseAudio sound server.
<b>pacmd</b>	is a tool used to reconfigure a PulseAudio sound server during runtime.
<b>pactl</b>	is used to control a running PulseAudio sound server.
<b>padsp</b>	is the PulseAudio OSS Wrapper.
<b>pamon</b>	is a symbolic link to <b>pacat</b> .
<b>paplay</b>	is used to play audio files on a PulseAudio sound server.
<b>parec</b>	is a symbolic link to <b>pacat</b> .
<b>parecord</b>	is a symbolic link to <b>pacat</b> .
<b>pasuspender</b>	is a tool that can be used to tell a local PulseAudio sound server to temporarily suspend access to the audio devices, to allow other applications to access them directly.

**pax11publish**

is the PulseAudio X11 Credential Utility.

**pulseaudio**

is a networked low-latency sound server for Linux.

**qpaeq**

is an equalizer interface for PulseAudio equalizer sinks.

**start-pulseaudio-kde**

Starts PulseAudio and loads module-device-manager to use KDE routing policies.

**start-pulseaudio-x11**

Starts PulseAudio and registers it to the X11 session manager.

# SDL-1.2.15

## 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.

This package is known to build and work properly using an LFS-7.3 platform.

## Package Information

- Download (HTTP): <http://www.libsdl.org/release/SDL-1.2.15.tar.gz>
- 
- Download MD5 sum: 9d96df8417572a2afb781a7c4c811a85
- Download size: 3.8 MB
- Estimated disk space required: 40 MB
- Estimated build time: 0.6 SBU

## SDL Dependencies

### Optional

ALSA-1.0.27, Esound-0.2.41, PulseAudio-3.0 NASM-2.10.07, libusb-1.0.9, X Window System, AAlib-1.4rc5, Pth-2.0.7, DirectFB, GGI, SVGAlib-1.9.5 (patched), libcaca and PicoGUI

## Installation of SDL

Install SDL by running the following commands:

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

Now, as the root user:

```
make install &&

install -v -m755 -d /usr/share/doc/SDL-1.2.15/html &&
install -v -m644      docs/html/*.html \
                  /usr/share/doc/SDL-1.2.15/html
```

## Testing SDL

If you wish 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 (they are listed in the README file in this directory). Many of them will need to be manually killed, and you'll need to turn your speakers on with the volume at a suitable level.

## Command Explanations

*--disable-static*: prevent static libraries being built and installed.

## 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

<b>Installed Program:</b>	sdl-config
<b>Installed Libraries:</b>	libSDL.{so,a} and libSDLmain.a
<b>Installed Directories:</b>	/usr/include/SDL and /usr/share/doc/SDL-1.2.15

### Short Descriptions

<b>sdl-config</b>	determines the compile and linker flags that should be used to compile and link programs that use libSDL.
<b>libSDL.{so,a}</b>	library provides low level access to audio, keyboard, mouse, joystick, 3D hardware via OpenGL, and 2D frame buffer across multiple platforms.

# SoundTouch-1.7.1

## Introduction to SoundTouch

The SoundTouch package contains an open-source audio processing library that allows changing the sound tempo, pitch and playback rate parameters independently from each other.

This package is known to build and work properly using an LFS-7.2 platform.

## Package Information

- Download (HTTP): <http://www.surina.net/soundtouch/soundtouch-1.7.1.tar.gz>
- 
- Download MD5 sum: 957500b90593cd6c7d8adc62a64a1851
- Download size: 100 KB
- Estimated disk space required: 6.0 MB
- Estimated build time: less than 0.1 SBU

## Installation of SoundTouch

Install SoundTouch by running the following commands:

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

This package does not come with a test suite.

Now, as the root user:

```
make pkgdocdir=/usr/share/doc/soundtouch-1.7.1 install
```

## Contents

<b>Installed Program:</b>	soundstrecth
<b>Installed Library:</b>	libSoundTouch.so
<b>Installed Directories:</b>	/usr/include/soundtouch and /usr/share/doc/soundtouch-1.7.1

## Short Descriptions

**libSoundTouch.so** contains SoundTouch API functions.

# Speex-1.2rc1

## 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.

This package is known to build and work properly using an LFS-7.2 platform.

## Package Information

- Download (HTTP): <http://downloads.us.xiph.org/releases/speex/speex-1.2rc1.tar.gz>
- 
- Download MD5 sum: c4438b22c08e5811ff10e2b06ee9b9ae
- Download size: 1.0 MB
- Estimated disk space required: 10 MB
- Estimated build time: 0.2 SBU

## Speex Dependencies

### Required

*libogg-1.3.0*

### Optional

*Valgrind*

## Installation of Speex

Install Speex by running the following commands:

```
./configure --prefix=/usr      \
            --disable-static \
            --docdir=/usr/share/doc/speex-1.2rc1 &&
make
```

This package does not come with a test suite.

Now, as the root user:

```
make install
```

## Command Explanations

**--disable-static:** Disables building of static libraries.

## Contents

<b>Installed Programs:</b>	speexdec and speexenc
<b>Installed Libraries:</b>	libspeex.{so,a} and libspeexdsp.{so,a}
<b>Installed Directories:</b>	/usr/share/doc/speex

## Short Descriptions

<b>speexdec</b>	decodes a Speex file and produces a WAV or raw file.
<b>speexenc</b>	encodes a WAV or raw files using Speex.
<b>libspeex.{so,a}</b>	provides functions for the audio encoding/decoding programs.
<b>libspeexdsp.{so,a}</b>	is a speech processing library that goes along with the Speex codec.

# Taglib-1.8

## Introduction to Taglib

Taglib is a library used for reading, writing and manipulating audio file tags and is used by applications such as Amarok and VLC.

This package is known to build and work properly using an LFS-7.2 platform.

## Package Information

- Download (HTTP): <https://github.com/downloads/taglib/taglib/taglib-1.8.tar.gz>
- 
- Download MD5 sum: dcb8bd1b756f2843e18b1fdf3aaeee15
- Download size: 584 KB
- Estimated disk space required: 10 MB
- Estimated build time: 0.3 SBU

## Taglib Dependencies

### Required

CMake-2.8.11

## Installation of Taglib

Install Taglib by running the following commands:

```
mkdir build &&
cd build &&
cmake -DCMAKE_INSTALL_PREFIX=/usr \
      -DCMAKE_BUILD_TYPE=Release \
      .. &&
make
```

Now, as the root user:

```
make install
```

## Contents

<b>Installed Programs:</b>	taglib-config
<b>Installed Libraries:</b>	libtag.so and libtag_c.so
<b>Installed Directories:</b>	/usr/include/taglib

## xine-lib-1.2.2

### 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 audio and video hardware.

This package is known to build and work properly using an LFS-7.3 platform.

### Package Information

- Download (HTTP): <http://downloads.sourceforge.net/xine/xine-lib-1.2.2.tar.xz>
- Download (FTP): <ftp://mirror.ovh.net/gentoo-distfiles/distfiles/xine-lib-1.2.2.tar.xz>
- Download MD5 sum: 6fa70fa336f708452ce9bf311b401de2
- Download size: 4.7 MB
- Estimated disk space required: 119 MB (additional 120 MB to install API documentation)
- Estimated build time: 1.4 SBU

### Xine Libraries Dependencies

#### Required

X Window System, FFmpeg-1.2.1, and at least one of: ALSA-1.0.27, PulseAudio-3.0 or JACK

#### Optional

liba52-0.7.4, AALib-1.4rc5, DirectFB, FAAD2-2.7, FLAC-1.2.1, gdk-pixbuf-2.26.5, gnome-vfs-2.24.4, ImageMagick-6.8.5-6, libbluray, libcaca, libdca, libdvdnav-4.2.0, libFAME, libmad-0.15.1b, libmng-1.0.10, libtheora-1.1.1, libvdpau, libvorbis-1.3.3, MesaLib-9.1.3, libmodplug, musepack, Samba-3.6.12, SDL-1.2.15, Speex-1.2rc1, VCDImager, Video4Linux, WavPack, and Doxygen-1.8.4 (to create the API documentation)

### Installation of Xine Libraries

Install xine Libraries by running the following commands:

```
./configure --prefix=/usr \
            --disable-vcd \
            --docdir=/usr/share/doc/xine-lib-1.2.2 &&
make
```

To create the API documentation, Doxygen must be installed and issue the following command:

```
doxygen doc/Doxyfile
```

This package does not come with a test suite.

Now, as the root user:

```
make install
```

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

```
install -v -m755 -d /usr/share/doc/xine-lib-1.2.2/api &&
install -v -m644 doc/api/* \
          /usr/share/doc/xine-lib-1.2.2/api
```

## Command Explanations

**--disable-vcd:** This option is required to compile Xine Lib without *VCDImager* installed. Remove this option if you have installed VCDImager.

**--docdir=/usr/share/xine-lib-1.2.2:** This switch causes the documentation to be installed into a versioned directory instead of the default /usr/share/doc/xine-lib.

**--with-external-dvdnav:** If you have installed libdvdnav-4.2.0, use this option to make Xine-lib link to the libdvdnav libraries (not recommended by the Xine developers).

**--enable-a52dec=external:** If you have installed liba52-0.7.4 use this option to make Xine-lib link its xineplug\_decode\_a52.so plugin to Liba52.

**--with-external-libmad:** If you have installed libmad-0.15.1b use this option to make Xine-lib link its xineplug\_decode\_mad.so plugin to Libmad.

## Contents

**Installed Programs:** xine-config and xine-list-1.2

**Installed Libraries:** libxine.so and numerous plugin modules and video extensions

**Installed Fonts:** Output display engine fonts located in /usr/share/xine-lib/fonts

**Installed Directories:** /usr/include/xine, /usr/lib/xine, /usr/share/xine-lib and /usr/share/doc/xine-lib-1.2.2

## Short Descriptions

**xine-config** provides information to programs trying to link with the xine libraries.

**xine-list-1.2** is used to get supported filetype information from xine-lib.

**libxine.so** provides the API for processing audio/video files.

## XviD-1.3.2

### Introduction to XviD

XviD is an MPEG-4 compliant video CODEC.

This package is known to build and work properly using an LFS-7.3 platform.

### Package Information

- Download (HTTP): <http://downloads.xvid.org/downloads/xvidcore-1.3.2.tar.gz>
- 
- Download MD5 sum: 87c8cf7b69ebcd93c2d82ea5709d098a
- Download size: 800 KB
- Estimated disk space required: 9 MB
- Estimated build time: 0.2 SBU

### XviD Dependencies

#### Optional

yasm-1.2.0

### Installation of XviD



#### Note

This package tarball expands to `xvidcore`, not the expected `xvidcore-1.3.2`.

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 755 /usr/lib/libxvidcore.so.4.3 &&
ln -v -sf libxvidcore.so.4.3 /usr/lib/libxvidcore.so.4 &&
ln -v -sf libxvidcore.so.4      /usr/lib/libxvidcore.so    &&

install -v -m755 -d /usr/share/doc/xvidcore-1.3.2/examples &&
install -v -m644 ../../doc/* /usr/share/doc/xvidcore-1.3.2 &&
install -v -m644 ../../examples/* \
    /usr/share/doc/xvidcore-1.3.2/examples
```

## 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

<b>Installed Programs:</b>	None
<b>Installed Library:</b>	libxvidcore.{so,a}
<b>Installed Directory:</b>	/usr/share/doc/xvidcore-1.3.2

## Short Descriptions

**libxvidcore.{so,a}** provides functions to encode and decode most MPEG-4 video data.

## Chapter 39. 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.

# Mpg123-1.15.3

## Introduction to Mpg123

The Mpg123 package contains a console-based MP3 player. It claims to be the fastest MP3 decoder for Unix. This package is known to build and work properly using an LFS-7.3 platform.

### Package Information

- Download (HTTP): <http://downloads.sourceforge.net/mpg123/mpg123-1.15.3.tar.bz2>
- 
- Download MD5 sum: f734f9e2982f398a1c919475fc0b3798
- Download size: 784 KB
- Estimated disk space required: 12 MB
- Estimated build time: 0.2 SBU

## Mpg123 Dependencies

### Recommended

alsa-lib-1.0.27

### Optional

Esound-0.2.41, OpenAL, PulseAudio-3.0, JACK, PortAudio and SDL-1.2.15

## Installation of Mpg123

Install Mpg123 by running the following commands:

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

This package does not come with a test suite.

Now, as the root user:

```
make install
```

## Command Explanations

**--disable-static**: This switch prevents installation of static versions of the libraries.

**--with-module-suffix=.so**: This switch tells **mpg123** to load modules with .so extension. Useful if you don't want to keep .la files.

## Contents

<b>Installed Program:</b>	mpg123
<b>Installed Library:</b>	libmpg123.so
<b>Installed Directory:</b>	/usr/lib/mpg123

## Short Descriptions

**mpg123** is used for playing MP3 files via the console.

**libmpg123.so** contains the Mpg123 API functions.

# vorbis-tools-1.4.0

## 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.

This package is known to build and work properly using an LFS-7.3 platform.

## Package Information

- Download (HTTP): <http://downloads.xiph.org/releases/vorbis/vorbis-tools-1.4.0.tar.gz>
- 
- Download MD5 sum: 567e0fb8d321b2cd7124f8208b8b90e6
- Download size: 1.3 MB
- Estimated disk space required: 11 MB
- Estimated build time: 0.1 SBU

## Vorbis Tools Dependencies

### Required

libvorbis-1.3.3

### Optional (required to build the `ogg123` program)

libao-1.1.0

### Optional

cURL-7.30.0, FLAC-1.2.1, kate-4.10.3, and Speex-1.2rc1

## Installation of Vorbis Tools

Install Vorbis Tools by running the following commands:

```
./configure --prefix=/usr \
            --enable-vcut \
            --without-curl &&
make
```

This package does not come with a test suite.

Now, as the root user:

```
make install
```

## Command Explanations

`--enable-vcut`: This parameter is used so that the `vcut` program is built as it is not by default.

`--without-curl`: This parameter disables HTTP streaming in `ogg123`. Remove this parameter if you have cURL installed.

# 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

<b>Installed Programs:</b>	ogg123, oggdec, oggenc, ogginfo, vcut, and vorbiscomment
<b>Installed Libraries:</b>	None
<b>Installed Directory:</b>	/usr/share/doc/vorbis-tools-1.4.0

## Short Descriptions

<b>ogg123</b>	is a command-line audio player for Ogg Vorbis streams.
<b>oggdec</b>	is a simple decoder which converts Ogg Vorbis files into PCM audio files (WAV or raw).
<b>oggenc</b>	is an encoder that turns raw, WAV or AIFF files into an Ogg Vorbis stream.
<b>ogginfo</b>	prints information stored in an audio file.
<b>vcut</b>	will split a file into two files at a designated cut point.
<b>vorbiscomment</b>	is an editor that changes information in the audio file metadata tags.

# LAME-3.99.5

## 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.

This package is known to build and work properly using an LFS-7.3 platform.

## Package Information

- Download (HTTP): <http://downloads.sourceforge.net/lame/lame-3.99.5.tar.gz>
- 
- Download MD5 sum: 84835b313d4a8b68f5349816d33e07ce
- Download size: 1.4 MB
- Estimated disk space required: 11 MB
- Estimated build time: 0.3 SBU

## LAME Dependencies

### Optional

*Dmalloc, Electric Fence, libsndfile-1.0.25 and NASM-2.10.07*

## Installation of LAME

Install LAME by running the following commands:

```
./configure --prefix=/usr --enable-mp3rtp --disable-static &&
make
```

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

Now, as the root user:

```
make pkghtmldir=/usr/share/doc/lame-3.99.5 install
```

## Command Explanations

- enable-mp3rtp: This switch enables building of the encode-to-RTP program.
- disable-static: This switch prevents installation of static versions of the libraries.
- enable-nasm: Enable the use of NASM-2.10.07 to compile optimized assembly routines.

## Contents

<b>Installed Programs:</b>	lame and mp3rtp
<b>Installed Library:</b>	libmp3lame.so
<b>Installed Directories:</b>	/usr/include/lame and /usr/share/doc/lame-3.99.5

## 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.

**libmp3lame.so**

libraries provide the functions necessary to convert raw PCM and WAV files to MP3 files.

# CDParanoia-III-10.2

## 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.

This package is known to build and work properly using an LFS-7.3 platform.

## Package Information

- Download (HTTP): <http://downloads.xiph.org/releases/cdparanoia/cdparanoia-III-10.2.src.tgz>
- 
- Download MD5 sum: b304bbe8ab63373924a744eac9ebc652
- Download size: 179 KB
- Estimated disk space required: 2.9 MB
- Estimated build time: less than 0.1 SBU

## Additional Downloads

- Required Patch: [http://www.linuxfromscratch.org/patches/blfs/svn/cdparanoia-III-10.2-gcc\\_fixes-1.patch](http://www.linuxfromscratch.org/patches/blfs/svn/cdparanoia-III-10.2-gcc_fixes-1.patch)

## Installation of CDParanoia

Install CDParanoia by running the following commands:

```
patch -Np1 -i ../cdparanoia-III-10.2-gcc_fixes-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_*.*.0.10.2
```

## 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

<b>Installed Program:</b>	cdparanoia
<b>Installed Libraries:</b>	libcdda_interface.{so,a} and libcdda_paranoia.{so,a}
<b>Installed Directories:</b>	None

## Short Descriptions

<b>cdparanoia</b>	is used for 'ripping' an audio-cd. Ripping is the process of digitally extracting music from an audio-cd.
<code>libcdda_interface.{so,a}</code>	contains functions used by <b>cdparanoia</b> , as well as other packages, which can automatically identify if a CD device is CDDA compatible.
<code>libcdda_paranoia.{so,a}</code>	contains functions used by <b>cdparanoia</b> , as well as other packages, which provide data verification, synchronization, error handling and scratch reconstruction capability.

# FreeTTS-1.2.2

## 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.

This package is known to build and work properly using an LFS-7.2 platform.

## Package Information

- Download (HTTP): <http://downloads.sourceforge.net/freetts/freetts-1.2.2-src.zip>
- 
- Download MD5 sum: 692b5ece251fed88539736e55af5f391
- Download size: 13.5 MB
- Estimated disk space required: 92 MB
- Estimated build time: 0.3 SBU

## Additional Downloads

- Test suite: <http://downloads.sourceforge.net/freetts/freetts-1.2.2-tst.zip>
- Download MD5 sum: 4348c7db928612d4b6f6eb2fd621a949
- Download size: 3.8 MB

## FreeTTS Dependencies

### Required

apache-ant-1.8.4, Sharutils-4.13.5 (for the **uudecode** program), 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-1.2.2-src.zip -x META-INF/* &&
unzip -q freetts-1.2.2-tst.zip -x META-INF/*
```

### Tip

The **sh jsapi.sh** command below installs the Java Speech API components into the FreeTTS source tree. You will be required to view, and then accept (by entering a **y** keypress), a license agreement before the installation will continue. If you are scripting (automating) the build, you'll need to account for this. There is information about automating build commands in the Automated Building Procedures section of Chapter 2. Towards the end of this section, specific information for automating this type of installation is discussed.

Install FreeTTS by running the following commands:

```
sed -i 's/value="src/value="./' build.xml &&
cd lib      &&
sh jsapi.sh &&
cd ..       &&
ant
```

To test the results, issue:

```
ant junit &&
cd tests &&
sh regression.sh &&
cd ..
```

Now, as the root user:

```
install -v -m755 -d /opt/freetts-1.2.2/{lib,docs/{audio,images}} &&
install -v -m644 lib/*.jar /opt/freetts-1.2.2/lib          &&
install -v -m644 *.txt RELEASE_NOTES docs/*.{pdf,html,txt,sx{w,d}} \
          /opt/freetts-1.2.2/docs          &&
install -v -m644 docs/audio/*   /opt/freetts-1.2.2/docs/audio &&
install -v -m644 docs/images/* /opt/freetts-1.2.2/docs/images &&
cp -v -R javadoc           /opt/freetts-1.2.2          &&
ln -v -s freetts-1.2.2 /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-1.2.2          &&
install -v -m644 speech.properties $JAVA_HOME/jre/lib &&
cp -v -R tools    /opt/freetts-1.2.2          &&
cp -v -R mbrola   /opt/freetts-1.2.2          &&
cp -v -R demo    /opt/freetts-1.2.2
```

## Command Explanations

**sed -i 's/value="src/value="./' build.xml:** Fix an error in the build file to allow the program to find the source.

**sh jsapi.sh:** This command installs the Java Speech API components into the FreeTTS source tree.

**ant:** FreeTTS uses the Apache Ant build system instead of the GNU autotools. This command 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

<b>Installed Programs:</b>	None
<b>Installed Libraries:</b>	/opt/freetts-1.2.2/lib/*.jar
<b>Installed Directory:</b>	/opt/freetts-1.2.2

## Short Descriptions

\*.jar contains the class libraries which make up the FreeTTS speech synthesis system.

# Audacious-3.3.3

## Introduction to Audacious

Audacious is a Gtk+ based audio player.

This package is known to build and work properly using an LFS-7.3 platform.

## Package Information

- Download (HTTP): <http://distfiles.audacious-media-player.org/audacious-3.3.3.tar.bz2>
- 
- Download MD5 sum: 644ef7fa37319d261b933c86b5ab3a95
- Download size: 470 KB
- Estimated disk space required: 13 MB
- Estimated build time: 0.3 SBU

## Additional Downloads

### Required Plugins

- Plugins: <http://distfiles.audacious-media-player.org/audacious-plugins-3.3.3.tar.bz2>
- Plugins Md5 sum: d77af4d5bff383cc7ab384da21f527f6
- Plugins Size: 1.7 MB
- Estimated Plugins disk space required: 45 MB
- Estimated Plugins build time: 0.8 SBU

## Additional Downloads

### Required Patch (if you have libcdio >=v0.90 installed)

- [http://www.linuxfromscratch.org/patches/blfs/svn/audacious-plugins-3.3.3-libcdio\\_v0.90\\_fixes-1.patch](http://www.linuxfromscratch.org/patches/blfs/svn/audacious-plugins-3.3.3-libcdio_v0.90_fixes-1.patch)

## Audacious Dependencies

### Required

GTK+-3.6.4 and libxml2-2.9.1

### Recommended

D-Bus-1.6.10 and ALSA-1.0.27

### Optional

PCRE-8.32 or *Oniguruma*, and *libguess*

### Optional (for Plugins)

cURL-7.30.0, neon-0.29.6 (for online mpg3 and ogg radio), LAME-3.99.5, FLAC-1.2.1, libvorbis-1.3.3, FAAD2-2.7, FFmpeg-1.2.1, SDL-1.2.15, mpg123-1.15.3, libnotify-0.7.5, PulseAudio-3.0, libsndfile-1.0.25, libsample-0.1.8, *LIRC*, *libcdio*, *libcddb*, *libmodplug*, *libmms*, *JACK* (requires *libsamplerate-0.1.8*), *FluidSynth*, *libcue*, *The Bauer stereophonic-to-binaural DSP (bs2b) library*, *libbinio* (to build the AdPlug plugin), and *WavPack*

## Installation of Audacious

Install Audacious by running the following commands:

```
TPUT=/bin/true ./configure --prefix=/usr &&
make
```

If you have Doxygen-1.8.4 installed and wish to build the API documentation, issue **doxygen**.

This package does not come with a test suite.

Now, as the `root` user:

```
make install
```

If you built the API documentation, install it as the `root` user by issuing:

```
install -v -m755 -d /usr/share/doc/audacious-3.3.3/api &&
install -v -m644 doc/html/* \
          /usr/share/doc/audacious-3.3.3/api
```

## Installation of Audacious Plugins



### Note

If Xorg is not installed in `/usr`, tell the linker where to find it:

```
export LIBRARY_PATH=$XORG_PREFIX/lib
```

Install the required plugins package by unpacking the tarball, changing into the newly created directory, and issuing the following commands:

```
patch -Np1 -i ../audacious-plugins-3.3.3-libcdio_v0.90_fixes-1.patch &&
TPUT=/bin/true ./configure --prefix=/usr &&
make
```

This package does not come with a test suite.

Now, as the `root` user:

```
make install
```



### Note

This package installs icon files into the `/usr/share/icons/hicolor` hierarchy and desktop files into the `/usr/share/applications` hierarchy. You can improve system performance and memory usage by updating `/usr/share/icons/hicolor/index.theme` and `/usr/share/applications/mimeinfo.cache`. To perform the update you must have GTK+-2.24.17 or GTK+-3.6.4 installed (for the icon cache) and `desktop-file-utils-0.21` (for the desktop cache) and issue the following commands as the `root` user:

```
gtk-update-icon-cache &&
update-desktop-database
```

## Command Explanations

*TPUT=/bin/true*: the default is for **make** to output text in color. This is fine if you're building in a terminal, but if you script the build process and pipe the output from **make** to a log file then the control characters used to color the text can make the logfile unreadable. This option stops it coloring the text.

## Configuring Audacious

If you prefer the old, smaller Winamp/XMMS interface, click on View> Interface> Winamp Classic Interface.

## Contents

<b>Installed Programs:</b>	audacious and audtool
<b>Installed Libraries:</b>	libaudclient.so, libaudcore.so, libaudgui.so, libaudtag and numerous Container, Effect, General, Input, Output, Transport and Visualization plugin modules (exactly what is installed depends on the dependencies that are installed).
<b>Installed Directories:</b>	/usr/include/audacious, /usr/include/libaudcore, /usr/include/libaudgui, /usr/lib/audacious and /usr/share/audacious.

## Short Descriptions

<b>audacious</b>	is a Gtk2 port of XMMS based on the Beep Media Player.
<b>audtool</b>	is a small tool to modify the behavior of a running <b>audacious</b> instance.
<b>libaudclient.so</b>	contains functions that are used by <b>audacious</b> to render its graphical interface.

# Amarok-2.7.1

## Introduction to Amarok

Amarok is a powerful audio player for the KDE environment. Features include a context browser, integration with many online music services and support for management of several digital music players including Apple's iPod.

This package is known to build and work properly using an LFS-7.2 platform.

## Package Information

- Download (HTTP): <http://download.kde.org/stable/amarok/2.7.1/src/amarok-2.7.1.tar.bz2>
- Download (FTP): <ftp://ftp.kde.org/pub/kde/stable/amarok/2.7.1/src/amarok-2.7.1.tar.bz2>
- Download MD5 sum: 855203770cfb43be39bd9b961540dbaf
- Download size: 41 MB
- Estimated disk space required: 310 MB
- Estimated build time: 9.2 SBU

## Amarok Dependencies

### Required

kdelibs-4.10.3, MySQL-5.6.11 and taglib-1.8

### Recommended

FFmpeg-1.2.1 and nepomuk-core-4.10.3

### Optional

cURL-7.30.0 (for MP3tunes integration), libxml2-2.9.1 (for MP3tunes integration), OpenSSL-1.0.1e (for MP3tunes integration), QJson-0.8.1, Clamz (For Amazon integration), libgpod (for iPod support), liblastfm (for Last.fm integration), libmtp (for MTP device support), libmygpo-qt (for gpodder.net podcast support), libofa (for MusicDNS support), Loudmouth (for MP3tunes integration) and qtscript-qt

## Installation of Amarok

Install Amarok by running the following commands:

```
mkdir build &&
cd build &&
cmake -DCMAKE_INSTALL_PREFIX=$KDE_PREFIX \
      -DCMAKE_BUILD_TYPE=Release           \
      .. &&
make
```

Now, as the root user:

```
make install
```

## Contents

**Installed Programs:**

amarok, amarok\_aftagger, amarokcollectionscanner, amarokpkg and amzdownloader  
libamarokcore.so, libamaroklib.so, libamarokocsclient.so, libamarokpud.so,  
libamarok\_service\_lastfm\_shared.so, libamarok-sqlcollection.so, libamarok-  
transcoding.so, libampache\_account\_login.so and several libraries in \$KDE\_PREFIX/  
lib/kde4

**Installed Libraries:**

several in \$KDE\_PREFIX/share

## Short Descriptions

**amarok** Is a powerful music player and organizer built on top of KDE development platform.

# gvolwheel-1.0

## Introduction to Gvolwheel

The gvolwheel package provides a lightweight volume control with a tray icon.

This package is known to build and work properly using an LFS-7.3 platform.

## Package Information

- Download (HTTP): <http://sourceforge.net/projects/gvolwheel/files/gvolwheel-1.0.tar.gz>
- Download (FTP):
- Download MD5 sum: 4f04f00cdb875894c96b8a3ff8a9edb9
- Download size: 340 KB
- Estimated disk space required: 2.8 MB
- Estimated build time: less than 0.1 SBU

## Gvolwheel Dependencies

### Required

alsa-utils-1.0.27, GTK+-3.6.4, Intltool-0.50.2, and XML::Parser-2.41

## Kernel Configuration

In the Device Drivers  $\Rightarrow$  Sound card support  $\Rightarrow$  Advanced Linux Sound Architecture section of the kernel configuration, ensure that OSS Mixer API (CONFIG\_SND\_MIXER\_OSS) is selected. If necessary, recompile and install your new kernel.

## Installation of Gvolwheel

Install gvolwheel by running the following commands:

```
sed -i 's%doc/gvolwheel%share/doc/gvolwheel-1.0%' Makefile.in &&
./configure --prefix=/usr --enable-oss &&
make
```

This package does not come with a working test suite.

Now, as the root user:

```
make install
```

## Command Explanations

`sed -i 's%doc/gvolwheel%share/doc/gvolwheel-1.0%' . . .`: this puts the documentation into a versioned directory.

`--enable-oss`: without this, the program will not run unless **alsamixer** has been run.

## Configuring gvolwheel

Before using this application, use **alsamixer** to ensure the channels are not muted, and are set to suitable levels so that the master volume control will provide suitable levels. Once **gvolwheel** is running you can, if you wish, right-click on its icon in the tray to change it to control the PCM volume instead of the master volume. Depending on your theme settings, you may also wish to tick "Use Gnome Icons".

If you middle-click on the icon, it will mute the volume, that is, it will set it to zero : do not confuse this with the mute/unmute controls in e.g. **alsamixer**.

## Contents

<b>Installed Programs:</b>	gvolwheel
<b>Installed Libraries:</b>	none
<b>Installed Directories:</b>	/usr/share/doc/gvolwheel-1.0 /usr/share/pixmaps/gvolwheel

## Short Descriptions

**gvolwheel** is a lightweight volume control that sits in a tray.

## Chapter 40. 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-1.2.1

## 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.

This package is known to build and work properly using an LFS-7.2 platform.

## Package Information

- Download (HTTP): <http://ffmpeg.org/releases/ffmpeg-1.2.1.tar.bz2>
- 
- Download MD5 sum: 5071a26cc149f380908ce79ec2a677ef
- Download size: 5.7 MB
- Estimated disk space required: 100 MB
- Estimated build time: 4.0 SBU

## FFmpeg Dependencies

### Recommended

FAAC-1.28, FreeType-2.4.12, LAME-3.99.5, OpenJPEG-1.5.1, PulseAudio-3.0, Speex-1.2rc1, libtheora-1.1.1, libvorbis-1.3.3, libvpx-1.1.0, XviD-1.3.2, OpenSSL-1.0.1e, SDL-1.2.15, Xorg Libraries, yasm-1.2.0

### Optional

Fontconfig-2.10.2, *frei0r*, GnuTLS-3.2.0, *libaacplus*, *libass*, *libbluray*, *libcaca*, *libcelt*, *libcdio*, *libdc1394*, *fdk-aac*, *Flite*, *GSM*, *libiec61883*, *libilbc*, *libmodplug*, *libnut* (SVN checkout), *OpenCore AMR*, *OpenCV*, *Opus*, *librtmp*, *Schroedinger*, *TwoLAME*, *Video4Linux*, *vo-aaenc*, *vo-amrwbenc*, *x264*, *libxavs* (SVN checkout), *OpenAL*, and *texi2html* (to build HTML documentation)

### Optional (For Hardware Video Decoding)

VA-API (*libva*) with corresponding drivers, including: *Intel Driver (i965 chipsets only)*, *XVBA Driver for AMD Radeon Cards*, and *VDPAU Driver for VDPAU capable Cards* (requires *libvdpa*)

## Installation of FFmpeg

If Xorg is installed in a prefix other than `/usr`, the build will fail. Fix this by issuing the following command:

```
export LIBRARY_PATH=$XORG_PREFIX/lib
```

Install FFmpeg by running the following commands:

```
sed -i 's/-lflite"/-lflite -lasound"/' configure &&
./configure --prefix=/usr \
             --enable-gpl \
             --enable-version3 \
             --enable-nonfree \
             --disable-static \
             --enable-shared \
             --enable-x11grab \
             --enable-libfaac \
             --enable-libfreetype \
             --enable-libmp3lame \
             --enable-libopenjpeg \
             --enable-libpulse \
             --enable-libspeex \
             --enable-libtheora \
             --enable-libvorbis \
             --enable-libvpx \
             --enable-libxvid \
             --enable-openssl \
             --disable-debug     &&
make &&
gcc tools/qt-faststart.c -o tools/qt-faststart &&
unset LIBRARY_PATH
```

HTML documentation was built in the previous step if *texi2html* is installed. If the HTML was built (check for any .html files in the doc directory) and you have texlive-20120701 installed and wish to build PDF and Postscript versions of the documentation, issue the following commands:

```
pushd doc &&
for DOCNAME in `basename -s .html *.html`
do
    texi2pdf -b $DOCNAME.texi &&
    texi2dvi -b $DOCNAME.texi &&
    dvips -o $DOCNAME.ps \
           $DOCNAME.dvi &&
done &&
popd &&
unset DOCNAME
```

If you have Doxygen-1.8.4 installed and wish to create the API documentation (takes about 300 MB of space), issue the command **doxygen doc/Doxyfile**.

To properly test the installation you must have rsync-3.0.9 installed and follow the instructions for the *FFmpeg Automated Testing Environment*. Note that the BLFS team has not performed this regression testing.

Now, as the root user:

```
make install &&
install -v -m755      tools/qt-faststart /usr/bin &&
install -v -m755 -d /usr/share/doc/ffmpeg-1.2.1 &&
install -v -m644      doc/*.txt \
                     /usr/share/doc/ffmpeg-1.2.1
```

If HTML documentation was built, issue the following command to install it:

```
install -v -m644 doc/*.html \
                 /usr/share/doc/ffmpeg-1.2.1
```

If you used **doxygen** to create the API documentation, install it (another 300 MB of space) by issuing the following commands as the root user:

```
install -v -m755 -d /usr/share/doc/ffmpeg-1.2.1/api &&
install -v -m644      doc/doxy/html/* \
                     /usr/share/doc/ffmpeg-1.2.1/api
```

## Command Explanations

**sed -i ...**: This command adds the ALSA library to the Flite LDFLAGS variable and enables the discovery of Flite.

**gcc tools/qt-faststart.c -o tools/qt-faststart**: This builds the **qt-faststart** program which can modify QuickTime formatted movies (.mov or .mp4) so that the header information is located at the beginning of the file instead of the end. This allows the movie file to begin playing before the entire file has been downloaded.

**--enable-gpl**: Enables the use of GPL code and permits support for postprocessing, swscale and many other features.

**--enable-version3**: Enables the use of (L)GPL version 3 code.

**--enable-nonfree**: Enables the use of nonfree code. Note that the resulting libraries and binaries will be unredistributable.

**--disable-static**: This switch prevents installation of static versions of the libraries.

**--enable-shared**: Enables building shared libraries, otherwise only static libraries are built and installed.

**--enable-x11grab**: Enables X11 grabbing.

**--enable-libfaac**: Enables AAC encoding via libfaac.

**--enable-libfreetype**: Enables the use of libfreetype.

**--enable-libmp3lame**: Enables MP3 encoding via libmp3lame.

**--enable-libopenjpeg**: Enables JPEG 2000 de/encoding via libopenjpeg.

**--enable-libpulse**: Enables Pulseaudio input via libpulse.

**--enable-libspeex**: Enables Speex de/encoding via libspeex.

**--enable-libtheora**: Enables Theora encoding via libtheora.

**--enable-libvorbis**: Enables Vorbis de/encoding via libvorbis.

--enable-libvpx: Enables VP8 de/encoding via libvpx.

--enable-libxvid: Enables Xvid encoding via libxvidcore.

--enable-openssl: Enables OpenSSL cryptography.

--disable-debug: Disables building debugging symbols into the programs and libraries.

--enable-<codec>: FFmpeg comes with code to compile decoders for almost every codec you could think of. The only reason to enable a specific codec (and make FFmpeg link to the prerequisite shared library installed on your system) is to make FFmpeg compile an *encoder* for that codec. FFmpeg provides an excellent collection of decoders. If you just want to use FFmpeg to watch video or listen to music (via other applications such as Gstreamer or Xine) then you will not benefit from linking FFmpeg to other codec libraries.

## Configuring FFmpeg

### Config Files

/etc/ffserver.conf and ~/ffmpeg/ffserver-config

You'll find a sample **ffserver** configuration file at doc/ffserver.conf in the source tree.

### Contents

<b>Installed Programs:</b>	ffmpeg, ffplay, ffprobe, ffserver and qt-faststart
<b>Installed Libraries:</b>	libavcodec.so, libavdevice.so, libavfilter.so, libavformat.so, libavutil.so, libpostproc.so, libswresample and libswscale.so
<b>Installed Directories:</b>	/usr/include/libavcodec, /usr/include/libavdevice, /usr/include/libavfilter, /usr/include/libavformat, /usr/include/libavutil, /usr/include/libpostproc, /usr/include/libswresample /usr/include/libswscale, /usr/share/ffmpeg and /usr/share/doc/ffmpeg-1.2.1

### Short Descriptions

<b>ffmpeg</b>	is a command-line tool to convert video files, network streams and input from a TV card to several video formats.
<b>ffplay</b>	is a very simple and portable media player using the <b>ffmpeg</b> libraries and the SDL library.
<b>ffprobe</b>	gathers information from multimedia streams and prints it in a human and machine-readable fashion.
<b>ffserver</b>	is a streaming server for everything that <b>ffmpeg</b> could use as input (files, streams, TV card input, webcam, etc).
<b>qt-faststart</b>	moves the index file to the front of quicktime (mov/mp4) videos.
<b>libavcodec.so</b>	is a library containing the FFmpeg codecs (both encoding and decoding).
<b>libavdevice.so</b>	is the FFmpeg device handling library.
<b>libavfilter.so</b>	is a library of filters that can alter video or audio between the decoder and the encoder (or output).
<b>libavformat.so</b>	is a library containing the file formats handling (mux and demux code for several formats) used by <b>ffplay</b> as well as allowing the generation of audio or video streams.
<b>libavutil.so</b>	is the FFmpeg utility library.

`libpostproc.so` is the FFmpeg post processing library.

`libswresample.so` is the FFmpeg audio rescaling library, it contains functions for converting audio sample formats.

`libswscale.so` is the FFmpeg image rescaling library.

# MPlayer-1.1.1

## Introduction to MPlayer

MPlayer is a powerful audio/video player controlled via the command line or a graphical interface that is able to play almost every popular audio and video file format. With supported video hardware and additional drivers, MPlayer can play video files without an X Window System installed.

This package is known to build and work properly using an LFS-7.3 platform.

## Package Information

- Download (HTTP): <http://www.mplayerhq.hu/MPlayer/releases/MPlayer-1.1.1.tar.xz>
- Download (FTP): <ftp://ftp.mplayerhq.hu/MPlayer/releases/MPlayer-1.1.1.tar.xz>
- Download MD5 sum: 39dd55f30eb5403f219a606e79a6648a
- Download size: 11 MB
- Estimated disk space required: 183 MB (120 MB using system-installed FFMpeg)
- Estimated build time: 4 SBU (1.5 SBU using system-installed FFMpeg)

## Additional Downloads

### Skins

- GUI skin (HTTP): <http://www.mplayerhq.hu/MPlayer/skins/Clearlooks-1.5.tar.bz2>
- GUI skin (FTP): <ftp://ftp.mplayerhq.hu/MPlayer/skins/Clearlooks-1.5.tar.bz2>
- Skin MD5 sum: 6b046a78fb15b243dc1eb5884276a750
- Skin size: 40 KB
- Alternative skins: <http://www1.mplayerhq.hu/MPlayer/skins/>



### Note

Skins are only required to use the Gtk+ 2 user interface.

## MPlayer Dependencies

### Required

yasm-1.2.0

### Recommended

GTK+-2.24.17

## Optional Input Drivers and Libraries

CDParanoia-III-10.2, Samba-3.6.12, libdvdread-4.2.0, libdvdnav-4.2.0, libdvdcss-1.2.13, *libbluray*, *libcdio*, *LIVE555 Streaming Media*, *RTMPDump*, *TiVo vstream client* and *XMMS*

## Optional Audio Output Drivers and Libraries

ALSA-1.0.27, EsounD-0.2.41, PulseAudio-3.0, SDL-1.2.15, *JACK*, *OpenAL* and *NAS*

## Optional Video Output Drivers and Libraries

AAlib-1.4rc5, *DirectFB*, giflib-4.1.6, *libcaca*, *libjpeg-turbo*-1.2.1, *libmng*-1.0.10, *libpng*-1.6.2, *OpenJPEG*-1.5.1 and *SVGAlib*

## Optional CODECs

FFmpeg-1.2.1, libmad-0.15.1b, LZO-2.06, Speex-1.2rc1, libtheora-1.1.1, mpg123-1.15.3, liba52-0.7.4, FAAC-1.28, FAAD2-2.7, libdv-1.0.0, XviD-1.3.2, libvpx-1.1.0, LAME-3.99.5, *TwoLAME, libgsm, libdca, libmpcdec, OpenCore Adaptive Multi Rate, CrystalHD, x264, Dirac, Schroedinger and libnut*

## Optional Miscellaneous Dependencies

*Enca, Fontconfig-2.10.2, FreeType-2.4.12, FriBidi-0.19.5, GTK+-2.24.17 (required for the GUI), LADSPA, libbs2b, LIRC (and LIRC Client Daemon), UnRar-4.2.4, and libxslt-1.1.28, docbook-xml-4.5 and docbook-xsl-1.77.1 (all three required to build the HTML documentation)*

# Installation of MPlayer

## Main MPlayer Installation



### Note

The package maintainers recommend building without any optimizations.

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:

```
./configure --prefix=/usr \
            --confdir=/etc/mplayer \
            --enable-dynamic-plugins \
            --enable-menu \
            --enable-gui \
            &&
make
```

If you wish to rebuild the chunked HTML documentation and build a non-chunked HTML version of the docs, issue the following command:

```
make doc
```

This package does not come with a test suite.

Now, as the **root** user:

```
make install
```

To install the HTML documentation, issue the following commands as the **root** user:

```
install -v -m755 -d /usr/share/doc/mplayer-1.1.1 &&
install -v -m644 DOCS/HTML/en/* \
            /usr/share/doc/mplayer-1.1.1
```

You will only need **codecs.conf** 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 as the **root** user:

```
install -v -m644 etc/codecs.conf /etc/mplayer
```

You may alternatively want to copy all the default configuration files to `/etc/mplayer` for future reference or more customization ability. As the `root` user:

```
install -v -m644 etc/*.*conf /etc/mplayer
```



### Note

This package installs icon files into the `/usr/share/icons/hicolor` hierarchy and desktop files into the `/usr/share/applications` hierarchy. You can improve system performance and memory usage by updating `/usr/share/icons/hicolor/index.theme` and `/usr/share/applications/mimeinfo.cache`. To perform the update you must have GTK+-2.24.17 or GTK +3.6.4 installed (for the icon cache) and `desktop-file-utils-0.21` (for the desktop cache) and issue the following commands as the `root` user:

```
gtk-update-icon-cache &&
update-desktop-database
```

## Skin Installation (Optional)

To enable the Gtk+ 2 frontend of MPlayer, you'll need to install at least one skin. Extract the desired skin and create the default location (as the `root` user):

```
tar -xvf ../Clearlooks-1.5.tar.bz2 \
-C /usr/share/mplayer/skins &&
ln -sfv Clearlooks /usr/share/mplayer/skins/default
```

## Command Explanations

`--enable-gui`: This option builds the GUI interface into **mplayer**.

`--enable-menu`: This option is set to enable the on-screen display.

`--disable-ffmpeg_a`: You can use this option if you have installed FFmpeg-1.2.1. MPlayer includes a copy of the FFmpeg source and without this option it will statically compile the included version of FFmpeg into itself. Dynamically linking to a system installed FFmpeg makes MPlayer and Mencoder about 9MB smaller. If MPlayer exhibits unstable behavior linked to a system installed FFmpeg, try recompiling MPlayer without this option (it is always more thoroughly tested with the included FFmpeg).

## 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 in the GUI will be saved in the user's `~/.mplayer` directory.

## Contents

<b>Installed Programs:</b>	gmplayer, mplayer and mencoder
<b>Installed Libraries:</b>	none
<b>Installed Directories:</b>	/etc/mplayer, /usr/lib/mplayer, /usr/share/mplayer and /usr/share/doc/mplayer

## Short Descriptions

<b>gmplayer</b>	is a symlink to <b>mplayer</b> which brings up the Gtk+ 2 frontend of MPlayer.
<b>mplayer</b>	is the main MPlayer video player.
<b>mencoder</b>	is a powerful command line video decoding, encoding and filtering tool that is useful for (amongst other things) ripping DVDs to files on your hard disk (see /usr/share/doc/mplayer-1.1.1/mencoder.html)

# Transcode-1.1.7

## 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/>.

This package is known to build and work properly using an LFS-7.2 platform.

## Package Information

- Download (HTTP): <https://bitbucket.org/france/transcode-tcforge/downloads/transcode-1.1.7.tar.bz2>
- Download (FTP): <ftp://mirror.ovh.net/gentoo-distfiles/distfiles/transcode-1.1.7.tar.bz2>
- Download MD5 sum: 9bb25a796a8591fb764de46ee87ce505
- Download size: 2.1 MB
- Estimated disk space required: 75 MB
- Estimated build time: 1.0 SBU

## Additional Downloads

- Required patch: <http://www.linuxfromscratch.org/patches/blfs/svn/transcode-1.1.7-ffmpeg-2.patch>

## Transcode Dependencies

### Required

FFmpeg-1.2.1

### Recommended

alsa-lib-1.0.27, LAME-3.99.5, libmpeg2-0.5.1 and Xorg Libraries

### Optional

FAAC-1.28, FreeType-2.4.12, ImageMagick-6.8.5-6, liba52-0.7.4, libdv-1.0.0, libdvdread-4.2.0, libjpeg-turbo-1.2.1, libogg-1.3.0, libquicktime-1.2.4, libtheora-1.1.1, libvorbis-1.3.3, libxml2-2.9.1, LZO-2.06, *MJPEG Tools*, *PVM3*, SDL-1.2.15, *Video4Linux*, *x264* and *XviD*-1.3.2

## Installation of Transcode



### Note

The details of how the FFmpeg libraries are used has changed since this version of Transcode was released. The patch allows the package to be compiled, but some or all of the internal calls to FFmpeg fail at run time (they report an error and processing continues, but without any output).

For many packages, that would be a critical error. In this case, the main reason to install Transcode is for the **tccat** program, which works. Some of the **transcode** options work - for the others, use **ffmpeg** directly on the command line.

Install Transcode by running the following commands:

```
sed -i 's|doc/transcode|&-$PACKAGE_VERSION)|' \
$(find . -name Makefile.in -exec grep -l 'docsdir ={} \;') &&
patch -Np1 -i ../transcode-1.1.7-ffmpeg-2.patch &&
./configure --prefix=/usr \
--enable-alsa \
--enable-libmpeg2 &&
make
```

This package does not come with a test suite.

Now, as the root user:

```
make install
```

## Command Explanations

**sed -i ...**: Fixes install location for documentation.

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

<b>Installed Programs:</b>	avifix, aviindex, avimerge, avisplit, avisync, tccat, tcdecode, tcdemux, tcextract, tcmodinfo, tcmp3cut, tcprobe, tscan, tcxmlcheck, tcxml2rgb, tcyait and transcode
<b>Installed Libraries:</b>	None
<b>Installed Directories:</b>	/usr/lib/transcode and /usr/share/doc/transcode-1.1.7

## Short Descriptions

<b>avifix</b>	fixes the header of an AVI file.
<b>aviindex</b>	writes a text file describing the index of an AVI file.
<b>avimerge</b>	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!).
<b>avisplit</b>	splits AVI files into multiple files.
<b>avisync</b>	can shift audio in AVI files for better synchronizing of the audio and video data signal.
<b>tccat</b>	concatenates input files using the input plugins of Transcode. This is useful for extracting VOB (Video OBject) files.
<b>tcdecode</b>	is used to decode input files to raw video and PCM audio streams.
<b>tcdemux</b>	demultiplexes (separates) audio/video input that contains multiple streams, e.g., VOB files.
<b>tcextract</b>	grabs single streams from a file containing multiple streams.
<b>tcmodinfo</b>	loads a supplied Transcode filter module and prints its parameters.
<b>tcmp3cut</b>	is a tool which can cut MP3 streams at milliseconds positions.
<b>tcprobe</b>	prints information about the input file format.
<b>tscan</b>	performs several measurements on the given input data.

**txmlcheck** 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.

# VLC-2.0.6

## Introduction to VLC

VLC is a media player, streamer, and encoder. It can play from many inputs like files, network streams, capture device, desktops, or DVD, SVCD, VCD, and audio CD. It can play most audio and video codecs (MPEG 1/2/4, H264, VC-1, DivX, WMV, Vorbis, AC3, AAC, etc.), but can also convert to different formats and/or send streams through the network.

This package is known to build and work properly using an LFS-7.3 platform.

### Package Information

- Download (HTTP): <http://download.videolan.org/pub/videolan/vlc/2.0.6/vlc-2.0.6.tar.xz>
- Download (FTP): <ftp://ftp.videolan.org/pub/videolan/vlc/2.0.6/vlc-2.0.6.tar.xz>
- Download MD5 sum: b45be633c71dca04ca7d6c3d64dd728b
- Download size: 18 MB
- Estimated disk space required: as much as 600 MB, but likely around 500 MB
- Estimated build time: 4.0 SBU

### Additional Downloads

- Required patch: [http://www.linuxfromscratch.org/patches/blfs/svn/vlc-2.0.6-opencv\\_fixes-1.patch](http://www.linuxfromscratch.org/patches/blfs/svn/vlc-2.0.6-opencv_fixes-1.patch)

### VLC Dependencies

#### Required

D-Bus-1.6.10

#### Recommended

alsa-lib-1.0.27, FFmpeg-1.2.1, GnuTLS-3.2.0, liba52-0.7.4, libgcrypt-1.5.2, libmad-0.15.1b and Qt-4.8.4 (Qt is required for the graphical user interface; without Qt you will only be able to use the command line or ncurses interface)

#### Optional input drivers and libraries

*Minizip, Libproxy, Live555, DC1394, libdv-1.0.0, libdvdread-4.2.0, libdvdnav-4.2.0, libbluray, OpenCV, Samba-3.6.12, Video4Linux, VCDImager* (requires *libcdio*) and *libcddb*

#### Optional mux/demux plugins

*libdvbpsi, Game Music Emu, sidplay-libs* (with patches located in contrib/src/sidplay2 subdirectory), *libogg-1.3.0, libshout, libmatroska* (requires *libebml*), *libmodplug* and *Musepack*

#### Optional codec plugins

*libva, OpenMAX, FAAD2-2.7, Twolame, libdca, FLAC-1.2.1, libmpeg2-0.5.1, libvorbis-1.3.3, Tremor, Speex-1.2rc1, Opus, libtheora-1.1.1, Dirac, Schroedinger, libpng-1.6.2, libx264, FluidSynth, Zapping VBI, libass, libkate and libtiger*

#### Optional video plugins

*SDL-1.2.15 (with SDL\_image), FreeType-2.4.12, Fontconfig-2.10.2, FriBidi-0.19.5, librsvg-2.36.4, AAlib-1.4rc5 and libcaca*

## Optional audio plugins

PulseAudio-3.0, *PortAudio*, *JACK* and *libsamplerate*

## Optional interface plugins

*xcb-util-keysyms*, *LIRC* and *libtar*

## Optional visualization plugins

*Goom* and *projectM*

## Optional service discovery plugins

Avahi-0.6.31, *MTP* and *UPnP*

## Optional miscellaneous dependencies

*libxml2*-2.9.1, *taglib*-1.8, *libnotify*-0.7.5, *MediaLibrary* (requires *SQLite*-3.7.16.2) and *Lua*

# Installation of VLC

Install VLC by running the following commands:

```
patch -Np1 -i ../vlc-2.0.6-opencv_fixes-1.patch &&
./bootstrap &&

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

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

Now, as the root user:

```
make docdir=/usr/share/doc/vlc-2.0.6 install
```



### Note

This package installs icon files into the `/usr/share/icons/hicolor` hierarchy and desktop files into the `/usr/share/applications` hierarchy. You can improve system performance and memory usage by updating `/usr/share/icons/hicolor/index.theme` and `/usr/share/applications/mimeinfo.cache`. To perform the update you must have `GTK+-2.24.17` or `GTK+-3.6.4` installed (for the icon cache) and `desktop-file-utils-0.21` (for the desktop cache) and issue the following commands as the root user:

```
gtk-update-icon-cache &&
update-desktop-database
```

# Command Explanations

**./bootstrap**: This command is required because the patch modifies Autotools files and VLC uses a custom reconfiguration system.

**--disable-lua**: The package fails to install if Lua is missing. Omit this option if you have installed Lua.

--disable-avcodec: Use this switch if you don't have FFmpeg installed.  
--disable-a52: Use this switch if you don't have liba52 installed.  
--disable-libgcrypt: Use this switch if you don't have libgcrypt installed.  
--disable-mad: Use this switch if you don't have libmad installed.  
--enable-shine: Use this option if you wish to build the Shine plugin.  
--enable-faad: Use this option if you have FAAD installed and wish to build the FAAD plugin.  
--enable-tremor: Use this option if you have Tremor installed and wish to build the Tremor plugin.  
--enable-aa: Use this option if you have AAlib installed and wish to build the AAlib plugin.

## Contents

<b>Installed Programs:</b>	cvlc, qvlc, rvlc, svlc, vlc and vlc-wrapper
<b>Installed Libraries:</b>	libvlccore.so, libvlc.so and several libraries in /usr/lib/vlc/plugins
<b>Installed Directories:</b>	/usr/include/vlc, /usr/lib/vlc, /usr/share/vlc and /usr/share/doc/vlc-2.0.6

## Short Descriptions

<b>cvlc</b>	is a script to run VLC with the dummy interface.
<b>qvlc</b>	is a script to run VLC with the Qt interface.
<b>rvlc</b>	is a script to run VLC with a command line interface.
<b>svlc</b>	is a script to run VLC with the skins interface.
<b>vlc</b>	is the VLC media player.
<b>vlc-wrapper</b>	is a wrapper to drop privileges with VLC.

# xine-ui-0.99.7

## 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.

This package is known to build and work properly using an LFS-7.3 platform.

### Package Information

- Download (HTTP): <http://downloads.sourceforge.net/xine/xine-ui-0.99.7.tar.xz>
- Download (FTP): <ftp://mirror.ovh.net/gentoo-distfiles/distfiles/xine-ui-0.99.7.tar.xz>
- Download MD5 sum: 2af6fcc2ad6af6ba2e471497c5d140dc
- Download size: 1.7 MB
- Estimated disk space required: 34 MB
- Estimated build time: 0.3 SBU

### Additional Patches

- Recommended patch: [http://www.linuxfromscratch.org/patches/blfs/svn/xine-ui-0.99.7-upstream\\_fix-1.patch](http://www.linuxfromscratch.org/patches/blfs/svn/xine-ui-0.99.7-upstream_fix-1.patch) (without this, opening files from the menu doesn't work).

### Xine User Interface Dependencies

#### Required

xine-lib-1.2.2 and shared-mime-info-1.1

#### Optional

pkg-config-0.28, cURL-7.30.0, AAlib-1.4rc5, LIRC and libcaca

## Installation of Xine User Interface

If you have downloaded the recommended patch, apply it by running the following command:

```
patch -Np1 -i ../../xine-ui-0.99.7-upstream_fix-1.patch
```

Install xine User Interface by running the following commands:

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

This package does not come with a test suite.

Now, as the root user:

```
make docdir=/usr/share/doc/xine-ui-0.99.7 install
```



## Note

This package installs icon files into the `/usr/share/icons/hicolor` hierarchy and desktop files into the `/usr/share/applications` hierarchy. You can improve system performance and memory usage by updating `/usr/share/icons/hicolor/index.theme` and `/usr/share/applications/mimeinfo.cache`. To perform the update you must have GTK+-2.24.17 or GTK+-3.6.4 installed (for the icon cache) and `desktop-file-utils-0.21` (for the desktop cache) and issue the following commands as the root user:

```
gtk-update-icon-cache &&
update-desktop-database
```

## Command Explanations

`docsdir=/usr/share/doc/xine-ui-0.99.7`: This parameter causes the Xine UI documentation to be installed in the versioned directory `/usr/share/doc/xine-ui-0.99.7`, rather than the default `/usr/share/doc/xine-ui`.

## 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-0.99.7/README.config_en`.

If you have a DVB TV card, you can watch TV with the command **xine dvb://** and change channels with the scroll wheel on your mouse.

## Contents

<b>Installed Programs:</b>	aaxine, cacaxine, fbxine, xine, xine-bugreport, xine-check and xine-remote
<b>Installed Libraries:</b>	None
<b>Installed Directories:</b>	/usr/share/xine and /usr/share/doc/xine-ui-0.99.7

## Short Descriptions

<b>aaxine</b>	is an ASCII art video player which utilizes AAlib as the frontend for the xine Libraries.
<b>cacaxine</b>	is a color ASCII art video player which utilizes CACA as the frontend for the xine Libraries.
<b>fbxine</b>	is a frame buffer interface to the xine Libraries.
<b>xine</b>	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.
<b>xine-bugreport</b>	produces a terse system description and guides you through the process of reporting a bug.
<b>xine-check</b>	tests the <b>xine</b> 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.

# Chapter 41. CD/DVD-Writing Utilities

This chapter contains information on CD/DVD-writing utilities in Linux.

Additional sources of information include:

- *CD-Writing HOWTO*
- *CD-Recordable FAQ*
- *The dvd+rw-tools Website*

# Cdrdao-1.2.3

## Introduction to Cdrdao

The Cdrdao package contains CD recording utilities. These are useful for burning a CD in disk-at-once mode.

This package is known to build and work properly using an LFS-7.3 platform.

## Package Information

- Download (HTTP): <http://downloads.sourceforge.net/cdrdao/cdrdao-1.2.3.tar.bz2>
- Download MD5 sum: 8d15ba6280bb7ba2f4d6be31d28b3c0c
- Download size: 1.4 MB
- Estimated disk space required: 64 MB
- Estimated build time: 1.3 SBU (includes building **gcdmaster**)

## Cdrdao Dependencies

### Recommended

`libao-1.1.0`, `libvorbis-1.3.3`, `libmad-0.15.1b`, and `LAME-3.99.5` (required to build **toc2mp3**)

### Optional (Required to Build the **gcdmaster** Program)

Note that the following packages must be built in the order listed. Use the current “stable” version of each package.

`libgnomeui-2.24.5`, `libsigc++-2.2.11`, `glibmm`, `gtkmm`, `libglademm`, `libgnomecanvasmm`, `gconfmm`, `gnome-vfsmm`, `libgnomemmm`, and `libgnomeuimm`

There are two additional optional dependencies that can be used by the Cdrdao build: *Cdrtools* and *PCCTS*. The pieces of these two packages required to build Cdrdao are also included in the source tree and are used by default.

## Installation of Cdrdao

Install Cdrdao by running the following commands:

```
sed -i '/ioctl/a #include <sys/stat.h>' dao/ScsiIf-linux.cc &&
./configure --prefix=/usr --mandir=/usr/share/man &&
make
```

This package does not come with a test suite.

Now, as the root user:

```
make install &&
install -v -m755 -d /usr/share/doc/cdrdao-1.2.3 &&
install -v -m644 README /usr/share/doc/cdrdao-1.2.3
```

## Command Explanations

`sed -i '/ioctl/a #include <sys/stat.h>' ...`: This sed adds missing `sys/stat.h` include.

`--mandir=/usr/share/man`: Install manual pages in `/usr/share/man` instead of `/usr/man`.

## Contents

**Installed Programs:** cdrdao, cue2toc, toc2cddb, toc2cue and optionally, gcdmaster and toc2mp3  
**Installed Libraries:** None  
**Installed Directories:** /usr/share/cdrdao, /usr/share/doc/cdrdao-1.2.3 and /usr/share/gcdmaster

## 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.

# dvd+rw-tools-7.1

## Introduction to dvd+rw-tools

The dvd+rw-tools package contains several utilities to master the DVD media, both +RW/+R and -R[W]. The principle tool is **growisofs** which provides a way to both lay down **and** grow an ISO9660 file system on (as well as to burn an arbitrary pre-mastered image to) all supported DVD media. This is useful for creating a new DVD or adding to an existing image on a partially burned DVD.

This package is known to build and work properly using an LFS-7.2 platform.

## Package Information

- Download (HTTP): <http://fy.chalmers.se/~appro/linux/DVD+RW/tools/dvd+rw-tools-7.1.tar.gz>
- 
- Download MD5 sum: 8acb3c885c87f6838704a0025e435871
- Download size: 138 KB
- Estimated disk space required: 1.7 MB
- Estimated build time: less than 0.1 SBU

## dvd+rw-tools Dependencies

### Required

Though not required during the build, you must have installed a package which provides the **xorrisofs** command, such as libisoburn-1.3.0, or the **growisofs** command will not function properly, rendering the entire package useless.

## Installation of dvd+rw-tools

Install dvd+rw-tools by running the following commands:

```
sed -i '/stdlib/a #include <limits.h>' transport.hxx &&
sed -i 's#mkisofs"##xorrisofs"#' growisofs.c &&
sed -i 's#mkisofs#xorrisofs#;s#MKISOFS#XORRISOFS#' growisofs.1 &&
make all rpl8 btcflash
```

This package does not come with a test suite.

Now, as the root user:

```
make prefix=/usr install &&
install -v -m644 -D index.html \
/usr/share/doc/dvd+rw-tools-7.1/index.html
```

## Command Explanations

**sed -i '/stdlib/a #include <limits.h>' ...**: This sed includes `limits.h`, one of the kernel headers. This is needed due to a change in the 2.6.23 kernel headers.

**sed -i 's#mkisofs"##xorrisofs"#' growisofs.c**: This sed changes the code to use **xorrisofs** from **xorriso**. The default was for it to use **mkisofs** from *Cdrtools*.

**sed -i 's#mkisofs#xorrisofs#;s#MKISOFS#XORRISOFS#' growisofs.1:** This sed fixes the man page to account for the above change.

**make all rpl8 btcflash:** This command uses additional targets so that all the utilities are built.

## Contents

**Installed Programs:** btcflash, dvd+rw-booktype, dvd+rw-format, dvd+rw-mediainfo, dvd-ram-control, growisofs, and rpl8  
**Installed Libraries:** /usr/share/doc/dvd+rw-tools-7.1

## Short Descriptions

**growisofs** is a combined **mkisofs** frontend/DVD recording program.

## K3b-2.0.2

### Introduction to K3b

The K3b package contains a KDE-based graphical interface to the Cdrtools and dvd+rw-tools CD/DVD manipulation tools. It also combines the capabilities of many other multimedia packages into one central interface to provide a simple-to-operate application that can be used to handle many of your CD/DVD recording and formatting requirements. It is used for creating audio, data, video and mixed-mode CDs as well as copying, ripping and burning CDs and DVDs.

Though K3b can be used to copy almost any DVD to similar medium, it does not provide a way to copy, or reproduce a double-layer DVD onto single-layer medium. Of course, there is not a program anywhere on any platform that can make an exact duplicate of a double-layer DVD onto a single-layer disk, there are programs on some platforms that can compress the data on a double-layer DVD to fit on a single-layer DVD producing a duplicate, but compressed, image. If you need to copy the contents of a double-layer DVD to single-layer medium, you may want to look at the *RMLCopyDVD* package.

This package is known to build and work properly using an LFS-7.2 platform.

### Package Information

- Download (HTTP): <http://downloads.sourceforge.net/k3b/k3b-2.0.2.tar.bz2>
- 
- Download MD5 sum: c86113af31a2032e57fd2f302b5f637a
- Download size: 13 MB
- Estimated disk space required: 350 MB
- Estimated build time: 3.0 SBU

### Additional Downloads

- Required patch: [http://www.linuxfromscratch.org/patches/blfs/svn/k3b-2.0.2-ffmpeg\\_fix-2.patch](http://www.linuxfromscratch.org/patches/blfs/svn/k3b-2.0.2-ffmpeg_fix-2.patch)

### K3b Dependencies

#### Required

kde-runtime-4.10.3, libkcddb-4.10.3 and libsamplerate-0.1.8

There are programs from three packages that K3b will look for at runtime: *Cdrtools* (required to burn CD-ROM media), *dvd+rw-tools-7.1* (required to burn or format DVD media), and *Cdrdao-1.2.3* (required to burn CD-ROM media in DAO (Disk At Once) mode). If you don't need the capability provided by any of the three packages, you don't have to install it. However, a warning message will be generated every time you run the **k3b** program if any are not installed.

#### Recommended

FFmpeg-1.2.1, libdvdread-4.2.0, libjpeg-turbo-1.2.1 and taglib-1.8

#### Optional

FLAC-1.2.1, LAME-3.99.5, libmad-0.15.1b, libsndfile-1.0.25, libvorbis-1.3.3, *libmusicbrainz* (version 2), *Musepack* (*libmpcdec*) and *VCDImager*

## Installation of K3b

Install K3b by running the following commands:

```
patch -Np1 -i ../k3b-2.0.2-ffmpeg_fix-2.patch &&
mkdir build &&
cd build &&
cmake -DCMAKE_INSTALL_PREFIX=$KDE_PREFIX \
      -DSYSCONF_INSTALL_DIR=/etc/kde      \
      .. &&
make
```

This package does not come with a test suite.

Now, as the root user:

```
make install
```

## Contents

<b>Installed Programs:</b>	k3b and k3bsetup
<b>Installed Libraries:</b>	libk3b.so, libk3bdevice.so and numerous modules for the installed dependencies
<b>Installed Directories:</b>	The following subdirectories of \$KDE_PREFIX/share/: applnk/Settings/System, apps/k3b, doc/HTML/en/k3b

## Short Descriptions

<b>k3b</b>	is the graphical CD/DVD program.
<b>k3bsetup</b>	is a script used to launch the k3bsetup2 KControlModule for setting up the CD/DVD hardware and device files on your system.

# libburn-1.3.0

## Introduction to libburn

libburn is a library for writing preformatted data onto optical media: CD, DVD and BD (Blu-Ray).

This package is known to build and work properly using an LFS-7.3 platform.

## Package Information

- Download (HTTP): <http://files.libburnia-project.org/releases/libburn-1.3.0.tar.gz>
- 
- Download MD5 sum: c06bfec410ef461a994b9a75b2620561
- Download size: 908 KB
- Estimated disk space required: 17 MB
- Estimated build time: 0.4 SBU

## Installation of libburn

Install libburn by running the following commands:

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

This package does not come with a test suite.

Now, as the root user:

```
make install
```

## Contents

<b>Installed Program:</b>	cdrskin
<b>Installed Library:</b>	libburn.so
<b>Installed Directory:</b>	/usr/include/libburn

## Short Descriptions

**cdrskin**        burns preformatted data to CD, DVD, and BD via libburn.

**libburn.so**    contains the libburn API functions.

# libisoburn-1.3.0

## Introduction to libisoburn

libisoburn is a frontend for libraries libburn and libisofs which enables creation and expansion of ISO-9660 filesystems on all CD/DVD/BD media supported by libburn. This includes media like DVD+RW, which do not support multi-session management on media level and even plain disk files or block devices.

This package is known to build and work properly using an LFS-7.3 platform.

## Package Information

- Download (HTTP): <http://files.libburnia-project.org/releases/libisoburn-1.3.0.tar.gz>
- 
- Download MD5 sum: 1341e87e385cb559ee1cd2605e372dec
- Download size: 1.4 MB
- Estimated disk space required: 20 MB
- Estimated build time: 0.2 SBU

## libisoburn Dependencies

### Required

libburn-1.3.0 and libisofs-1.3.0

### Optional

acl-2.2.51, attr-2.4.46, Doxygen-1.8.4 (to generate HTML documentation) and Tk-8.6.0 (for **xorriso-tcltk**)

## Installation of libisoburn

Install libisoburn by running the following commands:

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

If you have installed Doxygen and wish to generate the HTML documentation, issue the following command:

```
doxygen doc/doxygen.conf
```

This package does not come with a test suite.

Now, as the `root` user:

```
make install
```

If you have built the HTML documentation, install it by running the following commands as the `root` user:

```
install -v -dm755 /usr/share/doc/libisoburn-1.3.0 &&
install -v -m644 doc/html/* /usr/share/doc/libisoburn-1.3.0
```

## Command Explanations

`--disable-static`: This switch prevents installation of static versions of the libraries.

## Contents

**Installed Programs:** osirrox, xorrecord, xorriso, xorrisofs and xorriso-tcltk  
**Installed Library:** libisoburn.so  
**Installed Directories:** /usr/include/libisoburn and /usr/share/doc/libisoburn-1.3.0

## Short Descriptions

**osirrox** is a symbolic link to **xorriso** that copies files from ISO image to a disk filesystem.  
**xorrecord** is a symbolic link to **xorriso** that provides a cdrecord type user interface.  
**xorriso** is a program to create, load, manipulate, read, and write ISO 9660 filesystem images with Rock Ridge extensions.  
**xorrisofs** is a symbolic link to **xorriso** that provides a mkisofs type user interface.  
**libisoburn.so** contains the libisoburn API functions.

# libisofs-1.3.0

## Introduction to libisofs

libisofs is a library to create an ISO-9660 filesystem with extensions like RockRidge or Joliet.

This package is known to build and work properly using an LFS-7.3 platform.

## Package Information

- Download (HTTP): <http://files.libburnia-project.org/releases/libisofs-1.3.0.tar.gz>
- 
- Download MD5 sum: 5ab9f4a57d3c815d1183cbf49ce86a9e
- Download size: 752 KB
- Estimated disk space required: 12 MB
- Estimated build time: 0.4 SBU

## libisofs Dependencies

### Optional

acl-2.2.51 and attr-2.4.46

## Installation of libisofs

Install libisofs by running the following commands:

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

This package does not come with a test suite.

Now, as the root user:

```
make install
```

## Command Explanations

**--disable-static:** This switch prevents installation of static versions of the libraries.

## Contents

<b>Installed Programs:</b>	None
<b>Installed Library:</b>	libisofs.so
<b>Installed Directory:</b>	/usr/include/libisofs

## Short Descriptions

**libisofs.so** contains the libisofs API functions.

## **Part XII. Printing, Scanning and Typesetting**

## Chapter 42. Printing

This chapter contains spooling printer management systems and ghostscript applications to render PostScript for display on terminals or paper.

# Cups-1.6.2

## 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.

This package is known to build and work properly using an LFS-7.3 platform.

## Package Information

- Download (HTTP): <http://ftp.easysw.com/pub/cups/1.6.2/cups-1.6.2-source.tar.bz2>
- Download (FTP): <ftp://ftp.easysw.com/pub/cups/1.6.2/cups-1.6.2-source.tar.bz2>
- Download MD5 sum: 13c8b2b2336d42001abe4899766b62dc
- Download size: 8.0 MB
- Estimated disk space required: 80 MB
- Estimated build time: 1.2 SBU

## Additional Downloads

- Required patch: <http://www.linuxfromscratch.org/patches/blfs/svn/cups-1.6.2-blfs-1.patch>

## Cups Dependencies

### Recommended

Colord-1.0.0, D-Bus-1.6.10 and libusb-1.0.9

### Optional

acl-2.2.51, Avahi-0.6.31, GnuTLS-3.2.0 or OpenSSL-1.0.1e, *libpaper*, Linux-PAM-1.1.6, MIT Kerberos V5-1.11.2, OpenJDK-1.7.0.9, PHP-5.4.11, Python-2.7.5 and xdg-utils-1.1.0-rc1

### Required (Runtime)

cups-filters-1.0.34

## Kernel Configuration



### Note

There is a conflict between the Cups libusb backend and the usblp kernel driver. If you want to use Cups with libusb, *do not* enable USB Printer support in your kernel.

If you want to use the kernel usblp driver, enable the following options in your kernel configuration and recompile the kernel:

```
Device Drivers --->
  [*] USB support --->
...
Enable support for either UHCI or OHCI, not both:
  [*] OHCI HCD support
  [*] UHCI HCD (most Intel and VIA) support
...
  [*] USB Printer support
```

If you have a parallel printer, enable the following options in your kernel configuration and recompile the kernel:

```
Device Drivers --->
  [*] Parallel port support --->
    [*] PC-style hardware
...
Character devices --->
  [*] Parallel printer support
```

## Installation of Cups

You will need to add an `lp` user, as Cups will create some files owned by this user. (The `lp` user is the default used by Cups, but may be changed to a different user by passing a parameter to the `configure` script.) Use the following command as the `root` user:

```
useradd -c "Print Service User" -d /var/spool/cups -g lp -s /bin/false -u 9 lp
```

You will also need a dedicated group that will contain users allowed to do Cups administrative tasks. Add the group by running the following command as the `root` user:

```
groupadd -g 19 lpadmin
```

If you want to add a user to the Cups administrative group, run the following command as the `root` user:

```
usermod -a -G lpadmin <username>
```

If you didn't install `xdg-utils-1.1.0-rc1`, use the following `sed` to change the default browser that will be used to access the Cups web interface:

```
sed -i 's#@CUPS_HTMLVIEW@#firefox#' desktop/cups.desktop.in
```

Replace **firefox** with the web browser of your choice.

Install Cups by running the following commands:

```
patch -Np1 -i ../cups-1.6.2-blfs-1.patch &&
aclocal -I config-scripts &&
autoconf -I config-scripts &&
./configure --libdir=/usr/lib \
            --with-rcdir=/tmp/cupsinit \
            --with-docdir=/usr/share/cups/doc \
            --with-system-groups=lpadmin &&
make
```

This package does not have a working testsuite.

Now, as the `root` user:

```
make install &&
rm -rf /tmp/cupsinit &&
ln -sv ../cups/doc /usr/share/doc/cups-1.6.2
```

Create a basic Cups client configuration file by running the following command as the `root` user:

```
echo "ServerName /var/run/cups/cups.sock" > /etc/cups/client.conf
```

Remove filters that are now part of the Cups Filters package by running the following commands as the `root` user:

```
rm -rf /usr/share/cups/banners &&
rm -rf /usr/share/cups/data/testprint
```



### Note

This package installs icon files into the `/usr/share/icons/hicolor` hierarchy and you can improve system performance and memory usage by updating `/usr/share/icons/hicolor/index.theme`. To perform the update you must have GTK+-2.24.17 or GTK+-3.6.4 installed and issue the following command as the `root` user:

```
gtk-update-icon-cache
```

## Command Explanations

`--with-rcdir=/tmp/cupsinit`: This switch tells the build process to install the shipped bootscript into `/tmp` instead of `/etc/rc.d`.

`--with-system-groups=lpadmin`: This switch ensures that only `lpadmin` will be used as the Cups administrative group.

`--disable-libusb`: Use this switch if you have installed libusb-1.0.9, but wish to use the kernel usblp driver.

`--enable-libpaper`: Use this switch if you have installed libpaper and wish to use it with Cups.

`--disable-gnutls --enable-openssl`: This switch tells the build process to use OpenSSL-1.0.1e instead of GnuTLS-3.2.0. The current version of GnuTLS might produce lot of warnings during the Cups build.

## 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 ghostscript-9.06 to convert PostScript to raster images and a driver (e.g., from Gutenprint-5.2.9) 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

If you want the Cups print service to start automatically when the system is booted, install the init script included in the blfs-bootscripts-20130512 package:

```
make install-cups
```

## Contents

<b>Installed Programs:</b>	accept, cancel, cupsaccept, cupsaddsmb, cups-config, cupsctl, cupsd, cupsdisable, cupsenable, cupsfilter, cupsreject, cupstestdsc, cupstestppd, ipptool, lp, lpadmin, lpc, lpinfo, lpmove, lpoptions, lppasswd, lpq, lpr, lprm, lpstat, ppdc, ppdhtml, ppdi, ppdmerge, ppdpo and reject
<b>Installed Libraries:</b>	libcupscgi.so, libcupsimage.so, libcupsmime.so, libcupsppd.so and libcups.so
<b>Installed Directories:</b>	/etc/cups, /usr/include/cups, /usr/lib/cups, /usr/share/cups, /usr/share/doc/cups-1.6.2, /var/cache/cups, /var/log/cups, /var/run/cups and /var/spool/cups

## Short Descriptions

<b>accept</b>	instructs the printing system to accept print jobs to the specified destinations.
<b>cancel</b>	cancels existing print jobs from the print queues.
<b>cupsaddsmb</b>	exports printers to the Samba software for use with Windows clients.
<b>cups-config</b>	is a Cups program configuration utility.
<b>cupsctl</b>	updates or queries the cupsd.conf file for a server.
<b>cupsd</b>	is the scheduler for the Common Unix Printing System.
<b>cupsfilter</b>	is a front-end to the Cups filter subsystem which allows you to convert a file to a specific format.
<b>cupstestdsc</b>	tests the conformance of PostScript files.
<b>cupstestppd</b>	tests the conformance of PPD files.
<b>ipptool</b>	sends IPP requests to the specified URI and tests and/or displays the results.
<b>lp</b>	submits files for printing or alters a pending job.
<b>lpadmin</b>	configures printer and class queues provided by Cups.
<b>lpc</b>	provides limited control over printer and class queues provided by Cups.
<b>lpinfo</b>	lists the available devices or drivers known to the Cups server.
<b>lpmove</b>	moves the specified job to a new destination.

<b>lpoptions</b>	displays or sets printer options and defaults.
<b>lppasswd</b>	adds, changes or deletes passwords in the Cups digest password file <code>passwd.md5</code> .
<b>lpq</b>	shows the current print queue status on the named printer.
<b>lpr</b>	submits files for printing.
<b>lprm</b>	cancels print jobs that have been queued for printing.
<b>lpstat</b>	displays status information about the current classes, jobs, and printers.
<b>ppdc</b>	compiles PPDC source files into one or more PPD files.
<b>ppdhtml</b>	reads a driver information file and produces a HTML summary page that lists all of the drivers in a file and the supported options.
<b>ppdi</b>	imports one or more PPD files into a PPD compiler source file.
<b>ppdmerge</b>	merges two or more PPD files into a single, multi-language PPD file.
<b>ppdpo</b>	extracts UI strings from PPDC source files and updates either a GNU gettext or Mac OS X strings format message catalog source file for translation.
<b>reject</b>	instructs the printing system to reject print jobs to the specified destinations.
<b>libcups.so</b>	contains the Cups API functions.

# cups-filters-1.0.34

## Introduction to CUPS Filters

The CUPS Filters package contains backends, filters and other software that was once part of the core CUPS distribution but is no longer maintained by Apple Inc.

This package is known to build and work properly using an LFS-7.2 platform.

## Package Information

- Download (HTTP): <http://www.openprinting.org/download/cups-filters/cups-filters-1.0.34.tar.xz>
- 
- Download MD5 sum: e4d605cd35ea5a42c13f7fc1e1f273de
- Download size: 992 KB
- Estimated disk space required: 32 MB
- Estimated build time: 0.3 SBU

## CUPS Filters Dependencies

### Required

Cups-1.6.2, IJS-0.35, Little CMS-2.4, Poppler-0.22.4 and Qpdf-4.1.0

### Recommended

libjpeg-turbo-1.2.1, libpng-1.6.2 and LibTIFF-4.0.3

### Optional

Avahi-0.6.31

### Required (Runtime)

ghostscript-9.06 (Needed for PostScript printers)

## Installation of CUPS Filters

Install CUPS Filters by running the following commands:

```
./configure --prefix=/usr \
            --sysconfdir=/etc \
            --docdir=/usr/share/doc/cups-filters-1.0.34 \
            --without-rmdir \
            --with-gs-path=/usr/bin/gs \
            --with-pdftops-path=/usr/bin/gs \
            --disable-avahi \
            --disable-static \
make
```

This package does not have working test suite.

Now, as the root user:

```
make install
```

## Command Explanations

- without-rmdir: This switch disables installation of the bundled bootscript which is not compatible with BLFS.
- with-gs-path=/usr/bin/gs: This switch defines the path to the GhostScript binary in case ghostscript-9.06 is not installed at build time.
- with-pdfops-path=/usr/bin/gs: This switch defines the path to the GhostScript binary in case ghostscript-9.06 is not installed at build time.
- disable-avahi: This switch is required if you have not installed Avahi-0.6.31.
- disable-static: This switch prevents installation of static versions of the libraries.

## Contents

<b>Installed Programs:</b>	ttfread and cups-browsed
<b>Installed Libraries:</b>	libcupsfilters.so and libfontembed.so
<b>Installed Directories:</b>	/usr/include/cupsfilters, /usr/include/fontembed, /usr/share/cups/banners, /usr/share/cups/charsets, /usr/share/doc/cups-filters-1.0.34 and /usr/share/ppd/cups-filters

## Short Descriptions

**libcupsfilters.so** contains CUPS Filters API functions.

# ghostscript-9.06

## Introduction to Ghostscript

Ghostscript is a versatile processor for PostScript data with the ability to render PostScript to different targets.

This package is known to build and work properly using an LFS-7.3 platform.

## Package Information

- Download (HTTP): <http://downloads.ghostscript.com/public/ghostscript-9.06.tar.bz2>
- 
- Download MD5 sum: 46f9ebe40dc52755287b30704270db11
- Download size: 28 MB
- Estimated disk space required: 195 MB (includes installing libgs.so and both font tarballs)
- Estimated build time: 2.5 SBU (includes building and installing libgs.so)

## Additional Downloads

### Standard Fonts

- Download (FTP): <http://downloads.sourceforge.net/gs-fonts/ghostscript-fonts-std-8.11.tar.gz>
- Download MD5 sum: 6865682b095f8c4500c54b285ff05ef6
- Download size: 3.7 MB

### Other Fonts

- Download (HTTP): <http://downloads.sourceforge.net/gs-fonts/gnu-gs-fonts-other-6.0.tar.gz>
- Download MD5 sum: 33457d3f37de7ef03d2eea05a9e6aa4f
- Download size: 796 KB

## Ghostscript Dependencies

### Recommended

expat-2.1.0, FreeType-2.4.12, libjpeg-turbo-1.2.1, libpng-1.6.2, LibTIFF-4.0.3, and Little CMS-2.4

### Optional

Cairo-1.12.14, Fontconfig-2.10.2, GTK+-2.24.17, Cups-1.6.2, JasPer-1.900.1, Little CMS-1.19, libidn-1.26, X Window System and *libpaper*

## Installation of Ghostscript



### Note

The Ghostscript build system is not user-friendly. In order to use system copies of various graphics libraries, you must do it using unconventional methods.

GPL Ghostscript includes (old) copies of several libraries. Some of these seem to have been patched to fix known vulnerabilities, but others of these copies are less-well maintained. To ensure that any future fixes are applied throughout the whole system, it is recommended that you first install the released versions of these libraries and then configure GPL Ghostscript to link to them.

If you have installed these dependencies on your system, remove the copies of expat, freetype, lcms2, libjpeg, libpng, and libtiff:

```
rm -rf expat freetype jpeg lcms2 libpng tiff
```

### Note

If you have a multicore computer and try to run make with multiple jobs (eg, make -j4) then the build may fail due to race conditions in the Ghostscript build system. You can work around that problem by simply running make again (eg, **make -j4 || make -j1**).

### Note

If you have installed Cups and your printer is *not* a postscript printer you will need to add --with-install-cups to the configure options below. (This option makes Ghostscript compile and install the gstoraster filter and the gstoraster.convs configuration file that allow Cups to convert a PostScript file to raster.)

Compile Ghostscript:

```
rm -rf jasper lcms zlib &&
./configure --prefix=/usr --enable-dynamic --with-system-libtiff LIBS=-lz &&
make
```

### Note

The shared library depends on GTK+-2.24.17. It is only used in external programs like ImageMagick-6.8.5-6.

To compile the shared library **libgs.so**, run the following additional command as an unprivileged user:

```
make so
```

This package does not come with a test suite. However, you may test the operation of the newly built **gs** program by issuing the following command (issue from an X Windows terminal):

```
bin/gs -Ilib -dBATCH examples/tiger.eps
```

Now, as the root user:

```
make install
```

If you want the shared library too:

```
make soinstall &&
install -v -m644 base/*.h /usr/include/ghostscript &&
ln -v -s ghostscript /usr/include/ps
```

Now install the documentation:

```
ln -sfv ../ghostscript/9.06/doc /usr/share/doc/ghostscript-9.06
```

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 -xvf ../../<font-tarball> -C /usr/share/ghostscript --no-same-owner
```

## Command Explanations

**rm -rf jasper lcms zlib:** The Ghostscript build system defaults to using its own version of *OpenJpeg* for JPEG 2000 files so jasper source can be removed. The default color management system is now lcms2 so the lcms source is not needed. Zlib was installed as part of LFS.

**--with-system-libtiff:** Remove this option if you've not installed LibTIFF-4.0.3.

**LIBS=-lz:** Use the LIBS variable to tell the linker (ld) to link against the system installed zlib.

**install -v -m644 base/\*.h...:** Some packages (ImageMagick is one) need the Ghostscript interface headers in place to link to the shared library. These commands install the headers.

**ln -v -s ghostscript /usr/include/ps:** Some packages expect to find the interface headers in an alternate location.

**ln -sfv ..//ghostscript-9.06/doc ...:** This puts a symbolic link to the documentation where it is expected to be found.

## Contents

**Installed Programs:** bdftops, dumphint, dvipdf, eps2eps, fixmswrd.pl, font2c, gs, gsbj, gsc (from soinstall), gsdj, gsdj500, gslj, gslp, gsnd, gsx (from soinstall), lprsetup.sh, pdf2dsc, pdf2ps, pdffopt, pf2afm, pfbtopfa, printafm, ps2ascii, ps2epsi, ps2pdf, ps2pdf12, ps2pdf13, ps2pdf14, ps2pdfwr, ps2ps, ps2ps2, pv.sh, unix-lpr.sh, and wftopfa

**Installed Library:** libgs.so

**Installed Directories:** /usr/include/ghostscript, /usr/lib/ghostscript, /usr/share/ghostscript and /usr/share/doc/ghostscript-9.06

## Short Descriptions

**gs** is an interpreter for Adobe Systems' PostScript(tm) and Portable Document Format (PDF).

**libgs.so** provides Ghostscript functionality to other programs, such as GSView, ImageMagick, and libspectre.

GPL Ghostscript provides many different scripts used to convert PostScript, PDF, and other formats. Please refer to the HTML documentation or the man pages for information about the capabilities provided.

# Gutenprint-5.2.9

## Introduction to Gutenprint

The Gutenprint (formerly Gimp-Print) package contains high quality drivers for many brands and models of printers for use with ghostscript-9.06, Cups-1.6.2, *Foomatic*, and the GIMP-2.0. See a list of supported printers at [http://gutenprint.sourceforge.net/p\\_Supported\\_Printers.php](http://gutenprint.sourceforge.net/p_Supported_Printers.php).

This package is known to build and work properly using an LFS-7.3 platform.

## Package Information

- Download (HTTP): <http://downloads.sourceforge.net/gimp-print/gutenprint-5.2.9.tar.bz2>
- 
- Download MD5 sum: aefbec27b96dd404d9ac9811e17d58ce
- Download size: 5.5 MB
- Estimated disk space required: 73 MB
- Estimated build time: 0.4 SBU

## Gutenprint Dependencies

### Recommended

Cups-1.6.2, and Gimp-2.8.4

### Optional

*Foomatic*, IJS-0.35

### Optional (to Regenerate Documentation)

ImageMagick-6.8.5-6, texlive-20120701, Doxygen-1.8.4, and DocBook-utils-0.6.14

## Installation of Gutenprint

Install Gutenprint by running the following commands:

```
sed -i 's|$(PACKAGE)/doc|doc/$(PACKAGE)-$(VERSION)|' \
    {,doc/,doc/developer/}Makefile.in &&
./configure --prefix=/usr --disable-static &&
make
```

To test the results, issue: **make check**. When last tested (version 5.2.7, LFS-7.1, on a uniprocessor box which is admittedly short of memory) this took more than 800 SBUs (more than two days for that box) and used an extra 678 MB of disk space.

Now, as the root user:

```
make install &&
install -v -m755 -d /usr/share/doc/gutenprint-5.2.9/api/gutenprint{,ui2} &&
install -v -m644      doc/gutenprint/html/* \
                     /usr/share/doc/gutenprint-5.2.9/api/gutenprint &&
install -v -m644      doc/gutenprintui2/html/* \
                     /usr/share/doc/gutenprint-5.2.9/api/gutenprintui2
```

## Command Explanations

**sed -i '...'** ...**Makefile.in**: This command is used so that the package documentation is installed in the conventional /usr/share/doc directory structure instead of /usr/share/gutenprint/doc.

**--disable-static**: This switch prevents the static libraries being installed.

## Configuring Gutenprint

### Configuration Information

For CUPS to see newly installed print drivers, it has to be restarted (as the root user):

```
/etc/rc.d/init.d/cups restart
```

Then point your web browser to <http://localhost:631> to add a new printer to CUPS.

## Contents

<b>Installed Programs:</b>	cups-calibrate, cups-genppd.5.2, cups-genppdupdate, escputil, ijsgutenprint.5.2 (if compiled using ijs), and testpattern
<b>Installed Libraries:</b>	libgutenprint.so, libgutenprintui2.so and optionally, various CUPS filters and backend drivers
<b>Installed Directories:</b>	/usr/include/gutenprint, /usr/lib/gutenprint, /usr/share/doc/gutenprint-5.2.9 and /usr/share/gutenprint

## Short Descriptions

<b>cups-calibrate</b>	calibrates the color output of printers using the Gutenprint, CUPS or ESP Print Pro drivers.
<b>escputil</b>	is a command line utility to perform various maintenance tasks on Epson Stylus inkjet printers.
<b>ijsgutenprint.5.2</b>	is a Ghostscript driver for HP inkjet and laserjet printers.

## Chapter 43. Scanning

This chapter contains scanning applications which allow you to convert printed documents into formatted documents readable by other applications.

# SANE-1.0.23

## 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.

This package is known to build and work properly using an LFS-7.2 platform.

## Back Ends Package Information

- 
- Download (FTP): <ftp://ftp2.sane-project.org/pub/sane/sane-backends-1.0.23.tar.gz>
- Download MD5 sum: 979c9dbb23920d04e322be23122c7de7
- Download size: 5.1 MB
- Estimated disk space required: 120 MB
- Estimated build time: 1.2 SBU

## Front Ends Package Information

- Download (HTTP): <http://alioth.debian.org/download.php/1140/sane-frontends-1.0.14.tar.gz>
- Download (FTP): <ftp://ftp2.sane-project.org/pub/sane/sane-frontends-1.0.14/sane-frontends-1.0.14.tar.gz>
- Download MD5 sum: c63bf7b0bb5f530cf3c08715db721cd3
- Download size: 231 KB
- Estimated disk space required: 3.0 MB
- Estimated build time: less than 0.1 SBU

## SANE Dependencies

### Optional (Back Ends)

Avahi-0.6.31, Cups-1.6.2, libjpeg-turbo-1.2.1, LibTIFF-4.0.3, libusb-1.0.9, Net-SNMP, libieee1284, libgphoto2, Video4Linux, and texlive-20120701

### Optional (Front Ends)

X Window System, GTK+-2.24.17, and Gimp-2.8.4

## Kernel Configuration

To access your scanner, you will probably need the related kernel drivers and/or additional support packages. A SCSI scanner will need SCSI drivers, a parallel port scanner needs parallel port support (you should use enhanced EPP modes) and perhaps *libieee1284*, and a USB scanner will need the libusb-1.0.9 package. Ensure you have the necessary drivers properly configured to access the devices.

## Installation of SANE

### Installation of SANE Back Ends



#### Note

You may safely disregard any messages printed on the screen when you unpack the tarball.

The SANE daemon should run with its own group. Create this group by issuing the following commands as the root user:

```
groupadd -g 70 scanner
```



#### Note

The user building SANE-backends should be a member of the scanner group before proceeding. After you have added the user building the package to the scanner group, issue the following command to create a new shell:

```
su $(whoami)
```

Check the output of the **groups** command and ensure the user is a member of the scanner group.

Install SANE-backends by running the following commands:

```
./configure --prefix=/usr \
            --sysconfdir=/etc \
            --localstatedir=/var \
            --with-docdir=/usr/share/doc/sane-backend-1.0.23 \
            --with-group=scanner \
make \
exit
```

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

Now, as the root user:

```
make install \
install -m 644 -v tools/udev/libsane.rules \
          /etc/udev/rules.d/65-scanner.rules &&
chgrp -v scanner /var/lock/sane
```

### 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-0.998. For a list of frontend packages, see <http://www.sane-project.org/sane-frontends.html>.

To install SANE-frontends, use the following commands:

```
sed -i -e "/SANE_CAP_ALWAYS_SETTABLE/d" src/gtkglue.c &&
./configure --prefix=/usr &&
make
```

This package does not come with a test suite.

Now, as the **root** user:

```
make install &&
install -v -m644 doc/sane.png xscaimage-icon-48x48-2.png \
/usr/share/sane
```

If GIMP was linked into the build and you wish GIMP to use **xscaimage** as a scanning plugin, issue the following command as the **root** user:

```
ln -v -s ../../../../bin/xscaimage /usr/lib/gimp/2.0/plug-ins
```

## Command Explanations

**--sysconfdir=/etc**: This switch installs the configuration files in `/etc/sane.d` instead of `/usr/etc/sane.d`.

**--with-group=scanner**: This parameter causes the directory created for the locking files to be group owned by the **scanner** group instead of the default **uucp** group.

**exit**: This command is used to exit the shell created by the **su** command.

## 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.

Add any desired users to the **scanner** group.

#### 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 Firewalling protection to ensure only trusted clients access the daemon. Due to the complex security requirements to ensure 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:

<b>Installed Programs:</b>	gamma4scanimage, sane-config, saned, sane-find-scanner, and scanimage
<b>Installed Libraries:</b>	libsane.so and numerous scanner backend modules
<b>Installed Directories:</b>	/etc/sane.d, /usr/include/sane, /usr/lib/sane, /usr/share/sane, and /usr/share/doc/sane-1.0.23

### Front Ends:

<b>Installed Programs:</b>	scanadf, xcam, and xscaimage
<b>Installed Library:</b>	GIMP plugin embedded in <b>xscaimage</b>
<b>Installed Directories:</b>	None

### Short Descriptions

<b>gamma4scanimage</b>	creates a gamma table in the format expected by <b>scanimage</b> .
<b>sane-config</b>	is a tool used to determine the compiler and linker flags that should be used to compile and link SANE.
<b>saned</b>	is the SANE daemon that allows remote clients to access image acquisition devices available on the local host.
<b>sane-find-scanner</b>	is a command-line tool to find SCSI and USB scanners and determine their device files. Its primary purpose is to make sure that scanners can be detected by SANE backends.
<b>scanadf</b>	is a command-line interface to control image acquisition devices which are equipped with an automatic document feeder (ADF).
<b>scanimage</b>	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.
<b>xcam</b>	is a graphical camera front end for SANE.
<b>xscaimage</b>	is a graphical user interface for scanning.
<b>libsane.so</b>	is the application programming interface that is used to communicate between frontends and backends.
<b>libsane-* .so</b>	modules are backend scanning library plugins used to interface with scanning devices. See <a href="http://www.sane-project.org/sane-supported-devices.html">http://www.sane-project.org/sane-supported-devices.html</a> for a list of supported backends.

# XSane-0.998

## Introduction to XSane

XSane is another front end for SANE-1.0.23. It has additional features to improve the image quality and ease of use compared to **xscanimage**.

This package is known to build and work properly using an LFS-7.2 platform.

## Package Information

- 
- Download (FTP): <ftp://ftp2.sane-project.org/pub/sane/xsane/xsane-0.998.tar.gz>
- Download MD5 sum: 936f1cc76b37caa8f285e1e15ac7e0aa
- Download size: 2.8 MB
- Estimated disk space required: 23 MB
- Estimated build time: 0.2 SBU

## XSane Dependencies

### Required

GTK+-2.24.17 and SANE-1.0.23 (back ends)

### Optional

LibTIFF-4.0.3, libjpeg-turbo-1.2.1, Little CMS-1.19, and Gimp-2.8.4

## Installation of XSane

Install XSane by running the following commands:

```
sed -i -e 's/netscape/xdg-open/' src/xsane.h &&
sed -i -e 's/png_ptr->jmpbuf/png_jmpbuf(png_ptr)/' src/xsane-save.c &&
./configure --prefix=/usr &&
make
```

This package does not come with a test suite.

Now, as the `root` user:

```
make xsanedocdir=/usr/share/doc/xsane-0.998 install &&
ln -v -s ../../doc/xsane-0.998 /usr/share/sane/xsane/doc &&
ln -v -s <browser> /usr/bin/netscape
```



### Note

Be sure to replace `<browser>` with the browser of your choice on your system.

If GIMP is installed, issue the following command as the `root` user:

```
ln -v -s /usr/bin/xsane /usr/lib/gimp/2.0/plug-ins/
```

## Command Explanations

**ln -v -s ../../doc(xsane-0.998 /usr/share/sane/xsane/doc:** This symlink is created to ensure that any program that looks for the XSane documentation in the default location will find it, as the documentation is installed in an alternate location specified in the **make install** command.

**ln -v -s /usr/bin/xsane /usr/lib/gimp/2.0/plug-ins/:** This creates a link in the system-wide GIMP plug-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/plug-ins/` to provide individual user access. **man xsane** for additional information.

## Contents

<b>Installed Program:</b>	xsane
<b>Installed Libraries:</b>	None
<b>Installed Directory:</b>	/usr/share/doc/xsane-0.998 and /usr/share/sane/xsane

## Short Descriptions

**xsane** is a graphical user-interface to control an image acquisition device such as a flatbed scanner.

## Chapter 44. 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.

This package is known to build and work properly using an LFS-7.3 platform.

## Package Information

- 
- 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: less than 0.1 SBU

## Additional Downloads

- Required patch: <http://www.linuxfromscratch.org/patches/blfs/svn/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
```

This package does not come with a test suite.

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

<b>Installed Programs:</b>	install-catalog and sgmlwhich
<b>Installed Libraries:</b>	None
<b>Installed Files:</b>	SGML and XML DocBook entity files
<b>Installed Directories:</b>	/etc/sgml, /usr/share/doc/sgml-common-0.6.3, and /usr/share/sgml

## Short Descriptions

### install-catalog

creates a centralized catalog that maintains references to catalogs scattered throughout the /usr/share/sgml 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-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.

This package is known to build and work properly using an LFS-7.3 platform.

### 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-6.0

## 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
```

This package does not come with a test suite.

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

<b>Installed Programs:</b>	None
<b>Installed Libraries:</b>	None
<b>Installed Files:</b>	SGML DTD and MOD files
<b>Installed Directory:</b>	/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-4.5

## 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.

This package is known to build and work properly using an LFS-7.3 platform.

### Package Information

- Download (HTTP): <http://www.docbook.org/sgml/4.5/docbook-4.5.zip>
- 
- Download MD5 sum: 07c581f4bbcba6d3aac85360a19f95f7
- Download size: 70 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-6.0

## 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
```

This package does not come with a test suite.

Now, as the `root` user:

```
install -v -d /usr/share/sgml/docbook/sgml-dtd-4.5 &&
chown -R root:root . &&
install -v docbook.cat /usr/share/sgml/docbook/sgml-dtd-4.5/catalog &&
cp -v -af *.dtd *.mod *.dcl /usr/share/sgml/docbook/sgml-dtd-4.5 &&
install-catalog --add /etc/sgml/sgml-docbook-dtd-4.5.cat \
    /usr/share/sgml/docbook/sgml-dtd-4.5/catalog &&
install-catalog --add /etc/sgml/sgml-docbook-dtd-4.5.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-4.5/catalog << "EOF"
-- Begin Single Major Version catalog changes --

PUBLIC "-//OASIS//DTD DocBook V4.4//EN" "docbook.dtd"
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

<b>Installed Programs:</b>	None
<b>Installed Libraries:</b>	None
<b>Installed Files:</b>	SGML DTD and MOD files
<b>Installed Directory:</b>	/usr/share/sgml/docbook/sgml-dtd-4.5

## 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-1.5.2

## 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.

This package is known to build and work properly using an LFS-7.3 platform.

### Package Information

- Download (HTTP): <http://downloads.sourceforge.net/openjade/OpenSP-1.5.2.tar.gz>
- 
- Download MD5 sum: 670b223c5d12cee40c9137be86b6c39b
- Download size: 1.5 MB
- Estimated disk space required: 32 MB
- Estimated build time: 1.0 SBU

## OpenSP Dependencies

### Required

sgml-common-0.6.3

### Optional

xmldt-0.0.25

## Installation of OpenSP

Install OpenSP by running the following commands:

```
sed -i 's/32,/253,' lib/Syntax.cxx &&
sed -i 's/LITLEN          240 /LITLEN          8092/' \
      unicode/{gensyntax.pl,unicode.syn} &&
./configure --prefix=/usr \
            --disable-static \
            --disable-doc-build \
            --enable-default-catalog=/etc/sgml/catalog \
            --enable-http \
            --enable-default-search-path=/usr/share/sgml &&
make pkgdatadir=/usr/share/sgml/OpenSP-1.5.2
```

To test the results, issue: **make check**. As many as nine of the 23 tests may fail. Do not be alarmed.

Now, as the root user:

```
make pkgdatadir=/usr/share/sgml/OpenSP-1.5.2 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/libsp.so
```

## Command Explanations

**sed -i 's/32,/253,/...unicode.syn}:** These seds prevent some annoying messages that may otherwise appear while running **openjade**.

**--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.

**--disable-doc-build:** This switch prevents the **configure** script checking if you have xmlto installed. If you have xmlto, you can remove this option.

**make pkgdatadir=/usr/share/sgml/OpenSP-1.5.2:** This sets the pkgdatadir variable in the Makefile from /usr/share/OpenSP to /usr/share/sgml/OpenSP-1.5.2.

**ln -v -sf ...:** These commands create the SP equivalents of OpenSP executables and libraries.

## Contents

<b>Installed Programs:</b>	onsgmls, osgmlnorm, ospam, ospcat, ospent, osx, and the SP equivalent symlinks: nsgmls, sgml2xml, sgmlnorm, spam, spcat, spent, and sx
<b>Installed Library:</b>	libosp.so and the SP equivalent symlink: libsp.so
<b>Installed Directories:</b>	/usr/include/OpenSP, /usr/share/doc/OpenSP, and /usr/share/sgml/OpenSP-1.5.2

## Short Descriptions

<b>onsgmls</b>	is used to process SGML files.
<b>osgmlnorm</b>	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.
<b>ospam</b>	is a markup stream editor.
<b>ospcat</b>	prints effective system identifiers found in the catalogs.
<b>ospent</b>	provides access to OpenSP's entity manager.
<b>osx</b>	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.

This package is known to build and work properly using an LFS-7.3 platform.

## Package Information

- Download (HTTP): <http://downloads.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: 0.7 SBU

## Additional Download

- Required patch: [http://www.linuxfromscratch.org/patches/blfs/svn/openjade-1.3.2-gcc\\_4.6-1.patch](http://www.linuxfromscratch.org/patches/blfs/svn/openjade-1.3.2-gcc_4.6-1.patch)

## OpenJade Dependencies

### Required

OpenSP-1.5.2

## Installation of OpenJade

First fix a compilation problem identified in gcc-4.6 and later:

```
patch -Npl -i ../../openjade-1.3.2-gcc_4.6-1.patch
```

First fix a compilation problem with perl-5.16 and later:

```
sed -i -e '/getopts/{N;s#&G#g#;s#do .getopts.pl.;##;}' \
-e '/use POSIX/a use Getopt::Std;' msggen.pl
```

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
```

This package does not come with a test suite.

Now, as the root user:

```
make install                               &&
make install-man                         &&
ln -v -sf openjade /usr/bin/jade          &&
ln -v -sf libogrove.so /usr/lib/libgrove.so   &&
ln -v -sf libospgrove.so /usr/lib/libspgrove.so &&
ln -v -sf libostyle.so /usr/lib/libstyle.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/4.5/docbookx.dtd\" \
  \" /usr/share/xml/docbook/xml-dtd-4.5/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

<b>Installed Programs:</b>	openjade and the Jade equivalent symlink, jade
<b>Installed Libraries:</b>	libogrove.so, libospgrove.so, libostyle.so, and the Jade equivalent symlinks: libgrove.so, libspgrove.so, and libstyle.so
<b>Installed Directory:</b>	/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-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.

This package is known to build and work properly using an LFS-7.3 platform.

### Package Information

- Download (HTTP): <http://downloads.sourceforge.net/docbook/docbook-dsssl-1.79.tar.bz2>
- Download (FTP): <ftp://mirror.ovh.net/gentoo-distfiles/distfiles/docbook-dsssl-1.79.tar.bz2>
- Download MD5 sum: bc192d23266b9a664ca0aba4a7794c7c
- Download size: 277 KB
- Estimated disk space required: 14 MB
- Estimated build time: less than 0.1 SBU

### Additional Downloads

#### Documentation and test data

- Download (HTTP): <http://downloads.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-3.1, docbook-4.5, OpenSP-1.5.2 and OpenJade-1.3.2

## Installation of DocBook DSSSL Stylesheets

If you downloaded the documentation, run:

```
tar -xf ../docbook-dsssl-doc-1.79.tar.bz2 --strip-components=1
```

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 an installation 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-3.1, docbook-4.5, OpenSP-1.5.2 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 as the `root` user:

```
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 "1.5.2"`

```
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
```

Finally, clean up:

```
rm jtest.rtf test.rtf c1.htm
```

## Contents

<b>Installed Program:</b>	collateindex.pl
<b>Installed Libraries:</b>	None
<b>Installed Files:</b>	DSSSL stylesheets
<b>Installed Directory:</b>	/usr/share/sgml/docbook/dsssl-stylesheets-1.79

## 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.

This package is known to build and work properly using an LFS-7.3 platform.

## 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: less than 0.1 SBU

## Additional Downloads

- Required Patch: [http://www.linuxfromscratch.org/patches/blfs/svn/docbook-utils-0.6.14-grep\\_fix-1.patch](http://www.linuxfromscratch.org/patches/blfs/svn/docbook-utils-0.6.14-grep_fix-1.patch)

## DocBook-utils Dependencies

### Required

texlive-20120701, docbook-dsssl-1.79, and docbook-3.1

### Optional (Runtime Dependencies Only)

SGMLSpm-1.1 (for conversion to man and texinfo), and Lynx-2.8.8dev.15 or Links-2.7 or w3m-0.5.3 (for conversion to ASCII text)

## Installation of DocBook-utils

Install DocBook-utils by running the following commands:

```
patch -Np1 -i ../docbook-utils-0.6.14-grep_fix-1.patch &&
sed -i 's:/html::' doc/HTML/Makefile.in &&
./configure --prefix=/usr &&
make
```

This package does not come with a test suite.

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 as the `root` user:

```
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-2.20` before attempting to use any of the DocBook-utils programs.

## Command Explanations

`patch -Np1 -i ..../docbook-utils-0.6.14-grep_fix-1.patch`: This patch corrects the syntax in the `jw` (Jade Wrapper) script which is at the heart of much `db2*` processing, so that the current version of Grep will not reject it.

`sed -i 's:/html::' doc/HTML/Makefile.in`: This command changes the installation directory of the HTML documents.

## Contents

<b>Installed Programs:</b>	docbook2dvi, docbook2html, docbook2man, docbook2pdf, docbook2ps, docbook2rtf, docbook2tex, docbook2texi, docbook2txt, jw, and sgmldiff
<b>Installed Libraries:</b>	None
<b>Installed Directories:</b>	/usr/share/doc/docbook-utils-0.6.14 and /usr/share/sgml/docbook/utils-0.6.14
<b>Installed Symlinks:</b>	db2dvi, db2html, db2man, db2pdf, db2ps, db2rtf, db2tex, db2texi, and db2txt

## Short Descriptions

<b>docbook2*</b>	are simple one-line wrapper scripts to <b>jw</b> . They are provided as easy-to-remember names used to convert DocBook or other SGML files to the respective format.
<b>db2*</b>	are symlinks pointing at the respectively named <b>docbook2*</b> commands, created to satisfy some program's use of these names.
<b>jw</b>	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.
<b>sgmldiff</b>	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 45. 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-4.5

## Introduction to DocBook XML DTD

The DocBook XML DTD-4.5 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.

This package is known to build and work properly using an LFS-7.3 platform.

### Package Information

- Download (HTTP): <http://www.docbook.org/xml/4.5/docbook-xml-4.5.zip>
- Download (FTP): <ftp://mirror.ovh.net/gentoo-distfiles/distfiles/docbook-xml-4.5.zip>
- Download MD5 sum: 03083e288e87a7e829e437358da7ef9e
- Download size: 96 KB
- Estimated disk space required: 1.2 MB
- Estimated build time: less than 0.1 SBU

## DocBook XML DTD Dependencies

### Required

libxml2-2.9.1 and UnZip-6.0

## 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-4.5 &&
install -v -d -m755 /etc/xml &&
chown -R root:root . &&
cp -v -af docbook.cat *.dtd ent/*.*mod \
    /usr/share/xml/docbook/xml-dtd-4.5
```

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 V4.5//EN" \
    "http://www.oasis-open.org/docbook/xml/4.5/docbookx.dtd" \
    /etc/xml/docbook &&
xmlcatalog --noout --add "public" \
    "-//OASIS//DTD DocBook XML CALS Table Model V4.5//EN" \
```

```
"file:///usr/share/xml/docbook/xml-dtd-4.5/calstblx.dtd" \
/etc/xml/docbook &&
xmllcatalog --noout --add "public" \
"--OASIS//DTD XML Exchange Table Model 19990315//EN" \
"file:///usr/share/xml/docbook/xml-dtd-4.5/soextblx.dtd" \
/etc/xml/docbook &&
xmllcatalog --noout --add "public" \
"--ELEMENTS DocBook XML Information Pool V4.5//EN" \
"file:///usr/share/xml/docbook/xml-dtd-4.5/dbpoolx.mod" \
/etc/xml/docbook &&
xmllcatalog --noout --add "public" \
"--ELEMENTS DocBook XML Document Hierarchy V4.5//EN" \
"file:///usr/share/xml/docbook/xml-dtd-4.5/dbhierx.mod" \
/etc/xml/docbook &&
xmllcatalog --noout --add "public" \
"--ELEMENTS DocBook XML HTML Tables V4.5//EN" \
"file:///usr/share/xml/docbook/xml-dtd-4.5/htmltblx.mod" \
/etc/xml/docbook &&
xmllcatalog --noout --add "public" \
"--ENTITIES DocBook XML Notations V4.5//EN" \
"file:///usr/share/xml/docbook/xml-dtd-4.5/dbnotnx.mod" \
/etc/xml/docbook &&
xmllcatalog --noout --add "public" \
"--ENTITIES DocBook XML Character Entities V4.5//EN" \
"file:///usr/share/xml/docbook/xml-dtd-4.5/dbcentx.mod" \
/etc/xml/docbook &&
xmllcatalog --noout --add "public" \
"--ENTITIES DocBook XML Additional General Entities V4.5//EN" \
"file:///usr/share/xml/docbook/xml-dtd-4.5/dbgenent.mod" \
/etc/xml/docbook &&
xmllcatalog --noout --add "rewriteSystem" \
"http://www.oasis-open.org/docbook/xml/4.5" \
"file:///usr/share/xml/docbook/xml-dtd-4.5" \
/etc/xml/docbook &&
xmllcatalog --noout --add "rewriteURI" \
"http://www.oasis-open.org/docbook/xml/4.5" \
"file:///usr/share/xml/docbook/xml-dtd-4.5" \
/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 V4.5 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 4.4
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/$DTDVERSION" \
        "file:///usr/share/xml/docbook/xml-dtd-4.5" \
        /etc/xml/docbook
    xmlcatalog --noout --add "rewriteURI" \
        "http://www.oasis-open.org/docbook/xml/$DTDVERSION" \
        "file:///usr/share/xml/docbook/xml-dtd-4.5" \
        /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

<b>Installed Programs:</b>	None
<b>Installed Libraries:</b>	None
<b>Installed Files:</b>	DTD, MOD and ENT files
<b>Installed Directories:</b>	/etc/xml and /usr/share/xml/docbook/xml-dtd-4.5

## 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-1.77.1

## Introduction to DocBook XSL Stylesheets

The DocBook XSL Stylesheets package contains XSL stylesheets. These are useful for performing transformations on XML DocBook files.

This package is known to build and work properly using an LFS-7.3 platform.

### Package Information

- Download (HTTP): <http://downloads.sourceforge.net/docbook/docbook-xsl-1.77.1.tar.bz2>
- 
- Download MD5 sum: a88dbdc0cd74702656083b6e4e4241d8
- Download size: 4.1 MB
- Estimated disk space required: 33 MB (includes installing optional documentation)
- Estimated build time: less than 0.1 SBU

### Additional Downloads

#### Optional documentation

- Download (HTTP): <http://downloads.sourceforge.net/docbook/docbook-xsl-doc-1.77.1.tar.bz2>
- Download MD5 sum: 070c32cc7dc3909fcc7c0fe35c2ff30a
- Download size: 978 KB

## DocBook XSL Stylesheets Dependencies

### Required

libxml2-2.9.1

### Optional

Ruby-1.9.3-p429 (to utilize the “epub” stylesheets)

## Installation of DocBook XSL Stylesheets

If you downloaded the optional documentation tarball, unpack it with the following command:

```
tar -xf ../docbook-xsl-doc-1.77.1.tar.bz2 --strip-components=1
```

BLFS does not install the required packages to run the test suite and provide meaningful results.

Install DocBook XSL Stylesheets by running the following commands as the root user:

```
install -v -m755 -d /usr/share/xml/docbook/xsl-stylesheets-1.77.1 &&  
  
cp -v -R VERSION common eclipse epub extensions fo highlighting html \  
    htmlhelp images javahelp lib manpages params profiling \  
    roundtrip slides template tests tools webhelp website \  
    xhtml xhtml-1_1 \  
/usr/share/xml/docbook/xsl-stylesheets-1.77.1 &&  
  
ln -s VERSION /usr/share/xml/docbook/xsl-stylesheets-1.77.1/VERSION.xsl &&  
  
install -v -m644 -D README \  
        /usr/share/doc/docbook-xsl-1.77.1/README.txt &&  
install -v -m644      RELEASE-NOTES* NEWS* \  
        /usr/share/doc/docbook-xsl-1.77.1
```

If you downloaded the optional documentation tarball, install the documentation by issuing the following command as the root user:

```
cp -v -R doc/* /usr/share/doc/docbook-xsl-1.77.1
```

## Configuring DocBook XSL Stylesheets

### Config Files

/etc/xml/catalog

## Configuration Information

Create (or append) and populate the XML catalog file using the following commands as the root user:

```
if [ ! -d /etc/xml ]; then install -v -m755 -d /etc/xml; fi &&
if [ ! -f /etc/xml/catalog ]; then
    xmlcatalog --noout --create /etc/xml/catalog
fi &&

xmlcatalog --noout --add "rewriteSystem" \
    "http://docbook.sourceforge.net/release/xsl/1.77.1" \
    "/usr/share/xml/docbook/xsl-stylesheets-1.77.1" \
/etc/xml/catalog &&

xmlcatalog --noout --add "rewriteURI" \
    "http://docbook.sourceforge.net/release/xsl/1.77.1" \
    "/usr/share/xml/docbook/xsl-stylesheets-1.77.1" \
/etc/xml/catalog &&

xmlcatalog --noout --add "rewriteSystem" \
    "http://docbook.sourceforge.net/release/xsl/current" \
    "/usr/share/xml/docbook/xsl-stylesheets-1.77.1" \
/etc/xml/catalog &&

xmlcatalog --noout --add "rewriteURI" \
    "http://docbook.sourceforge.net/release/xsl/current" \
    "/usr/share/xml/docbook/xsl-stylesheets-1.77.1" \
/etc/xml/catalog
```

Occasionally, you may find the need to install other versions of the XSL stylesheets as some projects reference a specific version. One example is BLFS-6.0, which required the 1.67.2 version. In these instances you should install any other required version in its own versioned directory and create catalog entries as follows (substitute the desired version number for <version>):

```
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

<b>Installed Programs:</b>	None
<b>Installed Libraries:</b>	None
<b>Installed Files:</b>	XSL style sheets for HTML and FO
<b>Installed Directories:</b>	/usr/share/xml/docbook/xsl-stylesheets-1.77.1 and /usr/share/doc/docbook-xsl-1.77.1

# Itstool-1.2.0

## Introduction to Itstool

Itstool extracts messages from XML files and outputs PO template files, then merges translations from MO files to create translated XML files. It determines what to translate and how to chunk it into messages using the W3C Internationalization Tag Set (ITS).

This package is known to build and work properly using an LFS-7.3 platform.

## Package Information

- Download (HTTP): <http://files.itstool.org/itstool/itstool-1.2.0.tar.bz2>
- 
- Download MD5 sum: c0925f6869e33af8e7fe56848c129152
- Download size: 80 KB
- Estimated disk space required: 600 KB
- Estimated build time: less than 0.1 SBU

## Itstool Dependencies

### Required

docbook-xml-4.5, docbook-xsl-1.77.1 and Python-2.7.5

## Installation of Itstool

Install Itstool by running the following commands:

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

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

Now, as the **root** user:

```
make install
```

## Contents

<b>Installed Program:</b>	itstool
<b>Installed Libraries:</b>	None
<b>Installed Directory:</b>	/usr/share/itstool

## Short Descriptions

**itstool** is used to create translated XML files.

# xmlto-0.0.25

## Introduction to xmlto

The xmlto is a front-end to an XSL toolchain. It chooses an appropriate stylesheet for the conversion you want and applies it using an external XSL-T processor. It also performs any necessary post-processing.

This package is known to build and work properly using an LFS-7.3 platform.

## Package Information

- Download (HTTP): <https://fedorahosted.org/releases/x/m/xmlto/xmlto-0.0.25.tar.bz2>
- 
- Download MD5 sum: 6b6267b1470f8571fe5f63a128970364
- Download size: 120 KB
- Estimated disk space required: 1.3 MB
- Estimated build time: less than 0.1 SBU

## xmlto Dependencies

### Required

docbook-xml-4.5, docbook-xsl-1.77.1, and libxslt-1.1.28

### Optional (for DVI, PDF, and postscript backend post-processing)

*dflatex*, *PassiveTeX*, and *fop-1.1*

### Optional (for text backend post-processing)

One of *w3m-0.5.3*, *Links-2.7*, or *Lynx-2.8.8dev.15*

## Installation of xmlto

Install xmlto by running the following commands:

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

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

Now, as the root user:

```
make install
```

## Contents

<b>Installed Programs:</b>	xmlif and xmlto
<b>Installed Libraries:</b>	None
<b>Installed Directory:</b>	/usr/share/xmlto

## Short Descriptions

**xmlif** is a conditional processing instructions for XML.

**xmlto** applies an XSL stylesheet to an XML document.

## Chapter 46. PostScript

This chapter includes applications that create, manipulate or view PostScript files and create or view Portable Document Format PDF files.

# a2ps-4.14

## 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".

This package is known to build and work properly using an LFS-7.2 platform.



### Caution

a2ps cannot convert UTF-8 encoded text to PostScript. The issue is discussed in detail in the Needed Encoding Not a Valid Option section of the Locale Related Issues page. The solution is to use paps-0.6.8 instead of a2ps for converting UTF-8 encoded text to PostScript.

## Package Information

- Download (HTTP): <http://ftp.gnu.org/gnu/a2ps/a2ps-4.14.tar.gz>
- Download (FTP): <ftp://ftp.gnu.org/gnu/a2ps/a2ps-4.14.tar.gz>
- Download MD5 sum: 781ac3d9b213fa3e1ed0d79f986dc8c7
- Download size: 2.6 MB
- Estimated disk space required: 22 MB
- Estimated build time: 0.3 SBU

## Additional Downloads

- International fonts: <http://anduin.linuxfromscratch.org/sources/BLFS/conglomeration/i18n-fonts/i18n-fonts-0.1.tar.bz2>

## a2ps Dependencies

### Required

Gperf-3.0.4

### Recommended

PSUtils-p17, and Cups-1.6.2 (otherwise, a2ps will use the **cat >/dev/lp0** command instead of **lpr** for sending its output to the printer)

### Optional

X Window System, texlive-20120701, ghostscript-9.06, *libpaper*, *Adobe Reader*, and *Ghostview*

## Installation of a2ps

Install a2ps by running the following commands:

```
autoconf &&
sed -i "s/GPERF --version |/& head -n 1 |/" configure &&
sed -i "s|/usr/local/share|/usr/share|" configure &&
./configure --prefix=/usr \
    --sysconfdir=/etc/a2ps \
    --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. The `styles.tst` may also fail, as the tests report some inconsistencies between the generated postscript and the reference sets. This is caused by version number differences between the postscript test files and those generated by the tests — these do not affect the operation of the program and can be ignored.

Now, as the root user:

```
make install
```

If desired, install the downloaded i18n-fonts by running the following commands as the root user:

```
tar -xf ../i18n-fonts-0.1.tar.bz2 &&
cp -v i18n-fonts-0.1/fonts/* /usr/share/a2ps/fonts &&
cp -v i18n-fonts-0.1/afm/* /usr/share/a2ps/afm &&
cd /usr/share/a2ps/afm &&
./make_fonts_map.sh &&
mv fonts.map.new fonts.map
```

## Command Explanations

**autoconf**: This command is used to recreate the **configure** script. This is required because there is an issue in the mktimes test which causes the **configure** script to hang for 60 seconds and then report that there is no working mktimes function.

**sed -i "s/GPERF --version |/& head -n 1 |/" configure**: This fixes a bug in the handling of the version output of gperf.

**sed -i "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.

**--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 to US letter. It can either be given here or set in `/etc/a2ps/a2ps-site.cfg` after installation. The default is A4, but there are several other options, in particular: A4dj or letterdj are good settings for HP Deskjet and other printers that need wider paper-handling margins. See `/etc/a2ps/a2ps.cfg` after installation.

# 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

<b>Installed Programs:</b>	a2ps, card, composeglyphs, fixnt, fixps, ogonkify, pdiff, psmandup, psset, and texi2dvi4a2ps
<b>Installed Libraries:</b>	liba2ps.{so,a} and filter data
<b>Installed Directories:</b>	/etc/a2ps and /usr/share/a2ps

## Short Descriptions

<b>a2ps</b>	is a filter, utilized primarily by printing scripts, that converts standard input or supported files to PostScript.
<b>card</b>	prints a reference card of a given program's options.
<b>composeglyphs</b>	creates a composite font program.
<b>fixnt</b>	is supposed to fix the problems in the PostScript files generated by the Microsoft PostScript driver under Windows NT (3.5 and 4.0).
<b>fixps</b>	tries to fix common PostScript problems that break postprocessing.
<b>ogonkify</b>	provides international support for Postscript by performing various munging of PostScript files related to printing in different languages.
<b>pdiff</b>	produces a pretty comparison between files.
<b>psmandup</b>	tries to produce a version of a given PostScript file to print in manual duplex.
<b>psset</b>	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.
<b>texi2dvi4a2ps</b>	compiles Texinfo and LaTeX files to DVI or PDF

# Enscript-1.6.6

## Introduction to Enscript

Enscript converts ASCII text files to PostScript, HTML, RTF, ANSI and overstrikes.

This package is known to build and work properly using an LFS-7.2 platform.



### Caution

Enscript cannot convert UTF-8 encoded text to PostScript. The issue is discussed in detail in the Needed Encoding Not a Valid Option section of the Locale Related Issues page. The solution is to use paps-0.6.8, instead of Enscript, for converting UTF-8 encoded text to PostScript.

## Package Information

- Download (HTTP): <http://ftp.gnu.org/gnu/enscript/enscript-1.6.6.tar.gz>
- Download (FTP): <ftp://mirror.ovh.net/gentoo-distfiles/distfiles/enscript-1.6.6.tar.gz>
- Download MD5 sum: 3acc242b829adacabcaf28533f049afdf
- Download size: 1.3 MB
- Estimated disk space required: 14 MB
- Estimated build time: 0.1 SBU

## Installation of Enscript

Install Enscript by running the following commands:

```
./configure --prefix=/usr           \
            --sysconfdir=/etc/enscript \
            --localstatedir=/var        \
            --with-media=Letter &&
make &&

pushd docs &&
texi2html enscript.texi &&
makeinfo --plaintext -o enscript.txt enscript.texi &&
popd
```

If you have texlive-20120701 installed, you can create Postscript and PDF documentation by issuing: **make -C docs ps pdf**.

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

Now, as the root user:

```
make install &&

install -v -m755 -d /usr/share/doc/enscript-1.6.6 &&
install -v -m644 README* *.txt docs/*.{html,txt} \
          /usr/share/doc/enscript-1.6.6
```

If you built Postscript and PDF documentation, install it using the following command as the `root` user:

```
install -v -m644 docs/*.{dvi, pdf, ps} \
          /usr/share/doc/enscript-1.6.6
```

## 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 size instead of the A4 default.

## Contents

**Installed Programs:** diffpp, enscript, mkafmmap, over, sliceprint, and states

**Installed Libraries:** None

**Installed Directories:** /etc/enscript, /usr/share/doc/enscript-1.6.6 and /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 overstriked 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.

This package is known to build and work properly using an LFS-7.2 platform.

## Package Information

- Download (FTP): <ftp://ftp.knackered.org/pub/psutils/psutils-p17.tar.gz>
- 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`, `fixdlrps`, `fixfmgs`, `fixmacps`, `fixpsditps`, `fixpspps`, `fixscribes`, `fixtpps`, `fixwfwps`, `fixwpps`, `fixwwps`, `getafm`, `includeres`, `psbook`, `psmerge`, `psnup`, `psresize`, `psselect`, `pstop`, 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.

<b>psbook</b>	rearranges pages into signatures.
<b>psnup</b>	puts multiple pages per physical sheet of paper.
<b>psresize</b>	alters the document paper size.
<b>psselect</b>	selects pages and page ranges.
<b>pstop</b>	performs general page rearrangements and selection.
<b>scripts</b>	the remaining commands are scripts that perform specific functions described in their respective man pages.

# ePDFView-0.1.8

## Introduction to ePDFView

ePDFView is a free standalone lightweight PDF document viewer using Poppler and GTK+ libraries. It is a good replacement for Evince as it does not rely upon GNOME libraries.

This package is known to build and work properly using an LFS-7.3 platform.

## Package Information

- Download (HTTP): <http://trac.emma-soft.com/epdfview/chrome/site/releases/epdfview-0.1.8.tar.bz2>
- 
- Download MD5 sum: e50285b01612169b2594fea375f53ae4
- Download size: 456 KB
- Estimated disk space required: 6 MB
- Estimated build time: less than 0.1 SBU

## Additional Downloads

- Required Patch: <http://www.linuxfromscratch.org/patches/blfs/svn/epdfview-0.1.8-fixes-1.patch>

## ePDFView Dependencies

### Required

Poppler-0.22.4 and GTK+-2.24.17

### Optional

Cups-1.6.2

## Installation of ePDFView

Install ePDFView by running the following commands:

```
patch -Np1 -i ../epdfview-0.1.8-fixes-1.patch &&
./configure --prefix=/usr &&
make
```

This package does not come with a test suite.

Now, as the root user:

```
make install
```

## Command Explanations

**patch -Np1 -i ../epdfview-0.1.8-fixes-1.patch** The patch does three things: fixes compiling with glib-2.32 or greater, corrects red appearing as blue with recent versions of poppler, and allows the application to compile when Cups-1.6.2 has been installed.

## Contents

**Installed Program:** epdfview  
**Installed Libraries:** None  
**Installed Directory:** /usr/share/epdfview

## Short Descriptions

**epdfview** is a Gtk+-2 program for viewing PDF documents.

# fop-1.1

## 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.

This package is known to build and work properly using an LFS-7.3 platform.

## Package Information

- Download (HTTP): <http://archive.apache.org/dist/xmlgraphics/fop/source/fop-1.1-src.tar.gz>
- 
- Download MD5 sum: 7b63af514b28c06fe710a794cbf4d68e
- Download size: 23 MB
- Estimated disk space required: 206 MB
- Estimated build time: 0.5 SBU

## Additional Downloads

### Required packages

- Java Advanced Imaging (JAI) API components (architecture dependent):
   
[http://download.java.net/media/jai/builds/release/1\\_1\\_3/jai-1\\_1\\_3-lib-linux-i586.tar.gz](http://download.java.net/media/jai/builds/release/1_1_3/jai-1_1_3-lib-linux-i586.tar.gz)
  
 a2cbc155ef3899bcde9c74a8035764b3
   
 3.4 MB

or

- [http://download.java.net/media/jai/builds/release/1\\_1\\_3/jai-1\\_1\\_3-lib-linux-amd64.tar.gz](http://download.java.net/media/jai/builds/release/1_1_3/jai-1_1_3-lib-linux-amd64.tar.gz)
  
 4a906db35612f668aeef2c0606d7075b
   
 3.4 MB

## fop Dependencies

### Required

Xorg-7.7 and apache-ant-1.8.4

### Optional

JUnit-4.10 (to run tests), *JIMI SDK*, *XMLUnit*, *JAI Image I/O Tools*, *JEuclid*, *PMD* (requires *Jaxen*), and *Forrest* (Forrest used only to build the documentation)

## Installation of fop



### Important

You must run this installation from an X-window using a GL-aware Xorg server or some of the JUnit tests will hang.

Ensure \$JAVA\_HOME is set correctly before beginning the build. To build the JIMI SDK and/or XMLUnit extension classes, ensure the corresponding .jar files can be found via the CLASSPATH environment variable.

## Installing Java Advanced Imaging (JAI) API components

Next install the JAI API components. As the root user:

```
case `uname -m` in
i?86)
    tar -xf ../jai-1_1_3-lib-linux-i586.tar.gz
    cp -v jai-1_1_3/lib/{jai*,mlibwrapper_jai.jar} $JAVA_HOME/jre/lib/ext/
    cp -v jai-1_1_3/lib/libmllib_jai.so                      $JAVA_HOME/jre/lib/i386/
    ;;
x86_64)
    tar -xf ../jai-1_1_3-lib-linux-amd64.tar.gz
    cp -v jai-1_1_3/lib/{jai*,mlibwrapper_jai.jar} $JAVA_HOME/jre/lib/ext/
    cp -v jai-1_1_3/lib/libmllib_jai.so                      $JAVA_HOME/jre/lib/amd64/
    ;;
esac
```

## Installing fop Components

Compile fop by running the following commands:

```
ant compile &&
ant jar-main &&
ant javadocs &&
mv build/javadoc .
```

If Forrest is installed, build the full set of documentation:

```
ant docs
```

To test the application run **ant junit-all**. The hyphenation tests will fail. To see a list of other test targets, use **ant -p**.

Now, as the root user:

```
install -v -d -m755                               /opt/fop-1.1 &&
cp -v  KEYS LICENSE NOTICE README                /opt/fop-1.1 &&
cp -va build conf examples fop* javadocs lib status.xml /opt/fop-1.1 &&

ln -v -sf fop-1.1 /opt/fop
```

## Command Explanations

**ant target**: This reads the file build.xml and builds the target files.

**ln -v -sf fop-1.1 /opt/fop**: This is optional and 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** 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** script. This can be accomplished by creating a `~/.foprc` (which is sourced by the **fop** script) and adding the parameter to the `FOP_OPTS` environment variable.

The **fop** 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 (in megabytes). 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** script in your path, update your personal or system-wide profile with the following:

```
PATH=$PATH:/opt/fop
```



### Note

Running **fop** can be somewhat verbose. The default logging level can be changed from INFO to any of FINEST, FINER, FINE, CONFIG, INFO, WARNING, SEVERE, ALL, or OFF. To do this, edit `$JAVA_HOME/jre/lib/logging.properties` and change the entries for `.level` and `java.util.logging.ConsoleHandler.level` to the desired value.

## Contents

**Installed Programs:**

`fop`

**Installed Libraries:**

`fop.jar` and numerous support library classes located in `/opt/fop/{build,lib}`; JAI components include `libmlib_jai.so`, `jai_codec.jar`, `jai_core.jar`, and `mlibwrapper_jai.jar`

**Installed Directory:**

`/opt/fop-1.1`

## Short Descriptions

**fop**

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.

# paps-0.6.8

## Introduction to paps

paps is a text to PostScript converter that works through Pango. Its input is a UTF-8 encoded text file and it outputs vectorized PostScript. It may be used for printing any complex script supported by Pango.

This package is known to build and work properly using an LFS-7.2 platform.

## Package Information

- Download (HTTP): <http://downloads.sourceforge.net/paps/paps-0.6.8.tar.gz>
- 
- Download MD5 sum: e9508132bf27609bf2fded2bfd9cb3f1
- Download size: 460 KB
- Estimated disk space required: 3 MB
- Estimated build time: less than 0.1 SBU

## paps Dependencies

### Required

Pango-1.32.5

### Optional

Doxxygen-1.8.4

## Installation of paps

Install paps by running the following commands:

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

To test the results, issue: **src/test\_libpaps > test.ps**. View the output file in any available PostScript viewer and visually compare it to **doxygen-doc/html/example-output.png** in the source tree. The results of the output will be more robust with DejaVu, Arphic, and Kochi fonts installed as explained in the Xft Font Protocol Section of the X Window System configuration.

Now, as the root user:

```
make install &&
install -v -m755 -d /usr/share/doc/paps-0.6.8 &&
install -v -m644 doxygen-doc/html/* /usr/share/doc/paps-0.6.8
```

## Contents

**Installed Program:**

paps

**Installed Library:**

libpaps.a

**Installed Directory:**

/usr/share/doc/paps-0.6.8

## Short Descriptions

**paps** is a text to PostScript converter that supports UTF-8 character encoding.

# Chapter 47. Typesetting

This chapter includes applications that create output equivalent to typesetting.

# texlive-20120701

## Introduction to TeX Live

The TeX Live package is a comprehensive TeX document production system. It includes TEX, LaTeX2e, ConTEXt, Metafont, MetaPost, BibTeX and many other programs; an extensive collection of macros, fonts and documentation; and support for typesetting in many different scripts from around the world.

This package is known to build and work properly using an LFS-7.2 platform.

## Package Information

- 
- Download (FTP): <ftp://tug.org/texlive/historic/2012/texlive-20120701-source.tar.xz>
- Download MD5 sum: 1d38be7dac26440fd022a4708f454a2b
- Download size: 126 MB
- Estimated disk space required: 3.1 GB
- Estimated build time: 8.0 SBU

## Additional Downloads

- The TeX Live installer: <http://mirror.ctan.org/systems/texlive/tlnet/install-tl-unx.tar.gz>

## TeX Live Dependencies

### Optional

ghostscript-9.06, Poppler-0.22.4, FreeType-2.4.12, Fontconfig-2.10.2, libpng-1.6.2, X Window System, ICU-51.1, *GD*, *t1lib*, *ZZIPlib*, *CLISP*, *Lua*, *TECkit*, and *Graphite*

## Installation of TeX Live

The TeX Live set of programs with its supporting documents, fonts, and utilities is very large. The upstream maintainers recommend placing all files in a single directory structure. BLFS recommends /opt/texlive.

First, unpack the installer and change into the installer's directory, `install-tl-20111204`. This directory name may change if the installer package is updated by the upstream maintainers.

```
tar -xf install-tl-unx.tar.gz &&
cd install-tl-20111204
```



### Note

The distribution binaries installed below use static linking for internal TeX Live libraries. Additional libraries as specified in the dependencies section do not need to be present during the install, but the programs that need them will not run until their specific dependencies are installed.

Now, as the root user:

```
TEXLIVE_INSTALL_PREFIX=/opt/texlive ./install-tl
```

This command is interactive and allows selection or modification of platform, packages, directories, and other options. The full installation scheme will require about 3 gigabytes of disk space. The time to complete the download time will depend on your internet connection speed and the number of packages selected.

After the package download is complete, the next step is to make sure that the system can properly find the files. If you set up your login scripts as recommended in The Bash Shell Startup Files, update the needed paths by appending to the `extrapaths.sh` script. Be sure to adjust the paths below to reflect your actual installation location. In addition, the path to the binaries will be affected by your system architecture.

```
cat >> /etc/profile.d/extrapaths.sh << "EOF"
pathappend /usr/share/man           MANPATH
pathappend /opt/texlive/2012/texmf/doc/man MANPATH
pathappend /usr/share/info          INFOPATH
pathappend /opt/texlive/2012/texmf/doc/info INFOPATH
pathappend /opt/texlive/2012/bin/x86_64-linux
EOF
```

### Note

The standard MANPATH and INFOPATH path are specified above to ensure they are included. If they are already set in the boot script procedure, the pathappend function will ensure duplicates are removed, so including them here will do no harm.

The new paths can be immediately activated by running `source /etc/profile`.

At this point the installation is complete. If building from source is desired, extract the source package as usual and continue.

### Note

If you do not have Xorg installed add `--without-x` to the configure command.

If you do not have fontconfig installed, add `--disable-xdvipdfmx` to the configure command.

```
./configure --prefix=/usr \
            --disable-native-texlive-build \
            --enable-build-in-source-tree \
            --without-luatex \
            --enable-mktextex-default \
            --with-banner-add=" - BLFS"    &&
make
```

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

In order to gather the built files in one place, use `make install` to put them in a temporary location:

```
make DESTDIR=$PWD/texlive-tmp install
```

Now copy the executables to the TeX Live binary directory. Be sure to adjust the destination directory for your installation. As the root user:

```
find texlive-tmp/usr/bin -type f -exec cp -v {} /opt/texlive/2011/bin/x86_64-linux
```



## Note

If you passed the option `--enable-shared` to the configure command, the two libraries, `ibkpathsea.so`, `libptexenc.so` and their symbolic links will also need to be copied to `/usr/lib`.

## Contents

<b>Installed Programs:</b>	Over 300 binaries and symlinks to scripts
<b>Installed Libraries:</b>	None
<b>Installed Directories:</b>	<code>/opt/texlive</code>

## Short Descriptions

**TeX programs** included in the TeX Live package are too numerous to individually list. Please refer to the individual program man and html pages in the installation directory's `2011/index.html` directory.

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# Appendix B. The MIT License

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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	Advanced Technology Attachment
ATSC	Advanced Television Systems Committee
ATK	Accessibility ToolKit
AVI	Audio Video Interleave
AWT	Abstract Window Toolkit
BER	Basic Encoding Rules
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 <a href="#">SMB</a> .
CMS	Cryptographic Message Syntax
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
DAO	Disc At Once
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
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
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
ODBC	Open DataBase Connectivity
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
SATA	Serial Advanced Technology Attachment
SBU	Standard Build Unit
SCSI	Small Computer System Interface
SDK	Software Development Kit
SGML	Standard Generalized Markup Language
SMART	Self Monitoring Analysis and Reporting Technology
SMB	Server Message Block
SMIL	Synchronized Multimedia Integration Language
SMTP	Simple Mail Transfer 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	XMuliMedia System
YP	Yellow Pages
YUV	Luminance-Bandwidth-Chrominance

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