Beyond Linux® From Scratch
Version 7.6

The BLFS Development Team

2014-09-23

Revision History

Revision 7.6	2014-09-23	Tenth Release
Revision 7.5	2014-03-05	Ninth release
Revision 7.4	2013-09-14	Eighth 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

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.

Dedication

This book is dedicated to the LFS community

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10. Graphics and Font Libraries

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 for 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

Last updated on 2012-08-22 06:45:43 -0700

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!

Last updated on 2012-08-22 06:45:43 -0700

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.

Part IX - Xfce

Xfce is a 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.

Last updated on 2014-08-06 17:44:46 -0700

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-1.0.28 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.

Last updated on 2012-12-19 11:57:20 -0800

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-2.29

> 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.

Last updated on 2007-04-04 12:42:53 -0700

Book Version

This is BLFS-BOOK version 7.6 dated September 23rd, 2014. This is the development branch of the BLFS book, currently targeting the LFS development book. If this version (7.6) 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.

Last updated on 2008-05-10 18:20:50 -0700

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.

Last updated on 2007-04-04 12:42:53 -0700

Getting the Source Packages

Within the BLFS instructions, each package has two references for finding the source files for the package—an HTTP link and an FTP link (some packages may only list one of these links). Every effort has been made to ensure that these

links are accurate. However, the World Wide Web is in continuous flux. Packages are sometimes moved or updated and the exact URL specified is not always available.

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

We would like to ask a favor, however. Although this is a public resource for you to use, 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.

Last updated on 2012-12-19 11:57:20 -0800

Change Log

Current release: 7.6 – September 23rd, 2014

Changelog Entries:

- September 23rd, 2014
  - [bdubbs] - Release of BLFS-7.6.

- September 21st, 2014
  - [fernando] - Pidgin-2.10.9 and LXDM-0.5.0: fixes.
  - [pierre] - Update to thunderbird-31.1.1. Fixes **#5461**.

- September 20th, 2014
  - [fernando] - Update to lxrandr-0.3.0. Fixes **#5535**.
  - [fernando] - Update to lxappearance-0.5.6. Fixes **#5534**.

- September 19th, 2014
  - [bdubbs] - Update to wireshark-1.12.1. Fixes **#5523**.
  - [bdubbs] - Update to seamonkey-2.29. Fixes **#5484**.
  - [fernando] - Fixes and tweaks: Avahi-0.6.31, lxde-common-0.5.6, LXSession-0.4.9.2, Brasero-3.10.0 and gnome-nettool-3.8.1.
  - [fernando] - Update to gnome-calculator-3.12.4. Fixes **#5516**.
  - [bdubbs] - Update haveged bootscript.

- September 18th, 2014
  - [ken] - Update to firefox-32.0.1. Fixes **#5503**.
  - [bdubbs] - Update to xfce4-power-manager-1.4.0. Fixes **#5521**.
  - [bdubbs] - Add note about when a reinstall of amarok is required. Finish fixing **#5238**.

- September 17th, 2014
  - [bdubbs] - Update to kde-4.14.1. Fixes **#5519**.
  - [bdubbs] - Update to colord-1.2.3. Fixes **#5505**.
  - [ken] - Update to dbus-1.8.8. Fixes **#5524**.
  - [fernando] - Fixes and tweaks: GPicView-0.2.4, LXDM-0.5.0, PCManFM-1.2.2, and Vim-7.4.
  - [fernando] - Update to lxinput-0.3.3. Fixes **#5529**.
  - [fernando] - Update to lxtask-0.1.5. Fixes **#5528**.
  - [fernando] - Update to lxappearance-obconf-0.2.2. Fixes **#5527**.
  - [fernando] - gnome-icon-theme-3.12.0: remove dependency XML::Simple-2.20, because it is required by icon-naming-utils-0.8.90, which is required by gnome-icon-theme.
  - [pierre] - Use the same upstream GCC patch in BLFS as in LFS. Tag all three GCC pages.

- September 16th, 2014
  - [bdubbs] - Update to xscreensaver-5.30. Fixes **#5504**.
  - [bdubbs] - Update to p11-kit-0.20.6. Fixes **#5492**.
  - [bdubbs] - Update to libdvdread-5.0.0. Fixes **#5490**.
  - [bdubbs] - Update to libdvdnav-5.0.1. Fixes **#5491**.

- September 15th, 2014
  - [bdubbs] - Change libdbusmenu-qt prefix to /usr. Partially fixes **#5238**.
  - [bdubbs] - Change grantlee prefix to /usr. Partially fixes **#5238**.
  - [bdubbs] - Change qjson prefix to /usr. Partially fixes **#5238**.

- - [bdubbs] - Change qca prefix to /usr. Partially fixes **#5238**.
  - [ken] - Clarify install-tl-unx runtime dependencies. Fixes **#5502**.
  - [bdubbs] - Update to lxrandr-0.2.0. Fixes **#5517**.

- September 14th, 2014
  - [fernando] - Revert 'add optional instructions for sqlite-tcl to SQLite-3.8.6'. Fixes **#5512**.
  - [fernando] - ICU-53.1: not anymore broken with clang++.

- September 14th, 2014
  - [fernando] - Update to whois_5.2.0. Fixes **#5510**.
  - [fernando] - Add optional instructions for sqlite-tcl to SQLite-3.8.6. Fixes **#5512**.
  - [fernando] - tcl-8.6.2: fixes for the build instructions. Fixes **#5511**.
  - [bdubbs] - Update to valgrind-3.10.0. Fixes **#5506**.
  - [bdubbs] - Update to lxmenu-data-0.1.4. Fixes **#5489**.
  - [bdubbs] - Update to lxde-icon-theme-0.5.1. Fixes **#5509**.

- September 13th, 2014
  - [pierre] - Update to Xorg Nouveau Driver-1.0.11. Fixes **#5469**.

- September 12th, 2014
  - [pierre] - Patch MesaLib-10.2.7 to account for the new LLVM API, which breaks the build and OpenGL. Fixes **#5497**.
  - [bdubbs] - Update to bluez-5.23. Fixes **#5483**.
  - [fernando] - Add libfm-extra-1.2.2.1. Fixes **#5501**.

- September 11th, 2014
  - [ken] - asy from the binary install-tl-unx now requires libfftw3.so.3 and libreadline.so.5, at least on i686.
  - [bdubbs] - Update to xf86-video-intel-2.99.916. Fixes **#5493**.

- September 10th, 2014
  - [ken] - fix xf86-video-ati-7.4.0 for xorg-server's glamor.
  - [rthomsen] - Update to phonon-4.8.0 and phonon-backend-vlc-0.8.0. Re-add phonon-backend-gstreamer to the book. Fixes **#5480**, **#5481** and **#5482**.

- September 9th, 2014
  - [igor] - Update to mesa-10.2.7. Fixes **#5477**.

- September 8th, 2014
  - [fernando] - MesaLib-10.2.6: fix build with LLVM-3.5.0. Thanks ojab. Partially fixes **#5475**.

- September 7th, 2014
  - [fernando] - Update to menu-cache-0.7.0. Fixes **#5479**.
  - [fernando] - Update p11-kit-0.20.5. Fixes **#5478**.
  - [fernando] - libpcap-1.6.2: fix build with bluez-5.2. Fixes **#5468**.

- September 6th, 2014
  - [ken] - Update to firefox-32.0. Fixes **#5460**.
  - [fernando] - Update to mc-4.8.13. Fixes **#5476**.
  - [fernando] - Update to LLVM-3.5.0. Fixes **#5475**.
  - [igor] - Update to mercurial-3.1.1. Fixes **#5464**.

- September 5th, 2014
  - [pierre] - Update to icedtea-2.5.2. Fixes **#5450**.
  - [fernando] - Update to pango-1.36.7. Fixes **#5472**.
  - [fernando] - Update to sysstat-11.1.1. Fixes **#5471**.
  - [fernando] - Update to libwnck 3.4.9. Fixes **#5467**.
  - [fernando] - Update to libpcap-1.6.2. Fixes **#5468**.
  - [fernando] - Update to LVM2.2.02.111. Fixes **#5456**.

- September 4th, 2014
  - [fernando] - Update to gimp-help-2.8.2. Fixes **#5466**.

- September 3rd, 2014
  - [igor] - Update to php-5.6.0. Fixes **#5444**.
  - [ken] - add run-parts script (from Slackware) to the libpaper page - thanks to akhiezer for his help.
  - [fernando] - LXDM-0.5.0 fixes: typo and some rewriting. Fix again localization, Thanks Armin K.

- September 2nd, 2014
  - [fernando] - LXDM-0.5.0 fixes: typo in configure, localization and starting.
  - [fernando] - Update to appstream-glib-0.3.0. Fixes **#5465**.
  - [fernando] - Update to iso-codes-3.56. Fixes **#5463**.
  - [fernando] - Update to lxde-common-0.5.6. Fixes **#5462**.
  - [fernando] - Update to libunistring-0.9.4. Fixes **#5458**.
  - [fernando] - Update to exempi-2.2.2. Fixes **#5457**.

- September 1st, 2014
  - [fernando] - Update to appdata-tools-0.1.8. Thanks Christopher G. for reporting. Fixes **#5452**.
  - [fernando] - Add appstream-glib-0.2.5, copied, modified, from BLFS systemd branch. Thanks Christopher G. Fixes **#5451**.
  - [pierre] - Add Icedtea-Sound-1.0.1. Fixes **#5217**.
  - [pierre] - Add basic configuration instructions to PulseAudio. Fixes **#5455**.
  - [fernando] - Add LXDM-0.5.0, copied, modified, from BLFS systemd branch. Fixes **#5459**.

- August 31st, 2014
  - [ken] - Clean up libpaper, in particular remove the /uetc/papersize typo. Thanks to willimm, fixes **#5454**.
  - [fernando] - Completely modify and fix instructions for alsa-tools-1.0.28. Fixes **#5453**.
  - [fernando] - Update to libreoffice-4.3.1.2. Fixes **#5445**.

- August 30th, 2014
  - [ken] - Update to nss-3.17. Fixes **#5449**.
  - [rthomsen] - Correct documentation installation path for libdvdread.
  - [fernando] - Update to elfutils-0.160. Fixes **#5448**.
  - [fernando] - Update to zsh-5.0.6. Fixes **#5447**.
  - [fernando] - Update to gstreamer-1.4.1 and plugins. Fixes **#5446**.

- August 29th, 2014
  - [ken] - Added biblatex-biber-1.8 and its multitudinous perl-module dependencies. Fixes **#5228**.
  - [fernando] - LibreOffice-4.3.0: add three new optional dependencies. Thanks Wayne B.
  - [fernando] - Git-2.1.0: fix AsciiDoc/xmlto documentaion install. Thanks Alex L.
  - [fernando] - webkitgtk-2.4.5: tidy up xml.
  - [igor] - Update to scons-2.3.3. Fixes **#5428**.

- August 28th, 2014
  - [ken] - Added instructions to build xindy in texlive. Fixes **#4719**.
  - [ken] - Added clisp-2.49. Fixes **#5441**.
  - [ken] - Added libsigsegv-2.10. Fixes **#5442**.
  - [fernando] - LibreOffice-4.3.0 - fix broken symbolic links. Thanks Wayne B.
  - [fernando] - Fix Tk-8.6.2 md5sum that changed overnight. Thanks Wayne B.
  - [fernando] - Remove WebKitGTK+1.10.x, consequently, fix Midori-0.5.8 and Gimp-2.8.14 (remove broken ftp link from the latter). Fixes **#5434**.
  - [fernando] - Update to webkitgtk-2.4.5. Fixes **#5426**.
  - [ken] - Added libpaper-1.1.24+nmu3. Fixes **#5440**.
  - [igor] - Update to gimp-2.8.14. Fixes **#5432**.

- August 27th, 2014
  - [fernando] - Update to menu-cache-0.6.1. Fixes **#5438**.
  - [fernando] - Update to tk8.6.2. Fixes **#5437**.
  - [fernando] - Update to tcl8.6.2. Fixes **#5436**.
  - [fernando] - Update to LVM2.2.02.110. Fixes **#5435**
  - [fernando] - Cyrus-sasl-2.1.26: Various package fixes, including autotools fixes, plugin fixes, security fixes, parallel build fixes. Thanks to Armin K and Christopher G, from systemd branch. Fixes **#5380**.
  - [bdubbs] - Update to acpid-2.0.23. Fixes **#5419**.
  - [bdubbs] - Remove no longer needed xulrunner. Fixes **#5433**.
  - [bdubbs] - Fix typo in bind random device. Fixes **#5378**.
  - [bdubbs] - Fix potential error in dhclient shutdown. Fixes **#5416**.
  - [ken] - Update to libwww-perl-6.08 and URI-1.64.
  - [igor] - Update to nmap-6.47. Fixes **#5417**.

- August 26th, 2014

- [fernando] - Minor fixes to libtasn1-4.1 and Gvfs-1.20.3 (reordered externa/internal optional dependencies, for the latter).
- [fernando] - Update to grilo-plugins-0.2.13. Fixes **#5431**.
- [fernando] - Update to grilo-0.2.11. Fixes **#5430**.
- [fernando] - Update to libfm-1.2.2.1. Fixes **#5429**.
- [fernando] - Update to gnutls-3.3.7. Fixes **#5427**
- [fernando] - Brasero-3.10.0: fix cdrtools link. Thanks to Christopher G, from systemd branch. Fixes **#5425**.
- [fernando] - Cdrdao-1.2.3: remove instructions for gcdmaster build. Thanks to Christopher G, from systemd branch. Fixes **#5424**.

- August 25th, 2014
  - [fernando] - Update to libtasn1-4.1. Fixes **#5423**.
  - [fernando] - Update to pcmanfm-1.2.2. Fixes **#5422**.
  - [fernando] - Update to libfm-1.2.2. Fixes **#5421**.
  - [fernando] - Update to gvfs-1.20.3. Fixes **#5420**.
  - [fernando] - OpenJDK-1.7.0.65/IcedTea-2.5.1: fix desktop file instructions, hopefully. Sorry for the mess.

- August 24th, 2014
  - [fernando] - LibreOffice-4.3.0: reorder some dependencies; add comment about the two SBUs and buildsizes, thanks to Christopher G, from systemd branch, for noticing.
  - [fernando] - OpenJDK-1.7.0.65/IcedTea-2.5.1: fix man pages and add a desktop file.
  - [fernando] - Update to icedtea-web-1.5.1, reorder some dependencies and add a desktop file. Replace Xulrunner-31.0 dependency by NPAPI-SDK-0.27.2, thanks to Armin K, from systemd branch for remembering (I had asked about this in one list some time ago, but forgot to check). Fixes **#5389**.
  - [fernando] - Update to libpng-1.6.13. Fixes **#5418**.
  - [ken] - Make TeX Live use system gc for asymptote.

- August 23rd, 2014
  - [rthomsen] - Update to KDE-4.14.0. Fixes **#5403**.
  - [igor] - Update to libgcrypt-1.6.2. Fixes **#5408**.

- August 22nd, 2014
  - [fernando] - Update to libwebp-0.4.18. Fixes **#5415**.
  - [fernando] - Update to php-5.5.16. Fixes **#5414**.
  - [fernando] - Update to xine-ui-0.99.9. Fixes **#5413**.
  - [fernando] - Update to lxpanel-0.7.0. Fixes **#5412**.
  - [fernando] - Update to doxygen-1.8.8. Fixes **#5411**.
  - [fernando] - Update to poppler-0.26.4. Fixes **#5410**.
  - [fernando] - Update to libreoffice-4.3.0. Patch sent by Christopher G, from systemd branch, thank you very much. Some fixes from Armin K, from systemd branch, thanks. Fixes **#5311**.
  - [ken] - Update to mdadm-3.3.2. Fixes **#5409**.
  - [igor] - Use ssh-copy-id shell wrapper for copying OpenSSH public key. Fixes **#5368**.

- August 21st, 2014
  - [fernando] - Update to cups-filters-1.0.58. Fixes **#5407**.
  - [fernando] - Update to gtksourceview-3.12.3. Fixes **#5406**.

- August 20th, 2014
  - [fernando] - Update to nss-3.16.4. Fixes **#5404**.
  - [fernando] - Update to MesaLib-10.2.6. Fixes **#5401**.
  - [fernando] - Update to nspr-4.10.7. Fixes **#5400**.
  - [fernando] - Update to x264-20140818-2245. Fixes **#5376**.
  - [fernando] - Update to ImageMagick-6.8.9-7. Fixes **#5375**.
  - [ken] - Update to xf86-video-intel-2.99.914 from the systemd branch.

- August 19th, 2014
  - [fernando] - Grilo-Plugins-0.2.12: reorder interna/external optional dependencies.
  - [fernando] - Update to totem-3.12.2. Fixes **#5398**.
  - [fernando] - Update to colord-1.2.2. Fixes **#5397**.
  - [fernando] - Update to librsvg-2.40.3. Fixes **#5396**.
  - [ken] - archive glamor-egl in favour of xorg-server's glamor. Fixes **#5347**.
  - [igor] - Update to dhcp-4.3.1. Fixes **#5359**.

- August 18th, 2014

- [fernando] - Update to libassuan-2.1.2. Fixes **#5395**.
- [fernando] - Update to ffmpeg-2.3.3. Some fixes for docummentation build. Thanks Bruce D. and Christopher G. for reporting. One fix was reported by Christopher G. Fixes **#5394**.
- [ken] - add libepoxy-1.2 from the systemd branch.

- August 17th, 2014
  - [fernando] - Fix URL: avahi, libasyncns (at pulseaudio page), libatasmart, libcanberra, libdaemon and mod_dnssd.
  - [fernando] - FontForge-2.0.20140101: reorder external/internal optional requirements.
  - [fernando] - Merge ImageMagick-6.8.9-1 from systemd.
  - [fernando] - MIT Kerberos V5-1.12.2: fix 'import the public key'. Thanks to Armin K. for reporting.
  - [fernando] - Update to pango-1.36.6. Fixes **#5393**.
  - [rthomsen] - Update to akonadi-1.13.0. Fixes **#5351** and **#5362**.
  - [igor] - Update to subversion-1.8.10. Fixes **#5356**.

- August 16th, 2014
  - [fernando] - Samba-4.1.11: promote libxslt-1.1.28 to Recommended. Fixes **#5392**.
  - [fernando] - MIT Kerberos V5-1.12.2: update gpg2, fix configure, install instructions and other parts. Fixes **#5390**.
  - [fernando] - Update to git-2.1.0. Modified docs and man instructions. Fixes **#5388**.
  - [fernando] - Update to SQLite-3.8.6. Fixes **#5387**.
  - [fernando] - Parted-3.2 fails to build with --disable-device-mapper. Reported and fixed by Ken M. Fixes **#5386**.
  - [igor] - Update to mariadb-10.0.13. Fixes **#5355**.

- August 15th, 2014
  - [fernando] - Update to cups-filters-1.0.57. Fixes **#5385**.
  - [fernando] - Git-2.0.4 test suite needs compatibility symlinks recommended in GnuPG-2.0.26. Fixes **#5377**.

- August 14th, 2014
  - [fernando] - Update to harfbuzz-0.9.35. Fixes **#5374**.
  - [fernando] - Update to cups-filters-1.0.56. Fixes **#5373**.
  - [fernando] - Update to clutter-1.18.4. Fixes **#5372**.
  - [fernando] - Update to poppler-data-0.4.7. Fixes **#5371**.
  - [fernando] - Update to p11-kit-0.20.4. Fixes **#5370**.
  - [fernando] - Update to krb5-1.12.2. Fixes **#5369**.
  - [igor] - Update to ffmpeg-2.3.2. Fixes **#5354**.

- August 13th, 2014
  - [fernando] - Update to gnupg-2.0.26. Fixes **#5367**.
  - [igor] - Update to libidn-1.29. Fixes **#5352**.

- August 12th, 2014
  - [fernando] - gnupg-2.0.25: fix import filter and add kbnode_t. Fixes **#5364**.
  - [fernando] - Change URL for psutils-p17. Fixes **#5363**.
  - [fernando] - Update to exim-4.84. Fixes **#5361**.
  - [fernando] - Update to serf-1.3.7. Fixes **#5360**.
  - [fernando] - Update to yasm-1.3.0. Fixes **#5358**.
  - [fernando] - Update to at_3.1.15. Fixes **#5357**.
  - [fernando] - bluez-5.22: /etc/sysconfig/bluetooth is installed with blfs-bootscripts-20140810; my earlier version of the bootscripts didn't have it. Fixes **#5341**.
  - [fernando] - libassuan-2.1.1: fix docs build. Fixes **#5346**.
  - [igor] - Update to boost-1.56.0. Fixes **#5344**.

- August 11th, 2014
  - [bdubbs] - Clean up CA Certificate install instructions. Fixes **#5350**.
  - [bdubbs] - Update to lvm2.2.02.109. Fixes **#5333**.
  - [igor] - Update to unrar-5.1.7. Fixes **#5342**.

- August 10th, 2014
  - [fernando] - Update to bluez-5.22. Fixes **#5341**.
  - [fernando] - Update to libtirpc-0.2.5. Fixes **#5348**.
  - [fernando] - libassuan-2.1.1: Problem building documentation. Fixes **#5346**.
  - [fernando] - Wrong syntax in iptables masquerading example. Fixes **#5345**.

- - [fernando] - Update to stunnel-5.03. Fixes **#5343**.
- August 9th, 2014
  - [fernando] - Update to evince-3.12.2. Fixes **#5349**.
  - [igor] - Update to openssl-1.0.1i. Fixes **#5340**.
- August 8th, 2014
  - [ken] - Apply upstream fix to libsigc++-2.3.2.
- August 7th, 2014
  - [igor] - Update to qemu-2.1.0. Fixes **#5318**.
- August 6th, 2014
  - [fernando] - Create a standard for packages with problems introduced by gcc-4.9.0. Modified: mdadm-3.3.1, gst-plugins-base-0.10.36, LAME-3.99.5 and LibreOffice-4.2.5. Thanks Christopher G., from systemd branch, for pointing that out, and Akhiezer and Armin K. for discussions.
  - [fernando] - Exim-4.83: fix exim daemon version in 'Short Descriptions'. Thanks Denis M.
  - [fernando] - GCC-4.9.1: as in LFS, use sed to fix a problem identified upstream.
  - [fernando] - FLTK-1.3.2: fix output of fltk-config --version. Thanks Jeremy H.
  - [igor] - Update to libxcb-1.11. Fixes **#5323**.
  - [igor] - Update to xcb-proto-1.11. Fixes **#5322**.
- August 5th, 2014
  - [fernando] - Update to libdvdcss-1.3.0. Fixes **#5335**.
  - [fernando] - Update to cmake-3.0.1. Fixes **#5334**.
  - [fernando] - Add the description of the alsaucm bin. Thanks Denis M.
  - [ken] - Add option to build audacious-plugins without mpg123 (new behaviour in 3.5.1, configure used to test for it).
- August 4th, 2014
  - [fernando] - Update to menu-cache-0.6.0. Fixes **#5332**.
  - [fernando] - Revert uneeded revision 13824 (FreeType-2.5.3 ...). Thanks Armin K., from systemd branch.
  - [fernando] - Fix FreeType-2.5.3 for first installation without Harfbuzz-0.9.34 that I forgot to make explicit (only talked about), when updating. Thanks Christopher G., from systemd branch.
  - [igor] - Update to ffmpeg-2.3.1. Fixes **#5312**.
- August 3rd, 2014
  - [fernando] - Update to MesaLib-10.2.5. Fixes **#5330**.
  - [fernando] - Update to xrandr-1.4.3. Fixes **#5329**.
  - [fernando] - Update to whois_5.1.5. Fixes **#5328**.
  - [fernando] - Update to harfbuzz-0.9.34. Fixes **#5327**.
- August 2nd, 2014
  - [fernando] - Update to libpeas-1.10.1. Fixes **#5324**.
  - [fernando] - Update to samba-4.1.11. Fixes **#5321**.
  - [fernando] - Update to mercurial-3.1. Fixes **#5320**.
  - [fernando] - Update to libsigc++-2.3.2. Fixes **#5319**.
- August 1st, 2014
  - [fernando] - Update to wireshark-1.12.0. Fixes **#5317**.
  - [igor] - Update to libdrm-2.4.56. Fixes **#5310**.
- July 31st, 2014
  - [fernando] - Update to cups-1.7.5 and separate internal from external optional dependencies. Fixes **#5316**.
  - [fernando] - Update to dhcpcd-6.4.3. Fixes **#5315**.
  - [fernando] - Update to gpgme-1.5.1. Fixes **#5314**.
  - [fernando] - Update to libndp-1.4. Fixes **#5309**.
  - [fernando] - Update to gdb-7.8. Fixes **#5308**.
  - [fernando] - parted-3.2: remove test t0251-gpt-unicode.sh. Fixes hopefully **#5307**.
  - [igor] - Update to git-2.0.4. Fixes **#5295** and **#5313**.
- July 29th, 2014
  - [fernando] - Update to parted-3.2. Fixes **#5307**.
  - [fernando] - Update to samba-4.1.10; separate internal from external optional dependencies. Fixes **#5306**.
  - [fernando] - Update to check-0.9.14. Fixes **#5304**.

- o [igor] - Update to harfbuzz-0.9.33. Fixes **#5292**.
- July 28th, 2014
  - o [ken] - Patch nfs-utils-1.3.0 to avoid segfault with gcc-4.9.1 reported by The Lightning Stalker.
  - o [fernando] - Update to cups-filters-1.0.55. Fixes **#5305**.
  - o [fernando] - Update to xterm-310. Fixes **#5303**.
  - o [fernando] - libpcap-1.6.1 doesn't build with bluez-5.21. Thanks Wayne B. Fixes **#5302**.
  - o [igor] - Update to libdrm-2.4.55. Fixes **#5300**.
- July 27th, 2014
  - o [fernando] - Thunderbird 31.0 and Python-2.7.8: Python2 needs to be built after openssl for this version of thunderbird.
  - o [fernando] - Update to postgresql-9.3.5. Fixes **#5299**.
  - o [fernando] - Update to php-5.5.15. Fixes **#5298**.
  - o [fernando] - Update to LVM2.2.02.108. Fixes **#5297**.
  - o [fernando] - Update to exim-4.83. Fixes **#5293**.
  - o [fernando] - Fix vala-0.24.0 (for at least Gucharmap-3.12.1). **#5301**.
  - o [bdubbs] - Separate libvdpau-va-gl to its own section. Fixes **#5290**.
  - o [igor] - Update to libXext-1.3.3. Fixes **#5294**.
- July 25th, 2014
  - o [fernando] - Updates to gstreamer-1.4.0 and plugins, including gst-libav. Fixes **#5283**.
- July 24th, 2014
  - o [ken] - Update to firefox/xulrunner 31.0. Fixes **#5287** - Python2 needs to be built after openssl for this version of firefox.
  - o [fernando] - Update to poppler-0.26.3. Fixes **#5284**.
  - o [fernando] - Update to audacious-3.5.1. Fixes **#5289**.
  - o [fernando] - Update to gnutls-3.3.6. Fixes **#5296**.
  - o [fernando] - Update to thunderbird-31.0. Fixes **#5288**.
  - o [igor] - Update to ffmpeg-2.3. Fixes **#5265**.
  - o [Chris] - Removed libxml2 dependency from MesaLib - it's no longer needed.
- July 23rd, 2014
  - o [pierre] - Icedtea-2.5.1/OpenJDK-1.7.0_65. Fixes **#5270**.
  - o [fernando] - SBC-1.2: add switch to configure. Fixes **#5291**.
  - o [fernando] - cURL-7.37.1: typo. Thanks Denis MUGNIER.
  - o [fernando] - Update to httpd-2.4.10. Fixes **#5286**.
  - o [fernando] - Update to libpcap-1.6.1. Fixes **#5285**.
  - o [fernando] - Update to libXfont-1.5.0. Fixes **#5282**.
- July 22nd, 2014
  - o [bdubbs] - Split packages.ent into packages.ent and gnome.ent.
  - o [bdubbs] - Split general.ent into general.ent and packages.ent.
  - o [bdubbs] - Update to kde-4.13.3. Fixes **#5268**.
  - o [pierre] - Update to GCC-4.9.1. Fixes **#5272**.
- July 19th, 2014
  - o [fernando] - Xulrunner-30.0: fix build with `ac_add_options --enable-shared-js`.
  - o [fernando] - Update to MesaLib-10.2.4. Fixes **#5281**.
  - o [fernando] - Update to libXi-1.7.4. Fixes **#5280**.
  - o [fernando] - Cheese-3.12.2: include comment about test suite, according to systemd branch.
- July 18th, 2014
  - o [fernando] - Update to harfbuzz-0.9.32. Fixes **#5279**.
  - o [fernando] - Update to nano-2.3.6. Fixes **#5278**.
  - o [fernando] - Update to xorg-server-1.16.0. Fixes **#5276**.
  - o [fernando] - Update to libnl-3.2.25. Fixes **#5275**.
  - o [fernando] - git-2.0.2 and curl-7.37.1: separate internal and external dependencies.
- July 17th, 2014
  - o [fernando] - Update to curl-7.37.1. Fixes **#5274**.
  - o [fernando] - Update to git-2.0.2. Fixes **#5273**.

- - [fernando] - Update to harfbuzz-0.9.31. Fixes **#5271**.
- July 16th, 2014
  - [fernando] - Update to gparted-0.19.1. Fixes **#5269**.
  - [fernando] - Update to xfsprogs-3.2.1. Fixes **#5263**.
- July 15th, 2014
  - [fernando] - Update to cups-1.7.4. Fixes **#5266**.
  - [fernando] - Update to dhcpcd-6.4.2. Fixes **#5264**.
- July 14th, 2014
  - [fernando] - Update to xterm-309. Fixes **#5261**.
- July 13th, 2014
  - [igor] - Update to scons-2.3.2. Fixes **#5244**.
  - [fernando] - Update to nano-2.3.5. Fixes **#5260**.
- July 12th, 2014
  - [fernando] - Update to cifs-utils-6.4. Fixes **#5259**.
- July 11th, 2014
  - [bdubbs] - Update to polkit-qt-1-0.112.0. Fixes **#5258**.
  - [bdubbs] - Update to libXi-1.7.3. Fixes **#5255**.
  - [bdubbs] - Update to libvdpau-0.8. Fixes **#5232**.
  - [bdubbs] - Add libvdpau-va-gl supplementary driver for libvdpau.
- July 10th, 2014
  - [fernando] - Update to x264-20140709-2245. Fixes **#5256**.
  - [fernando] - Update to harfbuzz-0.9.30. Fixes **#5254**.
  - [fernando] - Update to xine-lib-1.2.6. Fixes **#5246**.
- July 9th, 2014
  - [fernando] - Update to nss-3.16.3. Fixes **#5253**.
  - [fernando] - Update to Berkeley db-6.1.19. Fixes **#5252**.
  - [fernando] - Update to nano-2.3.4. Fixes **#5251**.
- July 8th, 2014
  - [fernando] - Logrotate-3.8.7: typo, tweaks, more explanations.
  - [fernando] - Update to webkitgtk-2.4.4. Fixes **#5250**.
  - [fernando] - Update to MesaLib-10.2.3. Fixes **#5249**.
- July 7th, 2014
  - [fernando] - Update to fcron-3.2.0. Fixes **#5248**.
  - [fernando] - Update to vlc-2.1.5. Reorder and separate internal and external dependencies. Fixes **#5247**.
  - [fernando] - Update to cogl-1.18.2. Fixes **#5241**.
  - [fernando] - Update to pixman-0.32.6. Fixes **#5245**.
  - [fernando] - Update to p11-kit-0.20.3. Fixes **#5243**.
  - [fernando] - Change title of libnewt-0.52.17 to newt-0.52.17. Thanks Bruce D.
- July 6th, 2014
  - [bdubbs] - Update to bluez-5.21. Fixes **#5242**.
  - [pierre] - Add a missing switch for GCC-Java.
- July 5th, 2014
  - [fernando] - Add newt-0.52.17 (libnewt). Fixes **#5240**.
  - [fernando] - Add libndp-1.3. Fixes **#5239**.
  - [fernando] - Update network-manager-applet-0.9.10.0. Fixes **#5237**.
  - [fernando] - Update NetworkManager-0.9.10.0. Fixes **#5236**.
  - [igor] - Update to lzo-2.08. Fixes **#5222**.
- July 4th, 2014
  - [bdubbs] - Add logrotate-3.8.7. Fixes **#5229**.
- July 3rd, 2014
  - [pierre] - Split GCC pages. Fixes **#5000**.
  - [fernando] - Update to iso-codes-3.55. Fixes **#5235**.

- [fernando] - Update to dbus-1.8.6. Fixes **#5234**.
  - [fernando] - Update to whois_5.1.4. Fixes **#5233**.
  - [fernando] - Update to pcmanfm-1.2.1. Fixes **#5231**.
  - [fernando] - Update to libfm-1.2.1. Fixes **#5230**.
- July 2nd, 2014
  - [fernando] - Update to mercurial-3.0.2. Fixes **#5227**.
  - [ken] - Update to texlive-20140525 and current (20140628) version of install-tl-unx. Fixes **#5170**.
  - [igor] - Update to git-2.0.1. Fixes **#5209**.
- July 1st, 2014
  - [fernando] - Update to transmission-2.84. Fixes **#5226**.
  - [fernando] - Update to gnupg-2.0.25. Fixes **#5225**.
  - [fernando] - Update to Python-2.7.8. Fixes **#5224**.
  - [fernando] - Update to libburn-1.3.8. Fixes **#5220**.
  - [fernando] - Update to libisoburn-1.3.8. Fixes **#5219**.
  - [fernando] - Update to libisofs-1.3.8. Fixes **#5218**.
  - [fernando] - Update to Qt-5.3.1. Fixes **#5206**.
- June 30th, 2014
  - [igor] - Update to xf86-video-ati-7.4.0. Fixes **#5208**.
- June 29th, 2014
  - [fernando] - MPlayer-1.1.1:
    - Fix building with new versions of giflib.
    - Reorder dependencies to separate internal and external ones.
  - [fernando] - polkit-gnome-0.105: fix directory of polkit-gnome-authentication-agent-1.
  - [igor] - Update to xorg-server-1.15.2. Fixes **#5212**.
- June 28th, 2014
  - [pierre] - Update to PHP-5.5.14. Fixes **#5216**.
  - [igor] - Update to lzo-2.07. Fixes **#5210**.
- June 27th, 2014
  - [fernando] - XviD-1.3.3: fixes.
  - [pierre] - Update to Icedtea-2.5.0/OpenJDK-1.7.0.60. Fixes **#5173**.
  - [fernando] - Update to gnutls-3.3.5. Fixes **#5215**.
  - [fernando] - Update to libtasn1-4.0. Fixes **#5214**.
  - [pierre] - Update to LVM2-2.02.107. Fixes **#5203**.
- June 26th, 2014
  - [igor] - Update to MesaLib-10.2.2. Fixes **#5205**.
- June 25th, 2014
  - [fernando] - Update to gnupg-2.0.24. Fixes **#5207**.
  - [fernando] - Update to pango-1.36.5. Fixes **#5204**.
  - [fernando] - Update to ffmpeg-2.2.4. Fixes **#5198**.
- June 24th, 2014
  - [fernando] - Update to pango-1.36.4. Fixes **#5202**.
  - [fernando] - Update to gtk+-2.24.24. Fixes **#5201**.
  - [fernando] - Update to vte-0.36.3. Fixes **#5200**.
  - [fernando] - Update to gnome-terminal-3.12.3. Fixes **#5199**.
  - [igor] - Update to rsync-3.1.1. Fixes **#5195**.
  - [fernando] - Update to samba-4.1.9. Fixes **#5197**.
  - [fernando] - Update to inkscape-0.48.5. Fixes **#5196**.
- June 23rd, 2014
  - [fernando] - Update to libreoffice-4.2.5.2. Fixes **#5194**.
  - [bdubbs] - Update to phonon-backend-vlc-0.7.2. Fixes **#5192**.
  - [bdubbs] - Update to phonon-backend-gstreamer-4.7.2. Fixes **#5191**.
  - [bdubbs] - Update to phonon-4.7.2. Fixes **#5190**.
  - [bdubbs] - Update to bluez-5.20. Fixes **#5193**.
  - [krejzi] - Added FontForge-2.0.20140101.

- June 21st, 2014
  - [pierre] - Slightly reword the paragraph about adding a user and a group in D-Bus (as proposed by B. Dubbs).

- June 20th, 2014
  - [fernando] - Update to poppler-0.26.2. Fixes **#5189**.
  - [fernando] - Update to xterm-308. Fixes **#5188**.

- June 18th, 2014
  - [fernando] - Update to sysstat-11.0.0. Fixes **#5187**.
  - [fernando] - Update to xterm-307. Fixes **#5186**.
  - [fernando] - Update to alsa 1.0.28. Fixes **#5184**.
  - [fernando] - Update to mpg123-1.20.1. Fixes **#5183**.
  - [bdubbs] - Update to xf86-input-wacom. Fixes **#5185**.

- June 16th, 2014
  - [fernando] - Tweaks in valgrind-3.9.0 and php-5.5.13.
  - [fernando] - llvm-3.4.2. Fixes **#5182**.
  - [fernando] - mariadb-10.0.12. Fixes **#5181**.

- June 16th, 2014
  - [fernando] - gnome-calculator-3.12.3. Fixes **#5179**.
  - [bdubbs] - Update to libva-intel-driver-1.3.2. Fixes **#5180**.

- June 15th, 2014
  - [fernando] - seamonkey-2.26.1. Fixes **#5178**.
  - [fernando] - libpng-1.6.12. Fixes **#5177**.
  - [fernando] - gc-7.4.2. Fixes **#5176**.
  - [fernando] - traceroute-2.0.20. Fixes **#5175**.
  - [fernando] - dhcpcd-6.4.0. Fixes **#5174**.
  - [bdubbs] - Update to libusb-1.0.19. Fixes **#5172**.
  - [bdubbs] - Update to xcb-util-renderutil-0.3.9. Fixes **#5171**.
  - [bdubbs] - Update to sg3_utils-1.39. Fixes **#5168**.
  - [fernando] - Fix Net-DNS-0.76 md5sum, thanks Wayne B.

    Promote '--enable-tee' to parameter in Cairo-1.12.16 and 'ac_add_options --enable-system-cairo' in Xulrunner-30.0, Firefox-30.0 and Thunderbird-24.6.0, thanks Armin K.

    Replace sentence '... do not touch ...' by 'The BLFS editors recommend not changing anything below this line' (Xulrunner, Firefox and Thunderbird), thanks Bruce D.

- June 14th, 2014
  - [bdubbs] - Add tigervnc-1.3.1. Fixes **#3903**.

- June 13th, 2014
  - [fernando] - bind-9.10.0-P2/bind-utilities-9.10.0-P2. Fixes **#5166**.
  - [fernando] - Net::DNS-0.76. Fixes **#5169**.
  - [fernando] - wireshark-1.10.8. Fixes **#5167**.
  - [fernando] - unrar-5.1.6. Fixes **#5165**.
  - [fernando] - Modify build instructions for firefox-30.0 and thunderbird-24.6.0. Uncoment 'ac_add_options --enable-system-cairo' in xulrunner/firefox-30.0 and thunderbird-24.6.0. Thanks Armin K.
  - [bdubbs] - Add fltk-1.3.2 to support tigervnc.

- June 12th, 2014
  - [fernando] - thunderbird-24.6.0. Fixes **#5160**.
  - [fernando] - xulrunner/firefox-30.0. Fixes **#5155**.
  - [bdubbs] - Update to kde-4.13.2. Fixes **#5161**.

- June 11th, 2014
  - [fernando] - stunnel-5.02. Fixes **#5164**.
  - [fernando] - dbus-1.8.4. Fixes **#5163**.
  - [fernando] - gparted-0.19.0. Fixes **#5162**.
  - [bdubbs] - Update to mdadm-3.3.1. Fixes **#5143**.
  - [bdubbs] - Update to libevdev-1.2.2. Fixes **#5141**.
  - [fernando] - cups-filters-1.0.54. Fixes **#5145**.

- June 10th, 2014

- o [fernando] - cmake-3.0.0. Fixes **#5159**.
- o [fernando] - gnumeric-1.12.17. Fixes **#5157**.
- o [fernando] - goffice-0.10.17. Fixes **#5156**.
- o [fernando] - Remove all explicit eudev version references from Udev Extras. Fixes **#5154**.
- o [fernando] - xscreensaver-5.29. Fixes **#5153**.
- o [bdubbs] - Update to autofs-5.1.0. Fixes **#5138**.
- o [igor] - Update to serf-1.3.6. Fixes **#5158**.

- June 9th, 2014
  - o [igor] - Update to libICE-1.0.9. Fixes **#5147**.
  - o [pierre] - Improve detection and handling of udevd in mkinitramfs.
  - o [pierre] - Eudev-1.7 (Udev-extras). Fixes **#5128**.

- June 8th, 2014
  - o [fernando] - MariaDB-10.0.11: move switch -DWITH_EMBEDDED_SERVER=ON to parameter.
  - o [fernando] - nspr-4.10.6. Fixes **#5151**.
  - o [fernando] - qpdf-5.1.2. Fixes **#5150**.
  - o [fernando] - MesaLib-10.2.1. Fixes **#5148**.
  - o [fernando] - libpng-1.6.11. Fixes **#5142**.
  - o [bdubbs] - Update to kde-4.13.1. Fixes **#5067**.
  - o [bdubbs] - Archive nepomuk-widgets, nepomuk-core, shared-desktop-ontologies. virtuoso, and soprano. Fixes **#4780**.
  - o [bdubbs] - Add libkdcraw-4.13.1.
  - o [bdubbs] - Add libraw-0.16.0.
  - o [igor] - Update to libXft-2.3.2. Fixes **#5144**.

- June 6th, 2014
  - o [fernando] - samba-4.1.8. Fixes **#5132**.
  - o [igor] - Update to wpa_supplicant-2.2. Fixes **#5137**.

- June 5th, 2014
  - o [fernando] - Fix gst-plugins-good-1.2.4: First Optional dependencies are actually Recommended.
  - o [fernando] - Add note for order of installation in gst plugins.
  - o [fernando] - Fix dependencies and build of xdg-utils-1.1.0-rc2.
  - o [fernando] - Fix /etc/xdg/autostart in polkit-gnome-0.105.
  - o [fernando] - openssl-1.0.1h. Fixes **#5140**.
  - o [fernando] - xscreensaver-5.28. Fixes **#5139**.
  - o [fernando] - Python-2.7.7. Fixes **#5135**.
  - o [fernando] - xterm-306. Fixes **#5134**.
  - o [fernando] - gnupg-2.0.23. Fixes **#5133**.
  - o [igor] - Update to sqlite-3.8.5. Fixes **#5136**.
  - o [pierre] - SWIG-3.0.2. Fixes **#5111**.

- June 3rd, 2014
  - o [fernando] - iso-codes-3.54. Fixes **#5129**.
  - o [fernando] - mercurial-3.0.1. Fixes **#5127**.
  - o [fernando] - clutter-gst-2.0.12. Fixes **#5126**.
  - o [pierre] - Update to git-2.0.0. Fixes **#5117**.
  - o [igor] - Update to ffmpeg-2.2.3. Fixes **#5131**.

- June 1st, 2014
  - o [fernando] - Change http URLs for: babl-0.1.10, gegl-0.2.0 and Gimp-2.8.10. Thanks to Armin K.
  - o [fernando] - check-0.9.13. Fixes **#5124**.
  - o [fernando] - xcursorgen-1.0.6. Fixes **#5123**.
  - o [pierre] - Patch CUPS again to avoid dependency on Avahi. Fixes **#5125**.

- May 31st, 2014
  - o [fernando] - gnutls-3.3.4. Fixes **#5122**.
  - o [fernando] - json-glib-1.0.2. Fixes **#5121**.
  - o [fernando] - php-5.5.13. Fixes **#5119**.
  - o [pierre] - Patch icedtea for new giflib API.

- May 30th, 2014
    - [fernando] - harfbuzz-0.9.29. Fixes **#5120**.
    - [fernando] - inputproto-2.3.1. Fixes **#5118**.
    - [fernando] - exim-4.82.1. Fixes **#5116**.
    - [fernando] - gnome-calculator-3.12.2. Fixes **#5115**.
    - [fernando] - gedit-3.12.2. Fixes **#5114**.
    - [fernando] - xscreensaver-5.27. Fixes **#5112**.
    - [bdubbs] - Update to bluz-5.19. Bootscripts updated. Fixes **#5083**.
- May 28th, 2014
    - [fernando] - Fix transmission-2.83 to build with Qt-4.8.6. Thanks to e5g6s. Final fix to **#5080**.
    - [fernando] - xkeyboard-config-2.12. Fixes **#5110**.
    - [fernando] - libogg-1.3.2. Fixes **#5109**.
    - [fernando] - mpg123-1.20.0. Fixes **#5108**.
    - [fernando] - cups-1.7.3. Fixes **#5107**.
    - [fernando] - Python-3.4.1. Fixes **#5113**.
- May 27th, 2014
    - [fernando] - Fixes to install-tl-unx, Imlib2-1.4.6 and gnash-0.8.10.
    - [fernando] - pygobject-3.12.2. Fixes **#5106**.
    - [fernando] - whois_5.1.3. Fixes **#5105**.
    - [fernando] - gdk-pixbuf-2.30.8. Fixes **#5104**.
- May 26th, 2014
    - [bdubbs] - Update to sendmail-8.14.9. Fixes Fixes **#5095**.
    - [ken] - Update fstab details / explanation for nfs clients. Fixes **#5041**.
    - [ken] - Second attempt at fixes for both versions of gst-plugins-base with gcc-4.9.0 on i686. Marked as "nodump" in the xml to avoid using it in other situations. 1.2.4 works, 0.10.36 compiles but I am unable to get sound, only video - the problem might be elsewhere in the 0.10 gstreamer packages.
    - [ken] - Second attempt at a fix for lame with gcc-4.9.0 on i686. Marked as "nodump" in the xml to avoid using it in other situations.
    - [fernando] - Fix to Doxygen-1.8.7.
    - [fernando] - webkitgtk-2.4.3. Fixes **#5103**.
    - [fernando] - ImageMagick-6.8.9-1. Fixes **#5065**.
    - [fernando] - libtasn1-3.6. Fixes **#5102**.
- May 25th, 2014
    - [fernando] - Fixes to Gimp-2.8.10 and Transmission-2.83.
    - [fernando] - curl-7.37.0. Fixes **#5094**.
    - [fernando] - gnumeric-1.12.16. Fixes **#5101**.
    - [fernando] - goffice-0.10.16. Fixes **#5098**.
    - [fernando] - poppler-0.26.1. Fixes **#5100**.
    - [fernando] - qt-5.3.0. Fixes **#5082**.
    - [pierre] - Update to Mariadb-10.0.11. Fixes **#5063**.
- May 24th, 2014
    - [fernando] - Fixes to seahorse-3.12.2 (for desktop file) and, thanks to Wayne B., to WebKitGTK+-2.4.2 (gtk+2 dependency).
    - [fernando] - elfutils-0.159. Fixes **#5088**.
    - [fernando] - transmission-2.83. Fixes **#5080**.
    - [fernando] - gpgme-1.5.0. Fixes **#5097**.
    - [fernando] - colord-1.2.1. Fixes **#5099**.
    - [ken] - Update to firefox/xulrunner 29.0.1. Fixes **#4886** and **#5044**.
    - [pierre] - Update to talloc-2.1.1. Fixes **#5089**.
- May 23rd, 2014
    - [bdubbs] - Update to xfsprogs-3.2.0. Fixes **#5073**.
    - [ken] - Update to postfix-2.11.1. Fixes **#5048**.
    - [fernando] - gutenprint-5.2.10. Fixes **#5079**.
    - [bdubbs] - Update to bind-9.10.0. Fixes **#5014**.
    - [pierre] - Update to NASM-2.11.05. Fixes **#5096**.
- May 21st, 2014

- [bdubbs] - Update to xf86-input-synaptics-1.8.0. Fixes **#5070**.
- [bdubbs] - Update to xf86-input-evdev-2.9.0 and add libevdev-1.2.1. Fixes **#5086**.
- [fernando] - SGMLSpm-1.1: Fix URL. Fixes **#5090**.
- [fernando] - webkitgtk-2.4.2. Fixes **#5059**.
- [fernando] - x264-20140519-2245. Fixes **#5084**.
- [fernando] - xdg-utils-1.1.0-rc2. Fixes **#4811**.
- [fernando] - Updates to gnome-desktop-3.12.2, gtksourceview-3.12.2, vte-0.36.2, cheese-3.12.2, eog-3.12.2, epiphany-3.12.1, nautilus-3.12.2, file-roller-3.12.2, gnome-system-monitor-3.12.2, gnome-terminal-3.12.2, gucharmap-3.12.1, and seahorse-3.12.2. Fixes **#5060**.
- [bdubbs] - Update to MesaLib-10.1.4. Fixes **#5085**.
- [pierre] - Vim: remove vim-lang instructions, add multibyte support and GTK+2 as a recommended dependency.
- [fernando] - Archive-Zip: Fix URL. Partially fixes **#5090**.
- [fernando] - lm_sensors-3.3.5: Remove ftp URL and add one patch for fancontrol and for sensors.conf.default. Fixes **#5091**.
- [fernando] - Archive (comment out) XML::Parser. Fixes **#5092**.
- [fernando] - Fcron-3.1.3 (remove not working ftp) gegl-0.2.0 and babl-0.1.10 (fix URL's). Fixes **#5093**.

- May 20th, 2014
  - [bdubbs] - Update to llvm-3.4.1. Fixes Fixes **#5045**.
  - [bdubbs] - Archive farstream. Addresses Fixes **#5028**.
  - [bdubbs] - Correct alsa-lib doc directory. Fixes Fixes **#5075**.

- May 19th, 2014
  - [pierre] - Fix building of kdelibs with giflib-5.1.0 Fixes **#5078**.

- May 18th, 2014
  - [fernando] - Fix Polkit-0.112 and Colord-1.2.0 to build without systemd.
  - [fernando] - gnome-keyring-3.12.2. Partially fixes **#5060**.
  - [fernando] - gcr-3.12.2. Partially fixes **#5060**.
  - [fernando] - gsettings-desktop-schemas-3.12.2. Partially fixes **#5060**.
  - [fernando] - gtk+-3.12.2. Fixes **#5061**.
  - [pierre] - Fix imlib2 and libwebp for building with giflib-5.1.0. Fixes **#5076** and **#5077**.

- May 17th, 2014
  - [ken] - Reinstate system boost and icu switches in libreoffice, thanks to Christopher Gregory for noticing.
  - [fernando] - Revert unnecessary revision 13047 "Help Lua-5.2.3 to find Ncurses-5.9 for Readline-6.3".
  - [fernando] - libatomic_ops-7.4.2. Fixes **#5074**.
  - [fernando] - libffi-3.1. Fixes **#5058**.
  - [fernando] - fcron-3.1.3. Fixes **#5057**.
  - [fernando] - libXfont-1.4.8. Fixes **#5069**.
  - [pierre] - Update to proftpd-1.3.5. Fixes **#5071**.
  - [pierre] - Update to giflib-5.1.0. Fixes **#5072**.

- May 16th, 2014
  - [bdubbs] - Update to Net::DNS-0.75. Fixes **#5054**.
  - [bdubbs] - Update to subversion-1.8.9. Fixes **#5068**.
  - [pierre] - Update to git-1.9.3. Fixes **#5047**.
  - [pierre] - Update to dovecot-2.2.13. Fixes **#5056**.

- May 15th, 2014
  - [pierre] - Update to apache-ant-1.9.4 and rearrange java pages. Fixes **#5032**.

- May 14th, 2014
  - [bdubbs] - Update to shadow-4.2.1. Fixes **#4989**.
  - [bdubbs] - Update to sudo-1.8.10p3. Fixes **#5055**.

- May 13th, 2014
  - [bdubbs] - Update to libnice-0.1.7. Fixes **#4778**.
  - [bdubbs] - Update to nasm-2.11.04. Fixes **#5031**.
  - [bdubbs] - Update to xf86-video-intel-2.99.911.
  - [bdubbs] - Update to xf86-input-evdev-2.8.4. Fixes **#5051**.
  - [bdubbs] - Update to xf86-input-synaptics-1.7.6. Fixes **#5062**.

- - [bdubbs] - Update to libva-1.3.1/libva-intel-driver-1.3.1. Fixes **#5052** and **#5053**.
- May 12th, 2014
  - [bdubbs] - Update to MesaLib-10.1.3. Fixes **#5029**.
  - [bdubbs] - Update udev-extras to use eudev.
  - [bdubbs] - Restore full dbus build to the book. Update to dbus-1.8.2. Fixes **#5015**
- May 10th, 2014
  - [fernando] - Fixes to GCC-4.9.0 (thanks Armin K. for the patch), Grilo-0.2.10, Gedit-3.12.1 and Totem-3.12.1.
  - [fernando] - qt-4.8.6. Fixes **#5010**.
  - [fernando] - ffmpeg-2.2.2. Fixes **#5027**.
  - [fernando] - lxpanel-0.6.2. Fixes **#5049**.
  - [fernando] - thunderbird-24.5.0. Fixes **#5002**.
  - [fernando] - gvfs-1.20.2. Fixes **#5050**.
  - [fernando] - ruby-2.1.2. Fixes **#5043**.
  - [fernando] - raptor2-2.0.14. Fixes **#5033**.
- May 9th, 2014
  - [fernando] - seamonkey-2.26. Fixes **#5023**.
  - [fernando] - gdb-7.7.1. Fixes **#5030**.
  - [fernando] - unrarsrc-5.1.5. Fixes **#5034**.
  - [fernando] - gnutls-3.3.2. Fixes **#5036**.
  - [fernando] - nss-3.16.1. Fixes **#5038**.
  - [fernando] - nspr-4.10.5. Fixes **#5035**.
- May 8th, 2014
  - [fernando] - Fix DoS vulnerability in the GIF image handler affecting Qt-4.8.5 and Qt-5.2.1 and several previous and more recent versions. Fixes **#5040**.
  - [ken] - Patch libreoffice-4.2.3.3 to build against system icu. Fixes **#5016**.
  - [ken] - Patch texlive-20130530 to build against poppler-0.26. Fixes **#5039**.
- May 6th, 2014
  - [ken] - firefox/xulrunner 29.0. Fixes **#5001**.
- May 4th, 2014
  - [fernando] - Fixes to colord-1.2.0 and ConsoleKit-0.4.6.
  - [fernando] - libdrm-2.4.54. Fixes **#5024**.
  - [fernando] - serf-1.3.5. Fixes **#4998**.
  - [fernando] - screen-4.2.1. Fixes **#4999**.
  - [fernando] - rxvt-unicode-9.20. Fixes **#4995**.
  - [fernando] - xterm-304. Fixes **#5026**.
  - [fernando] - whois_5.1.2. Fixes **#5025**.
  - [fernando] - mercurial-3.0. Fixes **#5018**.
  - [fernando] - openjpeg-1.5.2. Fixes **#5009**.
  - [fernando] - iso-codes-3.53. Fixes **#5020**.
  - [fernando] - libtasn1-3.5. Fixes **#5021**.
  - [fernando] - totem-3.12.1. Fixes **#5013**.
- May 3rd, 2014
  - [bdubbs] - Updated to xf86-input-synaptics-1.7.5. Fixes **#5006**.
  - [bdubbs] - Updated to xf86-input-evdev-2.8.3. Fixes **#5004**.
- May 2nd, 2014
  - [pierre] - php-5.5.12. Fixes **#5019**.
  - [fernando] - Fixes to grilo-plugins-0.2.12, gst-plugins-base-0.10.36 and midori-0.5.8.
  - [fernando] - libass-0.11.2. Fixes **#4994**.
  - [fernando] - gnumeric-1.12.15. Fixes **#5012**.
  - [fernando] - goffice-0.10.15. Fixes **#5011**.
  - [fernando] - harfbuzz-0.9.28. Fixes **#5005**.
  - [fernando] - libgtop-2.30.0. Fixes **#5003**.
  - [fernando] - unrar-5.1.4. Fixes **#5007**.
- May 1st, 2014

- ○ [pierre] - Patch CUPS in order to remove dependency on Avahi.
- April 29th, 2014
  - ○ [fernando] - Fixes to build lame-3.99.5 and gst-plugins-base-1.2.4 with gcc-4.9.0. Minor fixes to libdvdread-4.9.9 and nautilus-3.12.0.
  - ○ [fernando] - gnome-terminal-3.12.1. Fixes **#4996**.
  - ○ [fernando] - vte-0.36.1. Fixes **#4997**.
  - ○ [pierre] - Remove unneeded flags for compiling GCC-4.9.0 and correct test instructions.
  - ○ [pierre] - Update to GCC-4.9.0. Fixes **#4986**.
- April 28th, 2014
  - ○ [bdubbs] - Synchronize udev extras with LFS.
  - ○ [bdubbs] - Add references to dbus-launch to window managers.
  - ○ [bdubbs] - Remove XML::Parser from perl modules.
  - ○ [bdubbs] - Archive acl, attr, intltool, expat, gperf.
  - ○ [bdubbs] - Synchronize libcap with LFS.
  - ○ [bdubbs] - Synchronize D-Bus with LFS. Also fixes **#4977**.
- April 27th, 2014
  - ○ [fernando] - cups-filters-1.0.53. Fixes **#4993**.
  - ○ [fernando] - Fixes to Inkscape-0.48.4, Cairo-1.12.16, Poppler-0.26.0 and Ruby-2.1.1. Thanks Igor Z and Armin K.
- April 24th, 2014
  - ○ [fernando] - poppler-0.26.0. Fixes **#4992**.
  - ○ [fernando] - network-manager-applet-0.9.8.10. Fixes **#4990**.
  - ○ [fernando] - NetworkManager-0.9.8.10. Fixes **#4991**.
- April 24th, 2014
  - ○ [fernando] - tree-1.7.0. Fixes **#4988**.
  - ○ [fernando] - unrar-5.1.3. Fixes **#4987**.
  - ○ [fernando] - wireshark-1.10.7. Fixes **#4985**.
  - ○ [fernando] - audacious-3.5. Fixes **#4984**.
- April 22nd, 2014
  - ○ [fernando] - Fontsproto-2.1.3 breaks libXfont-1.4.7 - upstream fix. Thanks Armin K. for pointing to the upstream patch. Fixes **#4982**.
  - ○ [fernando] - Fontsproto-2.1.3 breaks libXfont-1.4.7. Thanks Miklos K. Fixes **#4982**.
  - ○ [fernando] - bluefish-2.2.6. Fixes **#4983**.
- April 21st, 2014
  - ○ [fernando] - MesaLib-10.1.1. Fixes **#4976**.
  - ○ [fernando] - WebKitGTK+ 2.4.1. Fixes **#4956**.
  - ○ [bdubbs] - Updated to doxygen-1.8.7. Fixes **#4980**
  - ○ [fernando] - gstreamer-1.2.4 and plugins, including gst-libav-1.2.4. Fixes **#4975**
  - ○ [fernando] - gnutls-3.3.1: fixes to build with guile and for the test suite.
  - ○ [fernando] - gnutls-3.3.1. Fixes **#4979**.
  - ○ [fernando] - apr-1.5.1. Fixes **#4978**.
- April 20th, 2014
  - ○ [rthomsen] - Add Ruby as dependency for Qt 5.
  - ○ [fernando] - Updated to libreoffice-4.2.3.3. Fixes **#4931**.
- April 19th, 2014
  - ○ [pierre] - OpenJDK-1.7.0.55/Icedtea-2.4.7. Fixes **#4966**.
  - ○ [fernando] - nmap-6.46. Fixes **#4974**.
  - ○ [fernando] - xproto-7.0.26. Fixes **#4963**.
  - ○ [fernando] - fontsproto-2.1.3. Fixes **#4962**.
- April 18th, 2014
  - ○ [bdubbs] - Updated to qemu-2.0.0. Fixes **#4973**.
- April 17th, 2014
  - ○ [bdubbs] - Updated to libiodbc-3.52.9. Fixes **#4968**.
  - ○ [bdubbs] - Updated to libdvdread-4.9.9. Fixes **#4955**.

- [bdubbs] - Updated to xine-lib-1.2.5. Fixes **#4929**.
- [bdubbs] - Updated to libjpeg-turbo-1.3.1. Fixes **#4970**.
- [bdubbs] - Updated to libgpg-error-1.13. Fixes **#4967**.
- [bdubbs] - Updated to samba-4.1.7. Fixes **#4972**.
- [fernando] - gnome-system-monitor-3.12.1. Partially fixes **#4958**.
- [fernando] - file-roller-3.12.1. Partially fixes **#4958**.
- [fernando] - evince-3.12.1. Partially fixes **#4958**.
- [fernando] - eog-3.12.1. Partially fixes **#4958**.
- [fernando] - cheese-3.12.1. Partially fixes **#4958**.
- [fernando] - baobab-3.12.1. Partially fixes **#4958**.
- [fernando] - gnome-desktop-3.12.1. Partially fixes **#4958**.
- [fernando] - at-spi2-atk-2.12.1. Fixes **#4960**.
- [fernando] - clutter-1.18.2. Fixes **#4961**.
- [pierre] - Update to Icedtea-web-1.5. Fixes **#4923**.
- [rthomsen] - Updated to akonadi-1.12.1.
- [rthomsen] - Updated to KDE-4.13.0. Three new packages were added: kfilemetadata, baloo and baloo-widgets. Fixes **#4751**.
- [rthomsen] - Added xapian-1.2.17. Required dependency of Baloo.

- April 16th, 2014
  - [fernando] - gedit-3.12.1. Partially fixes **#4892**.
  - [fernando] - gtksourceview-3.12.1. Partially fixes **#4892**.
  - [fernando] - gjs-1.40.1. Fixes **#4959**.
  - [fernando] - glib-networking-2.40.1. Fixes **#4964**.
  - [fernando] - pygobject-3.12.1. Fixes **#4965**.
  - [bdubbs] - Updated to sg3_utils-1.38. Fixes **#4894**.
  - [bdubbs] - Updated to acpid-2.0.22. Fixes **#4808**.
  - [bdubbs] - Updated to json-c-0.12. Fixes **#4938**.
  - [bdubbs] - Updated to autofs-5.0.9. Fixes **#4892**.
  - [bdubbs] - Added patch to lxpanel to fix handling of .desktop files. Fixes **#4915**.
  - [bdubbs] - Updated to mariadb-10.0.10. Fixes **#4883**.
  - [bdubbs] - Archived mysql. Fixes **#4899**.

- April 15th, 2014
  - [bdubbs] - stunnel-5.00. Fixes **#4770**.
  - [fernando] - xvid-1.3.3. Fixes **#4948**.
  - [fernando] - graphviz-2.38.0. Fixes **#4953**.
  - [fernando] - xorg-server-1.15.1. Fixes **#4952**.
  - [fernando] - gtkmm-3.12.0. Fixes **#4951**.
  - [fernando] - glibmm-2.40.0. Fixes **#4954**.
  - [fernando] - gnumeric-1.12.14. Fixes **#4949**.
  - [fernando] - goffice-0.10.14. Fixes **#4950**.

- April 14th, 2014
  - [bdubbs] - qemu-1.7.1. Fixes **#4873**.

- April 13th, 2014
  - [fernando] - Add fc-cache to instructions for font install in ghostscript-9.14.
  - [fernando] - bluez-5.18. Fixes **#4946**.
  - [fernando] - gvfs-1.20.1. Fixes **#4941**.
  - [fernando] - gtk+-3.12.1. Fixes **#4945**.
  - [fernando] - nmap-6.45. Fixes **#4943**.
  - [fernando] - ImageMagick-6.8.9-0. Fixes **#4942**.
  - [pierre] - Update to Icedtea-2.4.6. Fixes **#4897**.
  - [pierre] - Promote avahi to required dependency for CUPS-1.7.2. Fixes **#4944**.

- April 12th, 2014
  - [fernando] - gnutls-3.3.0. Fixes **#4940**.
  - [fernando] - libdrm-2.4.53. Fixes **#4937**.
  - [fernando] - cups-1.7.2. Fixes **#4936**.

- [fernando] - icu-53.1. Fixes **#4889**.
  - [fernando] - LVM2.2.02.106. Fixes **#4939**.
- April 11th, 2014
  - [fernando] - Remove two items from 'Command Explanations' of Fcron-3.1.2: autoconf and --with-dsssl-dir=/usr/share/sgml/docbook/dsssl-stylesheets-1.79.
- April 10th, 2014
  - [fernando] - gnome-calculator-3.12.1. Fixes **#4934**.
  - [fernando] - xfburn-0.5.2. Fixes **#4933**.
  - [fernando] - iso-codes-3.52. Fixes **#4891**.
  - [fernando] - git-1.9.2. Fixes **#4935**.
  - [fernando] - ffmpeg-2.2.1. Fixes **#4932**.
- April 9th, 2014
  - [ken] - postgresql-9.3.4. Fixes **#4840**.
  - [fernando] - xf86-video-vmware-13.0.2. Fixes **#4906**.
  - [fernando] - xf86-input-wacom-0.24.0. Fixes **#4905**.
  - [fernando] - xrandr-1.4.2. Fixes **#4904**.
  - [fernando] - xauth-1.0.9. Fixes **#4903**.
  - [fernando] - xtrans-1.3.4. Fixes **#4902**.
  - [fernando] - shared-mime-info-1.3. Fixes **#4930**.
  - [ken] - xine-ui-0.99.8. Fixes **#4790** and **#4921**.
- April 8th, 2014
  - [fernando] - mc-4.8.12. Fixes **#4893**.
  - [fernando] - pcre-8.35. Fixes **#4920**.
  - [fernando] - util-macros-1.19.0. Fixes **#4901**.
  - [fernando] - cups-filters-1.0.52. Fixes **#4922**.
  - [fernando] - gnutls-3.2.13. Fixes **#4925**.
  - [fernando] - openssl-1.0.1g. Fixes **#4924**.
- April 7th, 2014
  - [fernando] - colord-1.2.0. Fixes **#4918**.
  - [fernando] - mercurial-2.9.2. Fixes **#4895**.
  - [fernando] - unrarsrc-5.1.2. Fixes **#4919**.
  - [fernando] - giflib-5.0.6. Fixes **#4890**.
  - [fernando] - xmlto-0.0.26. Fixes **#4917**.
- April 6th, 2014
  - [fernando] - Midori-0.5.8. Fixes **#4908**.
  - [fernando] - cups-filters-1.0.51. Fixes **#4909**.
  - [fernando] - nss-3.16. Fixes **#4910**.
  - [fernando] - network-manager-applet-0.9.8.9. Fixes **#4907**.
  - [fernando] - NetworkManager-0.9.8.9. Fixes **#4898**.
- April 5th, 2014
  - [pierre] - PHP-5.5.11. Fixes **#4896**.
  - [pierre] - SQLite-3.8.4.3. Fixes **#4900**.
- April 4th, 2014
  - [ken] - nfs-utils-1.3.0. Fixes **#4870**.
  - [fernando] - Fix URLs in Gnome packages, some wrong and some to use 'gnome-minor' entity.
  - [fernando] - Update to totem-3.12.0. Fixes **#4862**.
  - [fernando] - Update to gnome-system-monitor-3.12.0. Partially fixes **#4862**.
- April 3rd, 2014
  - [fernando] - Update to gnome-terminal-3.12.0. Partially fixes **#4862**.
  - [fernando] - Update to nautilus-3.12.0. Partially fixes **#4862**.
  - [fernando] - Update to gnome-screenshot-3.12.0. Partially fixes **#4862**.
  - [fernando] - Update to gnome-calculator-3.12.0. Partially fixes **#4862**.
  - [fernando] - Update to file-roller-3.12.0. Partially fixes **#4862**.
  - [fernando] - Update to evince-3.12.0. Partially fixes **#4862**.

- [fernando] - Update to epiphany-3.12.0. Partially fixes **#4862**.
- [fernando] - Update to cheese-3.12.0. Partially fixes **#4862**.
- [fernando] - Update to baobab-3.12.0. Partially fixes **#4862**.
- [fernando] - Archive gnome-power-manager-3.10.1. Fixes **#4888**.
- [fernando] - Add new package appdata-tools-0.1.7. Fixes **#4887**.

- April 2nd, 2014
  - [fernando] - Update to Gucharmap-3.12.0. Partially fixes **#4862**.
  - [fernando] - Update to gnome-icon-theme-extras-3.12.0. Partially fixes **#4862**.
  - [fernando] - Update to gnome-themes-standard-3.12.0. Partially fixes **#4862**.
  - [fernando] - Update to gnome-icon-theme-symbolic-3.12.0. Partially fixes **#4862**.
  - [fernando] - Update to vte-0.36.0. Fixes **#4865**.
  - [fernando] - Update to dconf-0.20.0. Fixes **#4864**.
  - [fernando] - GLibmm-2.38.1 depends on GnuTLS. Thanks sor__. Fixes **#4885**.

- March 31st, 2014
  - [fernando] - Update to eog-3.12.0. Partially fixes **#4862**.
  - [fernando] - Update to gnome-desktop-3.12.0. Partially fixes **#4862**.
  - [fernando] - Update to gnome-icon-theme-3.12.0. Partially fixes **#4862**.
  - [fernando] - Update to libpeas-1.10.0. Fixes **#4882**.
  - [fernando] - Update to gjs-1.40.0. Fixes **#4879**.
  - [fernando] - Python-2.7.6 fails to build readline module with Readline version 6.3. Thanks Igor Å½ivkoviÄ‡. Fixes **#4880**.
  - [fernando] - Fix Poppler-0.24.5 to build both, qt4 and 5 libraries. Fixes **#4880**.
  - [fernando] - Add new package Mozilla JS-24.2.0. Fixes **#4500**.

- March 30th, 2014
  - [fernando] - Update to libva-intel-driver-1.3.0. Fixes **#4857**.
  - [fernando] - Update to libva-1.3.0. Fixes **#4856**.
  - [fernando] - Update to ghostscript-9.14. Thanks Armin K. for fixing to build with system zlib. Fixes **#4867**.
  - [fernando] - Add patch to BlueZ-5.17. Thanks Armin K. Fixes to work properly with gnome-bluetooth and_or kde bluedevil. Fixes **#3759**.

- March 29th, 2014
  - [fernando] - Update to BlueZ-5.17. Patch from Armin K, thanks. Fixes **#3759**.
  - [pierre] - Make the Java Binary page versioned, and closer to the layout of other pages.
  - [pierre] - Use the fastCGI process manager for PHP. Fixes **#4844**.
  - [fernando] - LibreOffice-4.2.2 additional dependencies. Thanks Wayne B. Fixes **#4877**.

- March 28th, 2014
  - [fernando] - Update to gedit-3.12.0. Partially fixes **#4862**.
  - [fernando] - Update to vala-0.24.0. Fixes **#4875**.
  - [fernando] - Update to gtksourceview-3.12.0. Partially fixes **#4862**.
  - [fernando] - Update to yelp-xsl-3.12.0. Partially fixes **#4862**.
  - [fernando] - Update to gtk+-3.12.0. Fixes **#4861**.
  - [fernando] - Update to gdk-pixbuf-2.30.7. Fixes **#4869**.
  - [fernando] - Update to json-glib-1.0.0. Fixes **#4872**.
  - [fernando] - Update to at-spi2-atk-2.12.0. Fixes **#4860**.
  - [fernando] - Update to at-spi2-core-2.12.0. Fixes **#4859**.
  - [fernando] - Update to atk-2.12.0. Fixes **#4858**.
  - [fernando] - Archive PyAtSpi2-2.10.0. Fixes **#4853**.
  - [fernando] - Update to pygobject-3.12.0. Fixes **#4852**.

- March 27th, 2014
  - [fernando] - Update to totem-pl-parser-3.10.2. Fixes **#4863**.
  - [fernando] - Update to libsoup-2.46.0. Fixes **#4855**.
  - [fernando] - Update to glib-networking-2.40.0. Fixes **#4854**.
  - [fernando] - Update to gsettings-desktop-schemas-3.12.0. Partially fixes **#4862**.
  - [fernando] - Update to gobject-introspection-1.40.0. Fixes **#4871**.
  - [fernando] - Fix pycairo-1.10.0 to build with python-3.4. Thanks to Wayne B. Fixes **#4868**.
  - [fernando] - Update to curl-7.36.0. Fixes **#4874**.

- [fernando] - Update to cups-filters-1.0.49. Fixes **#4866**.

- March 25th, 2014
  - [fernando] - Update to yelp-3.12.0. Partially fixes **#4862**.
  - [fernando] - Update to WebKitGTK+-2.4.0. Fixes **#4849**.
  - [fernando] - Update to glib-2.40.0. Fixes **#4850**.
  - [fernando] - Update to fontconfig-2.11.1. Fixes **#4851**.
  - [fernando] - Update to ffmpeg-2.2. Fixes **#4848**.

- March 24th, 2014
  - [fernando] - Update to seahorse-3.12.0. Fixes **#4847**.
  - [fernando] - Update to gnome-keyring-3.12.0. Fixes **#4846**.
  - [fernando] - Update to gcr-3.12.0. Fixes **#4845**.
  - [fernando] - Update to unbound-1.4.22. Fixes **#4794**.

- March 23nd, 2014
  - [fernando] - Update to gvfs-1.20.0. Fixes **#4843**.

- March 22nd, 2014
  - [fernando] - Update to clutter-1.18.0. Fixes **#4826**.
  - [fernando] - Update to cogl-1.18.0. Fixes **#4842**.
  - [fernando] - Update to guile-2.0.11. Fixes **#4841**.
  - [pierre] - Update to SWIG-3.0.0. Fixes **#4813**.

- March 21st, 2014
  - [pierre] - Fix some Icedtea-Openjdk dependencies, addressing **#4839**. Thanks to Fernando.

- March 20th, 2014
  - [fernando] - Update to seamonkey-2.25. Fixes **#4833**.
  - [fernando] - Update to grilo-plugins-0.2.12. Fixes **#4838**.
  - [fernando] - Update to grilo-0.2.10. Fixes **#4837**.
  - [fernando] - Update to libgsf-1.14.30. Fixes **#4835**.
  - [fernando] - Update to sudo-1.8.10p2. Fixes **#4834**.
  - [fernando] - Fix icedtea dependencies. Fixes **#4839**.
  - [fernando] - Update to webkitgtk-2.2.6. Fixes **#4829**.

- March 19th, 2014
  - [fernando] - Parted 3.1 fails to build with Readline 6.3. Thanks Armin K. Fixes **#4832**.
  - [fernando] - Update to gnumeric-1.12.13. Fixes **#4821**.
  - [fernando] - Update to goffice-0.10.13. Fixes **#4823**.
  - [fernando] - Update to guile-2.0.10. Fixes **#4825**.
  - [fernando] - Update to gtk+-2.24.23. Fixes **#4827**.
  - [fernando] - Update to librsvg-2.40.2. Fixes **#4831**.
  - [fernando] - Update to pango-1.36.3. Fixes **#4828**.
  - [fernando] - Update to harfbuzz-0.9.27. Fixes **#4830**.
  - [fernando] - Update to unrar-5.1.1. Fixes **#4824**.
  - [fernando] - Update to Git-1.9.1. Fixes **#4820**.
  - [ken] - minor re-ordering of firefox and xulrunner mozconfigs to put the new pulse option above the 'recommended not to touch anything below this' line.

- March 18th, 2014
  - [fernando] - Update to thunderbird-24.4.0. Fixes **#4819**.
  - [fernando] - Update to xulrunner-28.0/firefox-28.0 and firefox-28.0-standalone. Fixes **#4818**.

- March 17th, 2014
  - [fernando] - Several small fixes to Apr-Util-1.5.3, UPower-0.9.23 and Avahi-0.6.3 (thanks Armin K. for discussions).
  - [fernando] - Update to x264-20140316-2245. Fixes **#4732**.
  - [fernando] - Update to libFS-1.0.6. Fixes **#4817**.
  - [fernando] - Update to lcms2-2.6. Fixes **#4816**.
  - [fernando] - Update to Python-3.4.0. Fixes **#4815**. Thanks Armin K. for discussions.
  - [fernando] - Update to httpd-2.4.9. Fixes **#4814**.

- March 16th, 2014

- ○ [fernando] - Update to libatomic_ops-7.4.0. Fixes **#4812**.
- ○ [fernando] - Ruby-2.1.1 fails to build with Readline-6.3. Thanks Armin K. Fixes **#4810**.
- ○ [fernando] - Update to ssh-askpass-6.6p1. Fixes **#4809**.
- ○ [fernando] - Update to openssh-6.6p1. Fixes **#4807**.
- ○ [fernando] - Update to sudo-1.8.10p1. Fixes **#4806**.
- ○ [bdubbs] - Add haveged. Fixes **#4682**.
- ○ [pierre] - Add Pax-070715. Fixes **#4736**.
- ○ [fernando] - Update to MariaDB-10.0.9. Fixes **#4779**.
- ○ [fernando] - PCRE-8.34: build and security fixes for MariaDB-10.0.9. Thanks Bruce Dubbs.

- • March 15th, 2014
  - ○ [ken] - mutt-1.5.23. Fixes **#4795**.
  - ○ [bdubbs] - Added valgrind-3.9.0. Fixes **#4724**.
  - ○ [fernando] - Ristretto-0.6.3, Thunar-1.6.3 and xfce4-power-manager-1.2.0: include some dependencies.
  - ○ [fernando] - Update to xf86-input-synaptics-1.7.4. Fixes **#4802**.
  - ○ [fernando] - Update to PulseAudio 5.0. Fixes **#4667**.
  - ○ [fernando] - Update to tumbler-0.1.30. Fixes **#4786**.
  - ○ [fernando] - Update to garcon-0.3.0. Fixes **#4785**.
  - ○ [fernando] - Update to dhcpcd-6.3.2. Fixes **#4805**.

- • March 14th, 2014
  - ○ [fernando] - Update to mtdev-1.1.5. Fixes **#4774**.
  - ○ [fernando] - Update to udisks-1.0.5. Fixes **#4775**.
  - ○ [fernando] - Update to PHP 5.5.10. Fixes **#4757**.
  - ○ [fernando] - Update to xcb-util-wm-0.4.1. Fixes **#4728**.
  - ○ [fernando] - Update to scons-2.3.1. Fixes **#4777**.
  - ○ [fernando] - Update to libreoffice-4.2.2.1. Fixes **#4804**. Fix typo, thanks stoat, **#4796**.

- • March 13th, 2014
  - ○ [fernando] - Update to xfburn-0.5.0. Fixes **#4726**.
  - ○ [fernando] - Update to nss-3.15.5. Fixes **#4799**.
  - ○ [fernando] - Update to nspr-4.10.4. Fixes **#4800**.
  - ○ [fernando] - Update to sqlite-3.8.4.1. Fixes **#4798**.
  - ○ [fernando] - Update to libpng-1.6.10. Fixes **#4797**.

- • March 12th, 2014
  - ○ [fernando] - Archive LXShortcut-0.1.2. Fixes **#4793**.
  - ○ [fernando] - Update to Samba 4.1.6. Fixes **#4792**.
  - ○ [fernando] - Update to pcmanfm-1.2.0. Fixes **#4705**.
  - ○ [fernando] - Update to libfm-1.2.0. Fixes **#4704**.
  - ○ [fernando] - Update to cups-filters-1.0.48. Fixes **#4791**.
  - ○ [fernando] - Update to mpg123-1.19.0. Fixes **#4789**.
  - ○ [fernando] - Update to gnome-video-effects-0.4.1. Fixes **#4784**.
  - ○ [fernando] - Update to libsecret-0.18. Fixes **#4783**.

- • March 11th, 2014
  - ○ [pierre] - Add the time utility, as required by the LSB. Partially fulfills **#4736**.
  - ○ [fernando] - Update to udisks-2.1.3. Fixes **#4776**.
  - ○ [fernando] - Update to gmime-2.6.20. Fixes **#4773**.
  - ○ [fernando] - Update to ed-1.10. Fixes **#4772**.
  - ○ [fernando] - Update to sudo-1.8.10. Fixes **#4771**.
  - ○ [fernando] - Update to sqlite-3.8.4. Fixes **#4768**.

- • March 10th, 2014
  - ○ [fernando] - Update to samba-4.1.5. Fixes **#4730**.
  - ○ [fernando] - Update to MesaLib-10.1.0. Fixes **#4753**.
  - ○ [fernando] - Update to Python-3.3.5. Fixes **#4766**.
  - ○ [fernando] - Update to Lynx 2.8.8rel.2. Fixes **#4765**.
  - ○ [bdubbs] - Update to gptfdisk-10.8.10. Fixes **#4716**.
  - ○ [fernando] - Update to libreoffice-4.2.1. Fixes **#4717**.
  - ○ [bdubbs] - Changed the location of Certificate Authority Certificates to an automated location on a LFS/BLFS

server. Fixes **#4758**.

- March 9th, 2014
  - [fernando] - Update to libisoburn-1.3.6. Fixes **#4756**.
  - [fernando] - Update to libburn-1.3.6. Fixes **#4755**.
  - [fernando] - Update to libisofs-1.3.6. Fixes **#4754**.
  - [fernando] - Update to Berkeley DB 6.0.30. Fixes **#4763**.
  - [fernando] - Update to mercurial-2.9.1. Fixes **#4762**.
  - [rthomsen] - Update to NTFS-3g 2014.2.15. Fixes **#4747**.
  - [fernando] - Update to WebKitGTK+ 2.2.5. Fixes **#4703**.

- March 8th, 2014
  - [fernando] - Update to dhcpcd-6.3.1. Fixes **#4741**.
  - [fernando] - Update to keyutils-1.5.9. Fixes **#4746**.
  - [fernando] - Update to libass-0.11.1. Fixes **#4712**.
  - [fernando] - Update to rasqal-0.9.32. Fixes **#4742**.
  - [fernando] - Update to xterm-303. Fixes **#4752**.
  - [fernando] - Update to freetype-2.5.3. Fixes **#4759**.
  - [fernando] - Update to ffmpeg-2.1.4. Fixes **#4738**.
  - [fernando] - Update to grilo-plugins-0.2.11. Fixes **#4701**.
  - [fernando] - Update to grilo-0.2.9. Fixes **#4700**.
  - [fernando] - Update to totem-pl-parser-3.10.1. Fixes **#4702**.

- March 7th, 2014
  - [fernando] - Update to wireshark-1.10.6. Fixes **#4761**.
  - [fernando] - Update to nasm-2.11.02. Fixes **#4715**.
  - [fernando] - Update to Subversion 1.8.8. Fixes **#4729**.
  - [fernando] - Update to ruby-2.1.1. Fixes **#4739**.
  - [fernando] - Update to vlc-2.1.4. Fixes **#4734**.
  - [fernando] - Update to mpg123-1.18.1. Fixes **#4709**.
  - [fernando] - Update to hicolor-icon-theme-0.13. Fixes **#4707**.
  - [fernando] - Update to gparted-0.18.0. Fixes **#4713**.
  - [fernando] - Update to cups-filters-1.0.46. Fixes **#4735**.
  - [fernando] - Update to yelp-3.10.2. Fixes **#4750**.
  - [ken] - Reinstate CFLAGS in cyrus-sasl so that it will build on x86_64.

- March 6th, 2014
  - [pierre] - Add a sed to LVM2, to allow building with the new version of readline (6.3).
  - [fernando] - Update to gnumeric-1.12.12. Fixes **#4696**.
  - [fernando] - Update to goffice-0.10.12. Fixes **#4706**.
  - [fernando] - Update to gdk-pixbuf-2.30.6. Fixes **#4698**.
  - [fernando] - Update to gtk-doc-1.20. Fixes **#4695**.

- March 5th, 2014
  - [ken] - gnutls-3.2.12.1. Fixes **#4748**.
  - [bdubbs] - Release of BLFS-7.5.

Last updated on 2014-09-22 16:47:23 -0700

Mailing Lists

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

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

Last updated on 2007-04-04 12:42:53 -0700

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 AT linuxfromscratch D0T org**.

- Discussions of build instructions should be made by subscribing and mailing to the BLFS Development List at **mailto:blfs-dev AT linuxfromscratch D0T org**.

- Inappropriate material will be removed.

Last updated on 2007-04-04 12:42:53 -0700

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 7.6),

- 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/smart-questions.html**. Read and follow the hints in that document and you are much more likely to get a response to start with and also to get the help you actually need.

Last updated on 2009-09-24 22:43:37 -0700

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.

Current Editors

- Fernando de Oliveira
- Bruce Dubbs
- Ken Moffat
- Ragnar Thomsen
- Igor Živković

Contributors and Past Editors

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
- Jeff Bauman
- Andy Benton
- Wayne Blaszczyk
- Paul Campbell
- Nathan Coulson
- Jeroen Coumans
- Guy Dalziel
- Robert Daniels
- Richard Downing
- Manuel Canales Esparcia
- Jim Gifford
- Manfred Glombowski
- Ag Hatzimanikas
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- Olivier Peres
- Andreas Pedersen
- Henning Rohde
- Matt Rogers
- James Robertson
- Henning Rohde

- Chris Staub

- Jesse Tie-Ten-Quee

- Thomas Trepl

- Tushar Teredesai

- Jeremy Utley

- Zack Winkles

- Christian Wurst

General Acknowledgments

- Fernando Arbeiza

- Miguel Bazdresch

- Gerard Beekmans

- Oliver Brakmann

- Jeremy Byron

- Ian Chilton

- David Ciecierski

- Jim Harris

- Lee Harris

- Marc Heerdink

- Steffen Knollmann

- Eric Konopka

- Scot McPherson

- Ted Riley

Last updated on 2014-08-16 10:01:22 -0700

Contact Information

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

Last updated on 2012-02-05 21:15:51 -0800

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 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. The instructions in the book assume these packages are installed. Some changes or workarounds may be required if these packages are not installed.

- *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.

Stripping One More Time

In LFS, stripping of debugging symbols was discussed a couple of times. When building BLFS packages, there are generally no special instructions that discuss stripping again. It is probably not a good idea to strip an executable or a library while it is in use, so exiting any windowing environment is a good idea. Then you can do:

```
find /{,usr/}{bin,lib,sbin} -type f -exec strip --strip-unneeded {} \;
```

If you install programs in other directories such as /opt or /usr/local, you may want to strip the files there too.

For more information on stripping, see **http://www.technovelty.org/linux/stripping-shared-libraries.html**.

Libtool files

One of the side effects of packages that use Autotools, including libtool, is that they create many files with an .la extension. These files are not needed in an LFS environment. If there are conflicts with pkgconfig entries, they can actually prevent successful builds. You may want to consider removing these files periodically:

```
find /lib /usr/lib -not -path "*Image*" -a -name \*.la -delete
```

The above command removes all .la files with the exception of those that have "Image" as a part of the path. These .la files are used by the ImageMagick programs. There may be other exceptions by packages not in BLFS.

Last updated on 2014-08-24 10:00:46 -0700

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.

Last updated on 2007-04-04 12:42:53 -0700

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.

Last updated on 2007-04-04 12:42:53 -0700

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/7.6/chapter07/bootscripts.html** for more information on the LFS-Bootscripts package.

Package Information

- Download: **http://www.linuxfromscratch.org/blfs/downloads/7.6/blfs-bootscripts-20140919.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.

Last updated on 2007-04-04 12:42:53 -0700

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`, `libsupc++.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-32.0.1 and ghostscript-9.14 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-1.6.13 if used for Firefox-32.0.1). 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.

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/libraries

Last updated on 2013-02-11 10:51:17 -0800

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-2.8. 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-2.3.6 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-2.3.6, JOE-3.7, and all media players except Audacious-3.5.1.

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-2.40.0 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-6.6p1). 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-0.99.9 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.

Last updated on 2013-02-11 10:51:17 -0800

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**. 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 `LDFLAGS` 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** can also lead to a link to the package.

- If you know the name of the executable, but not the package that the executable belongs to, first try a Google search with the name of the executable. If the results are overwhelming, try searching for the given executable in the Debian repository at **http://www.debian.org/distrib/packages#search_contents**.

Some general hints on handling new packages:

- Many of the newer packages follow the `./configure && make && make install` process. Help on the options accepted by configure can be obtained via the command `./configure --help`.

- Most of the packages contain documentation on compiling and installing the package. Some of the documents are excellent, some not so excellent. Check out the homepage of the package for any additional and updated hints for compiling and configuring the package.

- If you are having a problem compiling the package, try searching the LFS archives at **http://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 `dfsg` 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, 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 not, use the search box. If the site is 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`.

- openSUSE **http://download.opensuse.org/factory/repo/src-oss/suse/src/** - source only seems to be available in source rpms.

- 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.

Last updated on 2013-08-26 08:43:33 -0700

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, Autofs-5.1.0, 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.

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/CreatingaCustomBootDevice

Last updated on 2014-01-19 04:43:46 -0800

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>
```

Last updated on 2007-10-16 06:49:09 –0700

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

Name	uid	gid
bin	1	
lp	9	
adm		16
atd	17	17
messagebus	18	18
lpadmin		19
named	20	20
gdm	21	21
fcron	22	22
systemd-journal		23
apache	25	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
dovecot	42	42
dovenull	43	43
ftp	45	45
proftpd	46	46

vsftpd	47	47
rsyncd	48	48
sshd	50	50
stunnel	51	51
svn	56	56
svntest		57
games	60	60
kvm		61
wireshark		62
lightdm	63	63
scanner		70
colord	71	71
systemd-bus-proxy	72	72
systemd-journal-gateway	73	73
systemd-journal-remote	74	74
systemd-journal-upload	75	75
systemd-network	76	76
systemd-resolve	77	77
systemd-timesync	78	78
ldap	83	83
avahi	84	84
avahi-autoipd	85	85
netdev		86
ntp	87	87
unbound	88	88
plugdev		90
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.

Last updated on 2014-09-22 15:13:35 -0700

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.

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/aboutdevices

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 usbfs filesystem:

```
usbfs  /proc/bus/usb  usbfs  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-1.0.24.

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.)

Last updated on 2012-03-13 11:19:34 -0700

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.arg>

# System wide environment variables and startup programs.

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

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

```
}

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

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

export -f pathremove pathprepend pathappend

# 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"

# Set some defaults for graphical systems
export XDG_DATA_DIRS=/usr/share/
export XDG_CONFIG_DIRS=/etc/xdg/

# 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

unset script RED GREEN NORMAL

# 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 and /bin/grep 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'
alias grep='grep --color=auto'
EOF
```

/etc/profile.d/extrapaths.sh

This script adds some useful paths to the PATH and can be used to customize other PATH related environment variables (e.g. LD_LIBRARY_PATH, etc) that may be needed for all users.

```
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
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 colored /bin/ls and /bin/grep commands.  Used in conjunction
```

```
# with code in /etc/profile.

alias ls='ls --color=auto'
alias grep='grep --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

unset RED GREEN NORMAL

# 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.

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

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

# Having . in the PATH is dangerous
#if [ $EUID -gt 99 ]; then
#  pathappend .
#fi

# 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**.

Last updated on 2014-09-16 10:29:57 -0700

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.

Last updated on 2007-10-16 06:02:24 -0700

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.
```

Last updated on 2007-04-04 12:42:53 -0700

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
```

Last updated on 2007-04-04 12:42:53 -0700

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-20140919 package.

```
make install-random
```

Last updated on 2007-04-04 12:42:53 -0700

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-7.6 platform.

Package Information

- Download (HTTP): **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

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/lsb_release

Installation of lsb_release

First fix a minor display problem:

```
sed -i "s|n/a|unavailable|" 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
```

Configuration Information

The configuration for this package was done in **LFS**. The file `/etc/lsb-release` should already exist. Be sure that the DISTRIB_CODENAME entry has been set properly.

Contents

Installed Programs: lsb_release
Installed Library: None
Installed Directories: None

Short Descriptions

`lsb_release`   is a script to give LSB data.

Last updated on 2014-09-08 23:39:08 -0700

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**. 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**. Finally, 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.

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/vulnerabilities

Last updated on 2013-12-30 02:12:57 -0800

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-1.0.1i. The certificates can also be used by other applications either directly of indirectly through openssl.

This package is known to build and work properly using an LFS-7.6 platform.

Introduction to Certificate Authorities

Package Information

- CA Certificate Download: **http://anduin.linuxfromscratch.org/sources/other/certdata.txt**
- CA Bundle size: 1.2 MB
- Estimated disk space required: 1.2 MB
- Estimated build time: less than 0.1 SBU

Note

The certfile.txt file above is actually retrieved from **https://hg.mozilla.org/releases/mozilla-release/file/default/security/nss/lib/ckfw/builtins/certdata.txt**. It is really an HTML file, but the text file can be retrieved indirectly from the HTML file. The Download URL above automates that process and also adds a line where the date can be extracted as a revision number by the scripts below.

Certificate Authority Certificates Dependencies

Required

OpenSSL-1.0.1i

Recommended

Wget-1.15

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/cacerts

Installation of Certificate Authority Certificates

First create a script to reformat a certificate into a form needed by openssl. As the *root* user:

```
cat > /usr/bin/make-cert.pl << "EOF"
#!/usr/bin/perl -w

# Used to generate PEM encoded files from Mozilla certdata.txt.
# Run as ./make-cert.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 /usr/bin/make-cert.pl
```

The following script creates the certificates and a bundle of all the certificates. It creates a ./certs directory and ./BLFS-ca-bundle-${VERSION}.crt. Again create this script as the *root* user:

```
cat > /usr/bin/make-ca.sh << "EOF"
#!/bin/sh
# Begin make-ca.sh
# Script to populate OpenSSL's CApath from a bundle of PEM formatted CAs
#
# The file certdata.txt must exist in the local directory
# Version number is obtained from the version of the data.
#
# Authors: DJ Lucas
#          Bruce Dubbs
#
# Version 20120211

certdata="certdata.txt"

if [ ! -r $certdata ]; then
  echo "$certdata must be in the local directory"
  exit 1
fi

REVISION=$(grep CVS_ID $certdata | cut -f4 -d'$')

if [ -z "${REVISION}" ]; then
  echo "$certfile has no 'Revision' in CVS_ID"
  exit 1
fi

VERSION=$(echo $REVISION | cut -f2 -d" ")

TEMPDIR=$(mktemp -d)
TRUSTATTRIBUTES="CKA_TRUST_SERVER_AUTH"
BUNDLE="BLFS-ca-bundle-${VERSION}.crt"
CONVERTSCRIPT="/usr/bin/make-cert.pl"
SSLDIR="/etc/ssl"

mkdir "${TEMPDIR}/certs"

# Get a list of starting lines for each cert
CERTBEGINLIST=$(grep -n "^# Certificate" "${certdata}" | cut -d ":" -f1)

# Get a list of ending lines for each cert
CERTENDLIST=`grep -n "^CKA_TRUST_STEP_UP_APPROVED" "${certdata}" | cut -d ":" -f 1`

# Start a loop
for certbegin in ${CERTBEGINLIST}; do
  for certend in ${CERTENDLIST}; do
    if test "${certend}" -gt "${certbegin}"; then
      break
    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}.tmp"
done

unset CERTBEGINLIST CERTDATA CERTENDLIST certbegin certend

mkdir -p certs
rm -f 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 /usr/bin/make-ca.sh
```

Add a short script to remove expired certificates from a directory. Again create this script as the *root* user:

```
cat > /usr/bin/remove-expired-certs.sh << "EOF"
#!/bin/sh
# Begin /usr/bin/remove-expired-certs.sh
#
# Version 20120211

# Make sure the date is parsed correctly on all systems
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 /usr/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.

```
URL=http://anduin.linuxfromscratch.org/sources/other/certdata.txt &&
rm -f certdata.txt &&
wget $URL            &&
make-ca.sh           &&
remove-expired-certs.sh certs &&
unset URL
```

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  &&
ln -sfv ../ca-bundle.crt ${SSLDIR}/certs/ca-certificates.crt &&
unset SSLDIR
```

Finally, clean up the current directory:

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

After installing or updating certificates, if OpenJDK is installed, update the certificates for Java using the procedures at the section called "Install or update the JRE Certificate Authority Certificates (cacerts) file".

Contents

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

Short Descriptions

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

Last updated on 2014-09-11 23:27:59 -0700

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-7.6 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

dbus-glib-0.102 and Xorg Libraries

Recommended

[Linux-PAM-1.1.8](#) and [Polkit-0.112](#)

> ### 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

[xmlto-0.0.26](#)

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/consolekit

Installation of ConsoleKit

Install ConsoleKit by running the following commands:

```
./configure --prefix=/usr        \
            --sysconfdir=/etc    \
            --localstatedir=/var \
            --enable-udev-acl    \
            --enable-pam-module  \
            --with-systemdsystemunitdir=no &&
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 xmlto is installed and you wish to build the API documentation.

`--with-systemdsystemunitdir=no`: Disable attempting to build with systemd libraries.

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

Installed Programs: ck-history, ck-launch-session, ck-list-sessions, ck-log-system-restart, ck-log-system-start, ck-log-system-stop and console-kit-daemon

Installed Libraries: libck-connector.so and pam_ck_connector.so

Installed Directories: /etc/ConsoleKit, /usr/include/ConsoleKit, /usr/lib/ConsoleKit, /usr/share/doc/ConsoleKit and /var/log/ConsoleKit

Short Descriptions

ck-list-sessions   list sessions with respective properties. Also good for debugging purposes.

Last updated on 2014-09-14 14:01:57 -0700

CrackLib-2.9.1

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-7.6 platform.

Package Information

- Download (HTTP): **http://downloads.sourceforge.net/cracklib/cracklib-2.9.1.tar.gz**
- Download MD5 sum: 90536219c520add2ceb3c26f0d7da404
- Download size: 624 KB
- Estimated disk space required: 24 MB
- Estimated build time: 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

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.* /lib &&
ln -sfv ../../lib/$(readlink /usr/lib/libcrack.so) /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 -sf 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-4.2.1 if you wish to provide strong password support on your system. If you are now going to install the Linux-PAM-1.1.8 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

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

Installed Libraries: libcrack.so and the _cracklibmodule.so Python module

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

Short Descriptions

`cracklib-check`	is used to determine if a password is strong.
`create-cracklib-dict`	is used to create the CrackLib dictionary from the given word list(s).
`libcrack.so`	provides a fast dictionary lookup method for strong password enforcement.

Last updated on 2014-09-10 06:19:10 -0700

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-7.6 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/7.6/cyrus-sasl-2.1.26-fixes-3.patch**

Cyrus SASL Dependencies

Required

OpenSSL-1.0.1i

Recommended

Berkeley DB-6.1.19

Optional

Linux-PAM-1.1.8, MIT Kerberos V5-1.12.2, MariaDB-10.0.13 or **MySQL**, OpenJDK-1.7.0.65/IcedTea-2.5.2, OpenLDAP-2.4.39, PostgreSQL-9.3.5, SQLite-3.8.6, **krb4** and **Dmalloc**

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/cyrus-sasl

Installation of Cyrus SASL

Install Cyrus SASL by running the following commands:

```
patch -Np1 -i ../cyrus-sasl-2.1.26-fixes-3.patch &&
autoreconf -fi &&
./configure --prefix=/usr         \
            --sysconfdir=/etc      \
            --enable-auth-sasldb \
            --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.

--enable-auth-sasldb: This switch enables SASLDB authentication backend.

--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** 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-20140919 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.

Last updated on 2014-09-17 11:48:47 -0700

GnuPG-2.0.26

Introduction to GnuPG

The GnuPG 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.

This package is known to build and work properly using an LFS-7.6 platform.

Package Information

- Download (FTP): **ftp://ftp.gnupg.org/gcrypt/gnupg/gnupg-2.0.26.tar.bz2**
- Download MD5 sum: fa7e704aad33eb114d1840164455aec1
- Download size: 4.2 MB
- Estimated disk space required: 68 MB
- Estimated build time: 0.6 SBU (additional 0.5 SBU for the tests)

GnuPG 2 Dependencies

Required

Pth-2.0.7, Libassuan-2.1.2, libgcrypt-1.6.2, and Libksba-1.3.0

Recommended

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

Optional

OpenLDAP-2.4.39, libusb-compat-0.1.5, cURL-7.37.1, **GNU adns**, and an MTA

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/gnupg2

Installation of GnuPG

Install GnuPG by running the following commands:

```
./configure --prefix=/usr \
            --enable-symcryptrun \
            --docdir=/usr/share/doc/gnupg-2.0.26 &&
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-20140525 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-2.0.26/html       &&
install -v -m644    doc/gnupg_nochunks.html \
                    /usr/share/doc/gnupg-2.0.26/gnupg.html &&
install -v -m644    doc/*.texi doc/gnupg.txt \
                    /usr/share/doc/gnupg-2.0.26
```

We recommend the creation of symlinks for compatibility with the first version of GnuPG, because some programs or scripts need them. Issue, as *root* user:

```
for f in gpg gpgv
do
  ln -svf ${f}2.1 /usr/share/man/man1/$f.1 &&
  ln -svf ${f}2   /usr/bin/$f
done
unset f
```

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-2.0.26/html &&
install -v -m644 doc/gnupg.{pdf,dvi,ps} \
                /usr/share/doc/gnupg-2.0.26
```

Command Explanations

--docdir=/usr/share/doc/gnupg-2.0.26: This switch changes the default docdir to `/usr/share/doc/gnupg-2.0.26`.

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

Contents

Installed Programs: addgnupghome, applygnupgdefaults, gnupg-pcsc-wrapper, gpg, gpg-agent, gpg-check-pattern, gpg-connect-agent, gpg-preset-passphrase, gpg-protect-tool, gpg2, gpg2keys_curl, gpg2keys_finger, gpg2keys_hkp, gpg2keys_ldap, gpgconf, gpgkey2ssh, gpgparsemail, gpgsm, gpgsm-gencert.sh, gpgv, gpgv2, kbxutil, scdaemon, symcryptrun, and watchgnupg

Installed Libraries: None

Installed Directories: /usr/share/doc/gnupg-2.0.26 and /usr/share/gnupg

Short Descriptions

`addgnupghome`	is used to create and populate user's `~/.gnupg` directories
`applygnupgdefaults`	is a wrapper script used to run `gpgconf` with the `--apply-defaults` parameter on all user's GnuPG home directories.
`gpg-agent`	is a daemon used to manage secret (private) keys independently from any protocol. It is used as a backend for `gpg2` and `gpgsm` as well as for a couple of other utilities.
`gpg-connect-agent`	is a utility used to communicate with a running `gpg-agent`.
`gpg`	(optional) is a symlink to `gpg2` for compatibility with the first version of GnuPG.
`gpg2`	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.
`gpgconf`	is a utility used to automatically and reasonable safely query and modify configuration files in the `~/.gnupg` home directory. It is designed not to be invoked manually by the user, but automatically by graphical user interfaces.
`gpgparsemail`	is a utility currently only useful for debugging. Run it with `--help` for usage information.
`gpgsm`	is a tool similar to `gpg2` 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.
`gpgsm-gencert.sh`	is a simple tool used to interactively generate a certificate request which will be printed to stdout.
`gpgv`	(optional) is a symlink to `gpgv2` for compatibility with the first version of GnuPG.
`gpgv2`	is a verify only version of `gpg2`.
`kbxutil`	is used to list, export and import Keybox data.
`scdaemon`	is a daemon used to manage smartcards. It is usually invoked by `gpg-agent` and in general not used directly.
`symcryptrun`	is a simple symmetric encryption tool.
`watchgnupg`	is used to listen to a Unix Domain socket created by any of the GnuPG tools.

Last updated on 2014-09-17 11:48:47 -0700

GnuTLS-3.3.7

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-7.6 platform.

Package Information

- Download (FTP): **ftp://ftp.gnutls.org/gcrypt/gnutls/v3.3/gnutls-3.3.7.tar.xz**
- Download MD5 sum: a7a73cfa883cd106d70b15300552a5b5
- Download size: 5.8 MB
- Estimated disk space required: 104 MB (additional 8 MB for the tests)
- Estimated build time: 0.9 SBU (additional 1.8 SBU for the tests)

GnuTLS Dependencies

Required

Nettle-2.7.1

Recommended

Certificate Authority Certificates and libtasn1-4.1

Optional

GTK-Doc-1.20, Guile-2.0.11, libidn-1.29, p11-kit-0.20.6, Unbound-1.4.22 (to build the DANE library), Valgrind-3.10.0 (used during the test suite), **autogen**, and **Trousers** (Trusted Platform Module support)

> **Note**
>
> Note that if you do not install libtasn1-4.1, an older version shipped in the GnuTLS tarball will be used instead.

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/gnutls

Installation of GnuTLS

First fix a bug in one of the libraries:

```
sed -i -e '201 i#ifdef ENABLE_PKCS11' \
       -e '213 i#endif'               \
       lib/gnutls_privkey.c
```

Install GnuTLS by running the following commands:

```
./configure --prefix=/usr \
            --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, you can 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.

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

Contents

Installed Programs:	certtool, crywrap, danetool, gnutls-cli, gnutls-cli-debug, gnutls-serv, ocsptool, p11tool, psktool, and srptool
Installed Libraries:	libgnutls.so, libgnutls-dane.so, libgnutls-openssl.so, libgnutlsxx.so, and /usr/lib/guile/2.0/guile-gnutls-v-2.so
Installed Directories:	/usr/include/gnutls, /usr/share/gtk-doc/html/gnutls, and /usr/share/guile/site/gnutls

Short Descriptions

`certtool`	is used to generate X.509 certificates, certificate requests, and private keys.
`crywrap`	is a simple wrapper that waits for TLS/SSL connections, and proxies them to an unencrypted location. Only installed if libidn-1.29 is present.
`danetool`	is a tool used to generate and check DNS resource records for the DANE protocol.
`gnutls-cli`	is a simple client program to set up a TLS connection to some other computer.
`gnutls-cli-debug`	is a simple client program to set up a TLS connection to some other computer and produces very verbose progress results.
`gnutls-serv`	is a simple server program that listens to incoming TLS connections.
`ocsptool`	is a program that can parse and print information about OCSP requests/responses, generate requests and verify responses.
`p11tool`	is a program that allows handling data from PKCS #11 smart cards and security modules.
`psktool`	is a simple program that generates random keys for use with TLS-PSK.
`srptool`	is a simple program that emulates the programs in the Stanford SRP (Secure Remote Password) libraries using GnuTLS.
`libgnutls.so`	contains the core API functions and X.509 certificate API functions.

Last updated on 2014-09-10 06:19:10 -0700

GPGME-1.5.1

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-7.6 platform.

Package Information

- Download (FTP): **ftp://ftp.gnupg.org/gcrypt/gpgme/gpgme-1.5.1.tar.bz2**
- Download MD5 sum: 8fb46b336200807a12a12a5760b4a39d
- Download size: 944 KB
- Estimated disk space required: 17 MB (additional 1 MB for the tests)
- Estimated build time: 0.2 SBU (additional 0.1 SBU for the tests)

GPGME Dependencies

Required

Libassuan-2.1.2

Optional

GnuPG-2.0.26 (used during the testsuite)

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/gpgme

Installation of GPGME

Install GPGME by running the following commands:

```
./configure --prefix=/usr       \
            --disable-fd-passing \
            --disable-gpgsm-test &&
make
```

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

Now, as the *root* user:

```
make install
```

Command Explanations

`--disable-fd-passing`: This option disables a problem causing a hang for some operations on some systems.

`--disable-gpgsm-test`: This option disables a test with gpgsm in some systems breaking make.

Contents

Installed Program: gpgme-config
Installed Libraries: libgpgme-pthread.so and libgpgme.so
Installed Directory: /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.

Last updated on 2014-09-17 11:48:47 -0700

Haveged-1.9.1

Introduction to Haveged

The Haveged package contains a daemon that generates an unpredictable stream of random numbers and feeds the /dev/random device.

This package is known to build and work properly using an LFS-7.6 platform.

Package Information

- Download (HTTP): **http://www.issihosts.com/haveged/haveged-1.9.1.tar.gz**
- Download MD5 sum: 015ff58cd10607db0e0de60aeca2f5f8
- Download size: 468 KB
- Estimated disk space required: 4.8 MB
- Estimated build time: 0.2 SBU

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/haveged

Installation of Haveged

Install Haveged by running the following commands:

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

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

Now, as the *root* user:

```
make install &&
mkdir -pv    /usr/share/doc/haveged-1.9.1 &&
cp -v README /usr/share/doc/haveged-1.9.1
```

Configuring haveged

Boot Script

If you want the Haveged daemon to start automatically when the system is booted, install the `/etc/rc.d/init.d/haveged` init script included in the [blfs-bootscripts-20140919](#) package.

```
make install-haveged
```

Contents

Installed Programs: haveged
Installed Libraries: libhavege.so
Installed Directory: /usr/include/haveged

Short Descriptions

`haveged`   is a daemon that generates an unpredictable stream of random numbers harvested from the indirect effects of hardware events based on hidden processor states (caches, branch predictors, memory translation tables, etc).

Last updated on 2014-09-19 13:27:36 -0700

Iptables-1.4.21

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-7.6 platform.

Package Information

- Download (HTTP): **http://www.netfilter.org/projects/iptables/files/iptables-1.4.21.tar.bz2**
- Download (FTP): **ftp://ftp.netfilter.org/pub/iptables/iptables-1.4.21.tar.bz2**
- Download MD5 sum: 536d048c8e8eeebcd9757d0863ebb0c0
- Download size: 536 KB
- Estimated disk space required: 15 MB
- Estimated build time: 0.2 SBU

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/iptables

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 ⇒ Networking Options ⇒ 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              \
            --sbindir=/sbin            \
            --with-xtlibdir=/lib/xtables \
            --enable-libipq &&
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 ip4tc ip6tc ipq iptc xtables
do
  mv -v /usr/lib/lib${file}.so.* /lib &&
  ln -sfv ../../lib/$(readlink /usr/lib/lib${file}.so) /usr/lib/lib${file}.so
done
```

Command Explanations

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

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

`--enable-nfsynproxy`: This switch enables installation of nfsynproxy SYNPROXY configuration tool.

`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-20140919 package.

```
make install-iptables
```

Contents

Installed Programs: ip6tables, ip6tables-restore, ip6tables-save, iptables, iptables-restore, iptables-save, iptables-xml, and xtables-multi

Installed Libraries: libip4tc.so, libip6tc.so, libipq.so, libiptc.so, and libxtables.so

Installed Directories: /lib/xtables and /usr/include/libiptc

Short Descriptions

iptables	is used to set up, maintain, and inspect the tables of IP packet filter rules in the Linux kernel.
iptables-restore	is used to restore IP Tables from data specified on STDIN. Use I/O redirection provided by your shell to read from a file.
iptables-save	is used to dump the contents of an IP Table in easily parseable format to STDOUT. Use I/O-redirection provided by your shell to write to a file.
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.
nfsynproxy	(optional) configuration tool. SYNPROXY target makes handling of large SYN floods possible without the large performance penalties imposed by the connection tracking in such cases.

Last updated on 2014-09-19 13:27:36 -0700

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.

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

Last updated on 2014-08-10 11:18:14 -0700

---

libcap-2.24 with PAM

Introduction to libcap with PAM

The libcap package was installed in LFS, but if PAM support is desired, it needs to be reinstalled after PAM is built.

This package is known to build and work properly using an LFS-7.6 platform.

Package Information

- Download (HTTP): **https://www.kernel.org/pub/linux/libs/security/linux-privs/libcap2/libcap-2.24.tar.xz**
- Download (FTP): **ftp://ftp.kernel.org/pub/linux/libs/security/linux-privs/libcap2/libcap-2.24.tar.xz**
- Download MD5 sum: d43ab9f680435a7fff35b4ace8d45b80
- Download size: 62 KB
- Estimated disk space required: 1.5 MB
- Estimated build time: 0.1 SBU

libcap Dependencies

Required

Linux-PAM-1.1.8

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/libcap

Installation of libcap

Install libcap by running the following commands:

```
sed -i 's:LIBDIR:PAM_&:g' pam_cap/Makefile &&
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 prefix=/usr \
     SBINDIR=/sbin \
     PAM_LIBDIR=/lib \
     RAISE_SETFCAP=no install
```

Still as the *root* user, clean up some library locations and permissions:

```
chmod -v 755 /usr/lib/libcap.so &&
mv -v /usr/lib/libcap.so.* /lib &&
ln -sfv ../../lib/libcap.so.2 /usr/lib/libcap.so
```

Command Explanations

`sed -i '...'`, *PAM_LIBDIR=/lib*: These correct PAM module install location.

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

Installed Programs: capsh, getcap, getpcaps, and setcap

Installed Library: libcap.{so,a}
Installed Directories: None

Short Descriptions

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

Last updated on 2014-09-10 06:19:10 -0700

Linux-PAM-1.1.8

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-7.6 platform.

Package Information

- Download (HTTP): **http://linux-pam.org/library/Linux-PAM-1.1.8.tar.bz2**
- Download MD5 sum: 35b6091af95981b1b2cd60d813b5e4ee
- Download size: 1.1 MB
- Estimated disk space required: 22 MB
- Estimated build time: 0.3 SBU

Additional Downloads

Optional Documentation

- Download (HTTP): **http://linux-pam.org/documentation/Linux-PAM-1.1.8-docs.tar.bz2**
- Download MD5 sum: 730895d1c6e1c706dc5ffe2419f9b3f5
- Download size 148 KB

Linux PAM Dependencies

Optional

Berkeley DB-6.1.19, CrackLib-2.9.1, libtirpc-0.2.5 and **Prelude**

Optional (To Rebuild the Documentation)

docbook-xml-4.5, docbook-xsl-1.78.1, fop-1.1, libxslt-1.1.28 and w3m-0.5.3

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/linux-pam

Installation of Linux PAM

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

```
tar -xf ../Linux-PAM-1.1.8-docs.tar.bz2 --strip-components=1
```

Install Linux PAM by running the following commands:

```
./configure --prefix=/usr \
            --sysconfdir=/etc \
            --libdir=/usr/lib \
            --enable-securedir=/lib/security \
            --docdir=/usr/share/doc/Linux-PAM-1.1.8 &&
make
```

To test the results, a suitable `/etc/pam.d/other` configuration file must exist.

For a first installation, 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`. Ensure there are no errors produced by the tests before continuing the installation.

Only in case of a first installation, 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 &&

for file in pam pam_misc pamc
do
  mv -v /usr/lib/lib${file}.so.* /lib &&
  ln -sfv ../../lib/$(readlink /usr/lib/lib${file}.so) /usr/lib/lib${file}.so
done
```

Command Explanations

--enable-securedir=/lib/security: This switch sets install location for the PAM modules.

`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-4.2.1 package.

Contents

Installed Program: mkhomedir_helper, pam_tally, pam_tally2, pam_timestamp_check, unix_chkpwd and unix_update
Installed Libraries: libpam.so, libpamc.so and libpam_misc.so
Installed Directories: /etc/security, /lib/security, /usr/include/security and /usr/share/doc/Linux-PAM-1.1.8

Short Descriptions

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

Last updated on 2014-09-10 06:19:10 -0700

MIT Kerberos V5-1.12.2

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-7.6 platform.

Package Information

- Download (HTTP): **http://web.mit.edu/kerberos/www/dist/krb5/1.12/krb5-1.12.2-signed.tar**
- Download MD5 sum: 357f1312b7720a0a591e22db0f7829fe
- Download size: 12 MB
- Estimated disk space required: 120 MB (Additional 25 MB if running the testsuite)
- Estimated build time: 1.0 SBU (additional 4.4 SBU if running the testsuite)

MIT Kerberos V5 Dependencies

Optional

DejaGnu-1.5.1 (for full test coverage), GnuPG-2.0.26 (to authenticate the package), keyutils-1.5.9, OpenLDAP-2.4.39, Python-2.7.8 (used during the testsuite) and rpcbind-0.2.1 (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.

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/mitkrb

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-2.0.26 installed, you can authenticate the package. First, check the contents of the file `krb5-1.12.2.tar.gz.asc`.

```
gpg2 --verify krb5-1.12.2.tar.gz.asc krb5-1.12.2.tar.gz
```

You will probably see output similar to:

```
gpg: Signature made Mon Aug 11 22:53:10 2014 GMT using RSA key ID 749D7889
gpg: Can't check signature: No public key
```

You can import the public key with:

```
gpg2 --pgp2 --keyserver pgp.mit.edu --recv-keys 0x749D7889
```

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])@g" \
    -i configure.in &&
sed -e 's@\^u}@^u cols 300}@' \
    -i tests/dejagnu/config/default.exp &&
autoconf &&
./configure --prefix=/usr            \
            --sysconfdir=/etc        \
            --localstatedir=/var/lib \
            --with-system-et         \
            --with-system-ss         \
            --with-system-verto=no   \
            --enable-dns-for-realm &&
make
```

To test the build, issue: `make check`. You need at least [Tcl-8.6.2](#), which is used to drive the testsuite. Furthermore, [DejaGnu-1.5.1](#) must be available for some of the tests to run. If you have a former version of MIT Kerberos V5 installed, it may happen that the test suite pick up the installed versions of the libraries, rather than the newly built ones. If so, it is better to run the tests after the installation.

Now, as the *root* user:

```
make install &&

for LIBRARY in gssapi_krb5 gssrpc k5crypto kadm5clnt kadm5srv \
               kdb5 kdb_ldap krad krb5 krb5support verto ; do
    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/krb5-1.12.2 &&
cp -vfr ../doc/*  /usr/share/doc/krb5-1.12.2 &&

unset LIBRARY
```

Command Explanations

`sed -e ...`: The first `sed` fixes Python detection. The second one increases the width of the virtual terminal used for some tests, to prevent some spurious characters to be echoed, which is taken as a failure.

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

--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.

--with-system-verto=no: This switch fixes a bug in the package: it does not recognize its own verto library installed previously. This is not a problem, if reinstalling the same version, but if you are updating, the old library is used as

system's one, instead of installing the new version.

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

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-2.9.1 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.local: add_policy dict-only
kadmin.local: addprinc -policy dict-only <loginname>
```

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

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

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

```
kadmin.local: 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 the **documentation for krb5-1.12.2** 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-20140919 package using the following command:

```
make install-krb5
```

Contents

Installed Programs: gss-client, gss-server, k5srvutil, kadmin, kadmin.local, kadmind, kdb5_ldap_util (optional), kdb5_util, kdestroy, kinit, klist, kpasswd, kprop, kpropd, kproplog, krb5-config, krb5kdc, krb5-send-pr, ksu, kswitch, ktutil, kvno, sclient, sim_client, sim_server, sserver, uuclient and uuserver

Installed Libraries: libgssapi_krb5.so, libgssrpc.so, libk5crypto.so, libkadm5clnt_mit.so, libkadm5clnt.so, libkadm5srv_mit.so, libkadm5srv.so, libkdb_ldap.so (optional), libkdb5.so, libkrad.so, libkrb5.so, libkrb5support.so, libverto.so, and some plugins under the /usr/lib/krb5 tree

Installed Directories: /usr/include/gssapi, /usr/include/gssrpc, /usr/include/kadm5, /usr/include/krb5, /usr/lib/krb5, /usr/share/doc/krb5-1.12.2, /usr/share/examples/krb5, /usr/share/gnats/, and /var/lib/krb5kdc

Short Descriptions

k5srvutil	is a host keytable manipulation utility.
kadmin	is an utility used to make modifications to the Kerberos database.
kadmind	is a server for administrative access to a Kerberos database.
kdb5_util	is the KDC database utility.
kdestroy	removes the current set of tickets.
kinit	is used to authenticate to the Kerberos server as a principal and acquire a ticket granting ticket that can later be used to obtain tickets for other services.

`klist`	reads and displays the current tickets in the credential cache.
`kpasswd`	is a program for changing Kerberos 5 passwords.
`kprop`	takes a principal database in a specified format and converts it into a stream of database records.
`kpropd`	receives a database sent by `kprop` and writes it as a local database.
`krb5-config`	gives information on how to link programs against libraries.
`krb5kdc`	is the Kerberos 5 server.
`ksu`	is the super user program using Kerberos protocol. Requires a properly configured `/etc/shells` and `~/.k5login` containing principals authorized to become super users.
`kswitch`	makes the specified credential cache the primary cache for the collection, if a cache collection is available.
`ktutil`	is a program for managing Kerberos keytabs.
`kvno`	prints keyversion numbers of Kerberos principals.
`sclient`	used to contact a sample server and authenticate to it using Kerberos 5 tickets, then display the server's response.
`sserver`	is the sample Kerberos 5 server.
`libgssapi_krb5.so`	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.
`libkadm5clnt.so`	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.
`libkrad.so`	contains the internal support library for RADIUS functionality.
`libkrb5.so`	is an all-purpose Kerberos 5 library.

Last updated on 2014-09-19 13:27:36 -0700

Nettle-2.7.1

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-7.6 platform.

Package Information

- Download (HTTP): **http://ftp.gnu.org/gnu/nettle/nettle-2.7.1.tar.gz**
- Download (FTP): **ftp://ftp.gnu.org/gnu/nettle/nettle-2.7.1.tar.gz**
- Download MD5 sum: 003d5147911317931dd453520eb234a5
- Download size: 1.5 MB
- Estimated disk space required: 94 MB
- Estimated build time: 0.6 SBU

Nettle Dependencies

Optional

OpenSSL-1.0.1i (for examples)

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/nettle

Installation of Nettle

Install Nettle by running the following commands:

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

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

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

```
sed -i '/^install-here/ s/install-static//' Makefile
```

Now, as the *root* user:

```
make install &&
chmod -v 755 /usr/lib/libhogweed.so.2.5 /usr/lib/libnettle.so.4.7 &&
install -v -m755 -d /usr/share/doc/nettle-2.7.1 &&
install -v -m644 nettle.html /usr/share/doc/nettle-2.7.1
```

Contents

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

Short Descriptions

`nettle-hash`   calulates a hash value using a specified algorithm.

`nettle-lfib-stream`   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.

Last updated on 2014-09-10 06:19:10 -0700

NSS-3.17

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-7.6 platform.

Package Information

- Download (HTTP): **http://ftp.mozilla.org/pub/mozilla.org/security/nss/releases/NSS_3_17_RTM/src/nss-3.17.tar.gz**
- Download (FTP): **ftp://ftp.mozilla.org/pub/mozilla.org/security/nss/releases/NSS_3_17_RTM/src/nss-3.17.tar.gz**
- Download MD5 sum: 081dd99afa12af589c09e2d7cb5f5c6d
- Download size: 6.2 MB
- Estimated disk space required: 79 MB
- Estimated build time: 0.7 SBU

Additional Downloads

- Required patch: **http://www.linuxfromscratch.org/patches/blfs/7.6/nss-3.17-standalone-1.patch**

NSS Dependencies

Required

NSPR-4.10.7

Recommended

SQLite-3.8.6

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/nss

Installation of NSS

Note

This package does not support parallel build.

Install NSS by running the following commands:

```
patch -Np1 -i ../nss-3.17-standalone-1.patch &&

cd nss &&
make 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) -j1
```

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 -v 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 **echo**s the option NSS_USE_SYSTEM_SQLITE=1 to **make** so that libsoftokn3.so will link against the system version of sqlite.

Contents

Installed Programs: certutil, nss-config, and pk12util

Installed Libraries: libcrmf.a, libfreebl3.so, libnss3.so, libnssckbi.so, libnssdbm3.so, libnsssysinit.so, libnssutil3.so, libsmime3.so, libsoftokn3.so, and libssl3.so

Installed Directories: /usr/include/nss

Short Descriptions

certutil   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.

nss-config   is used to determine the NSS library settings of the installed NSS libraries.

pk12util   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.

Last updated on 2014-09-15 22:13:43 -0700

OpenSSH-6.6p1

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-7.6 platform.

Package Information

- Download (HTTP): **http://ftp.openbsd.org/pub/OpenBSD/OpenSSH/portable/openssh-6.6p1.tar.gz**
- Download (FTP): **ftp://ftp.openbsd.org/pub/OpenBSD/OpenSSH/portable/openssh-6.6p1.tar.gz**
- Download MD5 sum: 3e9800e6bca1fbac0eea4d41baa7f239
- Download size: 1.3 MB
- Estimated disk space required: 32 MB (additional 2 MB if running the tests)
- Estimated build time: 0.5 SBU (running the tests takes at least 10 minutes, irrespective of processor speed)

OpenSSH Dependencies

Required

OpenSSL-1.0.1i

Optional

Linux-PAM-1.1.8, X Window System, MIT Kerberos V5-1.12.2, **libedit**, **OpenSC**, and **libsectok**

Optional Runtime (Used only to gather entropy)

OpenJDK-1.7.0.65/IcedTea-2.5.2, Net-tools-CVS_20101030, and Sysstat-11.1.1

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/OpenSSH

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          \
            --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 tests`.

Now, as the *root* user:

```
make install                                   &&
install -v -m755 contrib/ssh-copy-id /usr/bin &&
install -v -m644 contrib/ssh-copy-id.1 /usr/share/man/man1 &&
install -v -m755 -d /usr/share/doc/openssh-6.6p1           &&
install -v -m644 INSTALL LICENCE OVERVIEW README* /usr/share/doc/openssh-6.6p1
```

Command Explanations

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

`--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.

`--with-libedit`: This option enables line editing and history features for **sftp**.

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_USERNAME and REMOTE_HOSTNAME for the username and hostname of the remote computer and you'll also need to enter your password for the ssh-copy-id command to succeed:

```
ssh-keygen &&
ssh-copy-id -i ~/.ssh/id_rsa.pub REMOTE_USERNAME@REMOTE_HOSTNAME
```

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@d/login@d/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-20140919 package.

```
make install-sshd
```

Contents

Installed Programs: scp, sftp, sftp-server, slogin (symlink to ssh), ssh, sshd, ssh-add, ssh-agent, ssh-copy-id, ssh-keygen, ssh-keyscan, ssh-keysign, and ssh-pkcs11-helper

Installed Libraries: None

Installed Directories: /etc/ssh, /usr/libexec/openssh, /usr/share/doc/openssh-6.6p1, and /var/lib/sshd

Short Descriptions

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

agent	
ssh-copy-id	is a script that enables logins on remote machine using local keys.
ssh-keygen	is a key generation tool.
ssh-keyscan	is a utility for gathering public host keys from a number of hosts.
ssh-keysign	is used by `ssh` to access the local host keys and generate the digital signature required during hostbased authentication with SSH protocol version 2. This program is not normally called directly by the user.
ssh-pkcs11-helper	is a `ssh-agent` helper program for PKCS#11 support.

Last updated on 2014-09-08 23:39:08 -0700

OpenSSL-1.0.1i

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-7.6 platform.

Package Information

- Download (HTTP): **http://www.openssl.org/source/openssl-1.0.1i.tar.gz**
- Download (FTP): **ftp://ftp.openssl.org/source/openssl-1.0.1i.tar.gz**
- Download MD5 sum: c8dc151a671b9b92ff3e4c118b174972
- Download size: 4.2 MB
- Estimated disk space required: 55 MB (additional 1 MB for the tests)
- Estimated build time: 1.1 SBU (additional 0.4 SBU for the tests)

Additional Downloads

- Required patch: **http://www.linuxfromscratch.org/patches/blfs/7.6/openssl-1.0.1i-fix_parallel_build-1.patch**

OpenSSL Dependencies

Optional

MIT Kerberos V5-1.12.2

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/OpenSSL

Installation of OpenSSL

Install OpenSSL with the following commands:

```
patch -Np1 -i ../openssl-1.0.1i-fix_parallel_build-1.patch &&

./config --prefix=/usr         \
         --openssldir=/etc/ssl \
         --libdir=lib          \
         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-1.0.1i  &&
cp -vfr doc/*    /usr/share/doc/openssl-1.0.1i
```

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-2.1.0, cURL-7.37.1 or Wget-1.15 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

Installed Programs: c_rehash and openssl
Installed Libraries: libcrypto.{so,a}, libssl.{so,a} and several under /usr/lib/engines/
Installed Directories: /etc/ssl, /usr/include/openssl, /usr/lib/engines and /usr/share/doc/openssl-1.0.1i

Short Descriptions

c_rehash	is a Perl script that scans all files in a directory and adds symbolic links to their hash values.
openssl	is a command-line tool for using the various cryptography functions of OpenSSL 's crypto library from the shell. It can be used for various functions which are documented in `man 1 openssl`.
libcrypto.{so,a}	implements a wide range of cryptographic algorithms used in various Internet standards. The services provided by this library are used by the OpenSSL implementations of SSL, TLS and S/MIME, and they have also been used to implement OpenSSH , OpenPGP , and other cryptographic standards.
libssl.{so,a}	implements the Secure Sockets Layer (SSL v2/v3) and Transport Layer Security (TLS v1) protocols. It provides a rich API, documentation on which can be found by running `man 3 ssl`.

Last updated on 2014-09-08 23:39:08 -0700

p11-kit-0.20.6

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-7.6 platform.

Package Information

- Download (HTTP): **http://p11-glue.freedesktop.org/releases/p11-kit-0.20.6.tar.gz**
- Download MD5 sum: 2f65624f321c0821b216aaf0ddefa89d
- Download size: 964 KB
- Estimated disk space required: 70 MB (additional 6 MB for tests)
- Estimated build time: 0.4 SBU

p11-kit Dependencies

Recommended

Certificate Authority Certificates, libtasn1-4.1, and libffi-3.1

Optional

NSS-3.17, GTK-Doc-1.20 and libxslt-1.1.28

User Notes: *http://wiki.linuxfromscratch.org/blfs/wiki/p11-kit*

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`. The test-token test is known to fail.

Now, as the *root* user:

```
make install
```

Command Explanations

`--with-hash-impl=freebl`: Use this switch if you want to use Freebl library from NSS for SHA1 and MD5 hashing.

`--enable-doc`: Use this switch if you have installed GTK-Doc-1.20 and libxslt-1.1.28 and wish to rebuild the documentation and generate manual pages.

Contents

Installed Program: p11-kit and trust
Installed Libraries: libp11-kit.so, p11-kit-proxy.so and /usr/lib/pkcs11/p11-kit-trust.so
Installed Directories: /etc/pkcs11, /usr/include/p11-kit-1, /usr/lib/{p11-kit,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.

Last updated on 2014-09-16 10:29:57 -0700

Polkit-0.112

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-7.6 platform.

Package Information

- Download (HTTP): **http://www.freedesktop.org/software/polkit/releases/polkit-0.112.tar.gz**
- Download MD5 sum: b0f2fa00a55f47c6a5d88e9b73f80127
- Download size: 1.4 MB
- Estimated disk space required: 17 MB
- Estimated build time: 0.2 SBU

Polkit Dependencies

Required

GLib-2.40.0, and JS-17.0.0

Optional (Required if building GNOME)

gobject-introspection-1.40.0

Optional

docbook-xml-4.5, docbook-xsl-1.78.1, GTK-Doc-1.20, libxslt-1.1.28 and Linux-PAM-1.1.8

> **Note**
>
> If libxslt-1.1.28 is installed, then docbook-xml-4.5 and docbook-xsl-1.78.1 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.

User Notes: *http://wiki.linuxfromscratch.org/blfs/wiki/polkit*

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        \
            --disable-static            \
            --enable-libsystemd-login=no \
            --with-authfw=shadow        &&
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

`--enable-libsystemd-login=no`: This parameter fixes building without systemd, which is not part of LFS/BLFS. If you use systemd, replace "no" by "yes".

`--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

Installed Programs: pkaction, pkcheck, pk-example-frobnicate, pkexec, pkttyagent and polkitd
Installed Libraries: libpolkit-agent-1.so and libpolkit-gobject-1.so
Installed Directories: /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

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

Last updated on 2014-09-09 12:00:35 -0700

Shadow-4.2.1

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-7.6 platform.

Package Information

- Download (HTTP): **http://pkg-shadow.alioth.debian.org/releases/shadow-4.2.1.tar.xz**
- Download MD5 sum: 2bfafe7d4962682d31b5eba65dba4fc8
- Download size: 1.5 MB
- Estimated disk space required: 53 MB
- Estimated build time: 0.2 SBU

Shadow Dependencies

Required

Linux-PAM-1.1.8 or CrackLib-2.9.1

User Notes: *http://wiki.linuxfromscratch.org/blfs/wiki/shadow*

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

sed -i 's/1000/999/' etc/useradd &&

./configure --sysconfdir=/etc --with-group-name-max-length=32 &&
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 '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 's/1000/999/' etc/useradd`: Make a minor change to make the default useradd consistent with the LFS groups file.

`--with-group-name-max-length=32`: The maximum user name is 32 characters. Make the maximum group name the same.

`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-1.1.8 page for further configuration information. For information specific to integrating Shadow, Linux-PAM and CrackLib, you can visit the following link:

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
```

'login'

```
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
```

Other common programs

```
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 **http://www.linuxfromscratch.org/lfs/view/7.6/chapter06/shadow.html#contents-shadow**.

Last updated on 2014-09-10 06:19:10 -0700

ssh-askpass-6.6p1

Introduction to ssh-askpass

The ssh-askpass is a generic executable name for many packages, with similar names, that provide a interactive X service to grab password for packages requiring administrative privileges to be run. It prompts the user with a window box where the necessary password can be inserted. Here, we choose Damien Miller's package distributed in the OpenSSH tarball.

This package is known to build and work properly using an LFS-7.6 platform.

Package Information

- Download (HTTP): **http://ftp.openbsd.org/pub/OpenBSD/OpenSSH/portable/openssh-6.6p1.tar.gz**
- Download (FTP): **ftp://ftp.openbsd.org/pub/OpenBSD/OpenSSH/portable/openssh-6.6p1.tar.gz**
- Download MD5 sum: 3e9800e6bca1fbac0eea4d41baa7f239
- Download size: 1.3 MB
- Estimated disk space required: 6.4 MB
- Estimated build time: Less than 0.1 SBU

ssh-askpass Dependencies

GTK+-2.24.24, Sudo-1.8.10p3 (runtime), Xorg Libraries, and X Window System (runtime)

Installation of ssh-askpass

Install ssh-askpass by running the following commands:

```
cd contrib &&
make gnome-ssh-askpass2
```

Now, as the *root* user:

```
install -v -d -m755                      /usr/libexec/openssh/contrib      &&
install -v -m755  gnome-ssh-askpass2 /usr/libexec/openssh/contrib      &&
ln -sv -f contrib/gnome-ssh-askpass2 /usr/libexec/openssh/ssh-askpass
```

The use of /usr/libexec/openssh/contrib and a symlink is justified by the eventual necessity of a different program for that service.

Configuring ssh-askpass

Configuration Information

As the *root* user, configure Sudo-1.8.10p3 to use ssh-askpass:

```
cat >> /etc/sudo.conf << "EOF" &&
# Path to askpass helper program
Path askpass /usr/libexec/openssh/ssh-askpass
EOF
chmod -v 0644 /etc/sudo.conf
```

If a given graphical <application> requires administrative privileges, use `sudo -A <application>` from an x-terminal, from a Window Manager menu and/or replace "Exec=<application> ..." by "Exec=sudo -A <application> ..." in the <application>.desktop file.

Contents

Installed Programs: ssh-askpass (symlink) and gnome-ssh-askpass2
Installed Library: None
Installed Directory: /usr/libexec/openssh/contrib

Short Descriptions

`gnome-ssh-askpass2`	is the program helper agent used to grab a password.
`ssh-askpass`	is a symlink to the program helper agent used to grab a password.

Last updated on 2014-09-19 13:27:36 -0700

stunnel-5.03

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-7.6 platform.

Package Information

- Download (HTTP): **http://mirrors.zerg.biz/stunnel/stunnel-5.03.tar.gz**
- Download (FTP): **ftp://ftp.stunnel.org/stunnel/stunnel-5.03.tar.gz**
- Download MD5 sum: ee43ef72038e0437400f712837cefee4
- Download size: 580 KB

- Estimated disk space required: 5.7 MB
- Estimated build time: 0.1 SBU

stunnel Dependencies

Required

[OpenSSL-1.0.1i](#)

Optional

[tcpwrappers](#)

User Notes: *http://wiki.linuxfromscratch.org/blfs/wiki/stunnel*

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. Further below, after `make ... install`, we include instructions to generate them. However, 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). 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 &&
make
```

This package does not come with a test suite.

Now, as the *root* user:

```
make docdir=/usr/share/doc/stunnel-5.03 install
```

To create the `stunnel.pem` in the `/etc/stunnel` directory, you need to create one. The following command prompts you for the necessary information. 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).

To generate a certificate, as the *root* user, run:

```
make cert
```

Command Explanations

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

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 &&
chown stunnel:stunnel /var/lib/stunnel
```

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

; Note: The pid and output locations are relative to the chroot location.

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

;debug = 7
;output = stunnel.log

;[https]
;accept  = 443
;connect = 80
;; "TIMEOUTclose = 0" is a workaround for a design flaw in Microsoft SSL
;; Microsoft implementations do not use SSL close-notify alert and thus
;; they are vulnerable to truncation attacks
;TIMEOUTclose = 0

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.

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-20140919 package.

```
make install-stunnel
```

Contents

Installed Programs: stunnel and stunnel3
Installed Library: libstunnel.so
Installed Directories: /etc/stunnel, /usr/lib/stunnel, /usr/share/doc/stunnel-5.03, and /var/lib/stunnel

Short Descriptions

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

Sudo-1.8.10p3

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-7.6 platform.

Package Information

- Download (HTTP): **http://www.sudo.ws/sudo/dist/sudo-1.8.10p3.tar.gz**
- Download (FTP): **ftp://ftp.sudo.ws/pub/sudo/sudo-1.8.10p3.tar.gz**
- Download MD5 sum: fcd8d0d9f9f0397d076ee901e242ed39
- Download size: 2.2 MB
- Estimated disk space required: 32 MB (additional 1 MB for tests)
- Estimated build time: 0.6 SBU

Sudo Dependencies

Optional

AFS, **FWTK**, Linux-PAM-1.1.8, MIT Kerberos V5-1.12.2, an MTA (that provides a `sendmail` command), OpenLDAP-2.4.39, **Opie** and **SecurID**

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/sudo

Installation of Sudo

Install Sudo by running the following commands:

```
./configure --prefix=/usr            \
            --libexecdir=/usr/lib     \
            --with-all-insults        \
            --with-env-editor         \
            --docdir=/usr/share/doc/sudo-1.8.10p3 \
            --with-passprompt="[sudo] password for %p" &&
make
```

To test the results, issue: `env LC_ALL=C make check`.

Now, as the *root* user:

```
make install
```

Command Explanations

--libexecdir=/usr/lib: This switch controls where private programs are installed. Everything in that directory is a library, so they belong under /usr/lib instead of /usr/libexec.

--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`.

--with-passprompt: This switch sets the prompt.

`--without-pam`: Avoids to build PAM support when PAM is installed on the system.

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

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

Configuring Sudo

`/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 PAM is installed on the system, Sudo is built with PAM support. In that case, 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

Installed Programs: sudo, sudoedit (symlink), sudoreplay, and visudo
Installed Libraries: group_file.so, sudoers.so, sudo_noexec.so, and system_group.so
Installed Directories: /etc/sudoers.d, /usr/lib/sudo, /usr/share/doc/sudo-1.8.10p3, and /var/{db,run}/sudo

Short Descriptions

`sudo`	executes a command as another user as permitted by the `/etc/sudoers` configuration file.
`sudoedit`	is a symlink to `sudo` that implies the `-e` option to invoke an editor as another user.
`visudo`	allows for safer editing of the `sudoers` file.
`sudoreplay`	is used to play back or list the output logs created by `sudo`.

Last updated on 2014-09-08 23:39:08 -0700

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-7.6 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-1.0.1i

Optional

An MTA

User Notes: *http://wiki.linuxfromscratch.org/blfs/wiki/tripwire*

Installation of Tripwire

Compile Tripwire by running the following commands:

```
sed -i -e 's@TWDB="${prefix}@TWDB="/var@' install/install.cfg              &&
sed -i -e 's/!Equal/!this->Equal/' src/cryptlib/algebra.h                 &&
sed -i -e '/stdtwadmin.h/i#include <unistd.h>' src/twadmin/twadmincl.cpp &&
sed -i -e '/TWMAN/ s|${prefix}|/usr/share|' \
       -e '/TWDOCS/s|${prefix}|/usr/share|' install/install.cfg           &&
sed -i -e 's/eArchiveOpen e\([^)]*\)\)/throw ( eArchiveOpen\1 )/' \
       -e '/throw e;/d' src/core/archive.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/share/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.

`sed ... install/install.cfg`: Fix the location of the man and doc directories.

`sed ... src/core/archive.cpp`: Fix compilation with gcc-4.9.

`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/`.

> **Note**
>
> During `make install`, several questions are asked, including passwords. If you want to make a script, you have to apply a sed before running `make install`:

```
sed -i -e `s@install/install.sh@& -n -s<site-password> -l<local-password>@` Makefile
```

Of course, you should do this with dummy passwords and change them later.

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/share/doc/tripwire/`.

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/share/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 `.twr`. 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`.

Changing the Policy File

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

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

Contents

Installed Programs: siggen, tripwire, twadmin, and twprint

Installed Libraries: None

Installed Directories: /etc/tripwire, /var/lib/tripwire, and /usr/share/doc/tripwire

Short Descriptions

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

Last updated on 2014-09-19 13:27:36 -0700

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**.

To install these scripts, run the following commands as the *root* user:

```
cat > /sbin/mkinitramfs << "EOF"
#!/bin/bash
# This file based in part on the mkinitrafms script for the LFS LiveCD
# written by Alexander E. Patrakov and Jeremy Huntwork.

copy()
{
  local file

  if [ "$2" == "lib" ]; then
    file=$(PATH=/lib:/usr/lib type -p $1)
  else
    file=$(type -p $1)
  fi

  if [ -n $file ] ; then
    cp $file $WDIR/$2
  else
    echo "Missing required file: $1 for directory $2"
    rm -rf $WDIR
    exit 1
  fi
}
```

```
if [ -z $1 ] ; then
  INITRAMFS_FILE=initrd.img-no-kmods
else
  KERNEL_VERSION=$1
  INITRAMFS_FILE=initrd.img-$KERNEL_VERSION
fi

if [ -n "$KERNEL_VERSION" ] && [ ! -d "/lib/modules/$1" ] ; then
  echo "No modules directory named $1"
  exit 1
fi

printf "Creating $INITRAMFS_FILE... "

binfiles="sh cat cp dd killall ls mkdir mknod mount "
binfiles="$binfiles umount sed sleep ln rm uname"

# Systemd installs udevadm in /bin. Other udev implementations have it in /sbin
if [ -x /bin/udevadm ] ; then binfiles="$binfiles udevadm"; fi

sbinfiles="modprobe blkid switch_root"

#Optional files and locations
for f in mdadm udevd udevadm; do
  if [ -x /sbin/$f ] ; then sbinfiles="$sbinfiles $f"; fi
done

unsorted=$(mktemp /tmp/unsorted.XXXXXXXXXX)

DATADIR=/usr/share/mkinitramfs
INITIN=init.in

# Create a temporrary working directory
WDIR=$(mktemp -d /tmp/initrd-work.XXXXXXXXXX)

# Create base directory structure
mkdir -p $WDIR/{bin,dev,lib/firmware,run,sbin,sys,proc}
mkdir -p $WDIR/etc/{modprobe.d,udev/rules.d}
touch $WDIR/etc/modprobe.d/modprobe.conf
ln -s lib $WDIR/lib64

# Create necessary device nodes
mknod -m 640 $WDIR/dev/console c 5 1
mknod -m 664 $WDIR/dev/null    c 1 3

# Install the udev configuration files
if [ -f /etc/udev/udev.conf ]; then
  cp /etc/udev/udev.conf $WDIR/etc/udev/udev.conf
fi

for file in $(find /etc/udev/rules.d/ -type f) ; do
  cp $file $WDIR/etc/udev/rules.d
done

# Install any firmware present
cp -a /lib/firmware $WDIR/lib

# Copy the RAID configuration file if present
if [ -f /etc/mdadm.conf ] ; then
  cp /etc/mdadm.conf $WDIR/etc
fi

# Install the init file
install -m0755 $DATADIR/$INITIN $WDIR/init

if [  -n "$KERNEL_VERSION" ] ; then
  if [ -x /bin/kmod ] ; then
    binfiles="$binfiles kmod"
  else
    binfiles="$binfiles lsmod"
    sbinfiles="$sbinfiles insmod"
  fi
fi

# Install basic binaries
for f in $binfiles ; do
  ldd /bin/$f | sed "s/\t//" | cut -d " " -f1 >> $unsorted
  copy $f bin
done
```

```
# Add lvm if present
if [ -x /sbin/lvm ] ; then sbinfiles="$sbinfiles lvm dmsetup"; fi

for f in $sbinfiles ; do
  ldd /sbin/$f | sed "s/\t//" | cut -d " " -f1 >> $unsorted
  copy $f sbin
done

# Add udevd libraries if not in /sbin
if [ -x /lib/udev/udevd ] ; then
  ldd /lib/udev/udevd | sed "s/\t//" | cut -d " " -f1 >> $unsorted
elif [ -x /lib/systemd/systemd-udevd ] ; then
  ldd /lib/systemd/systemd-udevd | sed "s/\t//" | cut -d " " -f1 >> $unsorted
fi

# Add module symlinks if appropriate
if [ -n "$KERNEL_VERSION" ] && [ -x /bin/kmod ] ; then
  ln -s kmod $WDIR/bin/lsmod
  ln -s kmod $WDIR/bin/insmod
fi

# Add lvm symlinks if appropriate
# Also copy the lvm.conf file
if  [ -x /sbin/lvm ] ; then
  ln -s lvm $WDIR/sbin/lvchange
  ln -s lvm $WDIR/sbin/lvrename
  ln -s lvm $WDIR/sbin/lvextend
  ln -s lvm $WDIR/sbin/lvcreate
  ln -s lvm $WDIR/sbin/lvdisplay
  ln -s lvm $WDIR/sbin/lvscan

  ln -s lvm $WDIR/sbin/pvchange
  ln -s lvm $WDIR/sbin/pvck
  ln -s lvm $WDIR/sbin/pvcreate
  ln -s lvm $WDIR/sbin/pvdisplay
  ln -s lvm $WDIR/sbin/pvscan

  ln -s lvm $WDIR/sbin/vgchange
  ln -s lvm $WDIR/sbin/vgcreate
  ln -s lvm $WDIR/sbin/vgscan
  ln -s lvm $WDIR/sbin/vgrename
  ln -s lvm $WDIR/sbin/vgck
  # Conf file(s)
  cp -a /etc/lvm $WDIR/etc
fi

# Install libraries
sort $unsorted | uniq | while read library ; do
  if [ "$library" == "linux-vdso.so.1" ] ||
     [ "$library" == "linux-gate.so.1" ]; then
    continue
  fi

  copy $library lib
done

if [ -d /lib/udev ]; then
  cp -a /lib/udev $WDIR/lib
fi
if [ -d /lib/systemd ]; then
  cp -a /lib/systemd $WDIR/lib
fi

# Install the kernel modules if requested
if [ -n "$KERNEL_VERSION" ]; then
  find                                                           \
     /lib/modules/$KERNEL_VERSION/kernel/{crypto,fs,lib}          \
     /lib/modules/$KERNEL_VERSION/kernel/drivers/{block,ata,md,firewire}     \
     /lib/modules/$KERNEL_VERSION/kernel/drivers/{scsi,message,pcmcia,virtio} \
     /lib/modules/$KERNEL_VERSION/kernel/drivers/usb/{host,storage}          \
     -type f 2> /dev/null | cpio --make-directories -p --quiet $WDIR

  cp /lib/modules/$KERNEL_VERSION/modules.{builtin,order}                   \
          $WDIR/lib/modules/$KERNEL_VERSION

  depmod -b $WDIR $KERNEL_VERSION
fi

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

# Remove the temporary directory and file
```

```
rm -rf $MDIR $unsorted
printf "done.\n"

EOF

chmod 0755 /sbin/mkinitramfs
```

```
mkdir -p /usr/share/mkinitramfs &&
cat > /usr/share/mkinitramfs/init.in << "EOF"
#!/bin/sh

PATH=/bin:/usr/bin:/sbin:/usr/sbin
export PATH

problem()
{
   printf "Encountered a problem!\n\nDropping you to a shell.\n\n"
   sh
}

no_device()
{
   printf "The device %s, which is supposed to contain the\n" $1
   printf "root file system, does not exist.\n"
   printf "Please fix this problem and exit this shell.\n\n"
}

no_mount()
{
   printf "Could not mount device %s\n" $1
   printf "Sleeping forever. Please reboot and fix the kernel command line.\n\n"
   printf "Maybe the device is formatted with an unsupported file system?\n\n"
   printf "Or maybe filesystem type autodetection went wrong, in which case\n"
   printf "you should add the rootfstype=... parameter to the kernel command line.\n\n"
   printf "Available partitions:\n"
}

do_mount_root()
{
   mkdir /.root
   [ -n "$rootflags" ] && rootflags="$rootflags,"
   rootflags="$rootflags$ro"

   case "$root" in
      /dev/* ) device=$root ;;
      UUID=* ) eval $root; device="/dev/disk/by-uuid/$UUID"  ;;
      LABEL=*) eval $root; device="/dev/disk/by-label/$LABEL" ;;
      ""     ) echo "No root device specified." ; problem    ;;
   esac

   while [ ! -b "$device" ] ; do
       no_device $device
       problem
   done

   if ! mount -n -t "$rootfstype" -o "$rootflags" "$device" /.root ; then
       no_mount $device
       cat /proc/partitions
       while true ; do sleep 10000 ; done
   else
       echo "Successfully mounted device $root"
   fi
}

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
  UDEVD=/sbin/udevd
elif [ -x /lib/udev/udevd ]; then
  UDEVD=/lib/udev/udevd
elif [ -x /lib/systemd/systemd-udevd ]; then
  UDEVD=/lib/systemd/systemd-udevd
else
  echo "Cannot find udevd nor systemd-udevd"
  problem
fi

${UDEVD} --daemon --resolve-names=never
udevadm trigger
udevadm settle

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

do_mount_root

killall -w ${UDEVD##*/}

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

EOF
```

Using an initramfs

Required Runtime Dependency

[cpio-2.11](#)

User Notes: <u>http://wiki.linuxfromscratch.org/blfs/wiki/initramfs</u>

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-ac11-4988408eb0a8 ro
  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-2.9.3

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-7.6 platform.

Package Information

- Download (HTTP): **http://downloads.sourceforge.net/fuse/fuse-2.9.3.tar.gz**
- Download MD5 sum: 33cae22ca50311446400daf8a6255c6a
- Download size: 564 KB
- Estimated disk space required: 9.5 MB
- Estimated build time: 0.1 SBU

User Notes: _http://wiki.linuxfromscratch.org/blfs/wiki/fuse_

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-1.8.8 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.2.9.3 /usr/lib/libfuse.so &&
rm -rf  /tmp/init.d &&

install -v -m755 -d /usr/share/doc/fuse-2.9.3 &&
install -v -m644    doc/{how-fuse-works,kernel.txt} \
                    /usr/share/doc/fuse-2.9.3
```

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-2.9.3/api &&
install -v -m644    doc/html/* \
                    /usr/share/doc/fuse-2.9.3/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-2014.2.15 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

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

Short Descriptions

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

Last updated on 2014-09-14 12:09:32 -0700

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-7.6 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

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/jfs

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

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

Short Descriptions

fsck.jfs	is used to replay the JFS transaction log, check a JFS formatted device for errors, and fix any errors found.
jfs_fsck	is a hard link to fsck.jfs.
mkfs.jfs	constructs an JFS file system.
jfs_mkfs	is a hard link to mkfs.jfs.
jfs_debugfs	is a program which can be used to perform various low-level actions on a JFS formatted device.
jfs_fscklog	extracts a JFS fsck service log into a file and/or formats and displays the extracted file.
jfs_logdump	dumps the contents of the journal log from the specified JFS formatted device into output file ./jfslog.dmp.
jfs_tune	adjusts tunable file system parameters on JFS file systems.

Last updated on 2014-09-19 13:27:36 -0700

LVM2-2.02.111

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-7.6 platform.

Package Information

- Download (FTP): **ftp://sources.redhat.com/pub/lvm2/LVM2.2.02.111.tgz**
- Download MD5 sum: 02487ab2a9e02d1ee76fe217183df28a
- Download size: 1.5 MB
- Estimated disk space required: 27 MB (additional 8 MB to run the test suite)
- Estimated build time: 0.4 SBU (additional 5.4 SBU to run the test suite)

LVM2 Dependencies

Optional

mdadm-3.3.2 (for checks) and xfsprogs-3.2.1 (for checks)

Kernel Configuration

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

> **Note**
>
> There are several other Device Mapper options in the kernel beyond those listed below. In order to get reasonable results if running the regression tests, all must be enabled either internally or as a module.

```
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
```

The check command must be run as the *root* user. Also the tests are known to hang if at least one partition on a hard drive is not set up as a Linux LVM partition (type 8e00). To test the results, issue: `make check` as the *root* user.

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

Installed Programs: blkdeactivate, dmeventd (optional), dmsetup, fsadm, lvm, lvmconf, lvmdump, vgimportclone. There are also numerous symbolic links to lvm that implement specific functionality

Installed Libraries: libdevmapper.so, liblvm2app.so and liblvm2cmd.so; optional: libdevmapper-event.so, libdevmapper-event-lvm2.so, libdevmapper-event-lvm2mirror.so, libdevmapper-event-lvm2snapshot.so, libdevmapper-event-lvm2raid.so, and libdevmapper-event-lvm2thin.so

Installed Directories: /etc/lvm and /lib/device-mapper (optional)

Short Descriptions

`blkdeactivate`	utility to deactivate block device.
`dmeventd`	(optional) is the Device Mapper event daemon.
`dmsetup`	is a low level logical volume management tool.
`fsadm`	is an utility used to resize or check filesystem on a device.
`lvm`	provides the command-line tools for LVM2 . Commands are implemented via sympolic links to this program to manage physical devices (pv*), volume groups (vg*) and logical volumes

`lvmconf`	is a script that modifies the locking configuration in the LVM2 configuration file.
`lvmdump`	is a tool used to dump various information concerning LVM2.
`vgimportclone`	is used to import a duplicated VG (e.g. hardware snapshot).
`libdevmapper.so`	contains the Device Mapper API functions.

Last updated on 2014-09-10 06:19:10 -0700

About Logical Volume Management (LVM)

LVM manages disk drives. It allows multiple drives and partitions to be combined into larger *volume groups*, assists in making backups through a *snapshot*, and allows for dynamic volume resizing. It can also provide mirroring similar to a RAID 1 array.

A complete discussion of LVM is beyond the scope of this introduction, but basic concepts are presented below.

To run any of the commands presented here, the LVM2-2.02.111 package must be installed. All commands must be run as the *root* user.

Management of disks with lvm is accomplished using the following concepts:

physical volumes
These are physical disks or partitions such as /dev/sda3 or /dev/sdb.

volume groups
These are named groups of physical volumes that can be manipulated by the administrator. The number of physical volumes that make up a volume group is arbitrary. Physical volumes can be dynamically added or removed from a volume group.

logical volumes
Volume groups may be subdivided into logical volumes. Each logical volume can then be individually formatted as if it were a regular Linux partition. Logical volumes may be dynamically resized by the administrator according to need.

To give a concrete example, suppose that you have two 2 TB disks. Also suppose a really large amount of space is required for a very large database, mounted on /srv/mysql. This is what the initial set of partitions would look like:

```
Partition  Use    Size      Partition Type
/dev/sda1  /boot  100MB     83 (Linux)
/dev/sda2  /       10GB     83 (Linux)
/dev/sda3  swap     2GB     82 (Swap)
/dev/sda4  LVM    remainder 8e (LVM)
/dev/sdb1  swap     2GB     82 (Swap)
/dev/sdb2  LVM    remainder 8e (LVM)
```

First initialize the physical volumes:

```
pvcreate /dev/sda4 /dev/sdb2
```

Next create a volume group named lfs-lvm:

```
vgcreate lfs-lvm /dev/sda4  /dev/sdb2
```

The status of the volume group can be checked by running the command `vgscan`. Now create the logical volumes. Since there is about 3900 GB available, leave about 900 GB free for expansion. Note that the logical volume named *mysql* is larger than any physical disk.

```
lvcreate --name mysql --size 2500G lfs-lvm
lvcreate --name home  --size  500G lfs-lvm
```

Finally the logical volumes can be formatted and mounted. In this example, the jfs file system (jfsutils-1.1.15) is used for demonstration purposes.

```
mkfs -t ext4 /dev/lfs-lvm/home
mkfs -t jfs  /dev/lfs-lvm/mysql
mount /dev/lfs-lvm/home /home
mkdir -p /srv/mysql
mount /dev/lfs-lvm/mysql /srv/mysql
```

The LFS boot scripts automatically make these file systems available to the system in the checkfs script. Edit the /etc/fstab file as required to automatically mount them.

A LVM logical volume can host a root filesystem, but requires the use of an initramfs (initial RAM file system) and is not discussed here.

For a more information about LVM, see the **LVM HOWTO** and the lvm man pages.

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-3.1.1.

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 offter a hardware-like RAID implementation in the system BIOS. Sometime this is referred to as 'fake' RAID as the capabilites 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-3.3.2.

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-3.2 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
```

Is this arrangement, a separate boot partition is created as the first small RAID array and a root filesystem as the secong 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 botih 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-3.2.1, reiserfsprogs-3.6.24, etc). The formatted partitions can then be mounted. The /etc/fstab ifile 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**.

Last updated on 2013-02-11 10:51:17 -0800

---

mdadm-3.3.2

Introduction to mdadm

The mdadm package contains administration tools for software RAID.

This package is known to build and work properly using an LFS-7.6 platform.

Package Information

- Download (HTTP): **http://www.kernel.org/pub/linux/utils/raid/mdadm/mdadm-3.3.2.tar.xz**
- Download MD5 sum: 44698d351501cac6a89072dc877eb220
- Download size: 402 KB
- Estimated disk space required: 8.3 MB
- Estimated build time: less than 0.1 SBU

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/mdadm

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

First, fix a problem inroduced by gcc-4.9.0:

```
sed -i 's/Wall -Werror/Wall/' Makefile
```

Install mdadm by running the following commands:

```
make
```

If you wish to run the tests, ensure that your kernel supports RAID and that a version of mdadm is not already running, and issue: `make test` and then, as the *root* user: ./test

Now, as the *root* user:

```
make install
```

Command Explanations

`make everything`: This target creates extra programs, particularly a statically-linked version of `mdadm` and also versions of `mdassemble`. These all need to be manually installed.

Contents

Installed Programs: mdadm, mdmon and optionally mdassemble
Installed Libraries: None
Installed Directory: None

Short Descriptions

mdadm	manages MD devices aka Linux Software RAID.
mdmon	monitors MD external metadata arrays.
mdassemble	is a tiny program that can be used to assemble MD devices inside an initial ramdisk (initrd) or initramfs.

Last updated on 2014-09-17 11:48:47 -0700

ntfs-3g-2014.2.15

Introduction to Ntfs-3g

The Ntfs-3g package contains a stable, read-write open source driver for NTFS partitions. NTFS partitions are used by newer Microsoft operating systems. Ntfs-3g enables you to mount NTFS partitions in read-write mode from your Linux system. It uses the FUSE kernel module to be able to implement NTFS support in user space.

This package contains both the NTFS-3g driver itself and various utilities useful for manipulating NTFS partitions.

This package is known to build and work properly using an LFS-7.6 platform.

Package Information

- Download (HTTP): **http://tuxera.com/opensource/ntfs-3g_ntfsprogs-2014.2.15.tgz**
- Download MD5 sum: f11d563816249d730a00498983485f3a
- Download size: 1.1 MB

- Estimated disk space required: 24 MB
- Estimated build time: 0.4 SBU

Ntfs-3g Dependencies

Optional

[Fuse-2.9.3]().

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/ntfs-3g

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-2.9.3]() use this option to dynamically link `lowntfs-3g` and `ntfs-3g` to libfuse.

`--disable-ntfsprogs`: Disables installation of various utilities used to manipulate NTFS partitions.

`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

Installed Programs: 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, ntfscmp, ntfscp, ntfsfix, ntfsinfo, ntfslabel, ntfsls, ntfsresize and ntfsundelete

Installed Library: libntfs-3g.so

Installed Directories: /usr/include/ntfs-3g and /usr/share/doc/ntfs-3g

Short Descriptions

lowntfs-3g	is similar to ntfs-3g but uses the Fuse low-level interface.
mkfs.ntfs	is a symlink to mkntfs.
mkntfs	creates an NTFS file system.
mount.lowntfs-3g	is a symlink to lowntfs-3g.
mount.ntfs	mounts an NTFS filesystem.
mount.ntfs-3g	is a symbolic link to ntfs-3g.
ntfs-3g	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.
ntfs-3g.probe	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.
ntfs-3g.secaudit	audits NTFS Security Data.
ntfs-3g.usermap	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.
ntfscluster	identifies files in a specified region of an NTFS volume
ntfscp	copies a file to an NTFS volume.
ntfsfix	fixes common errors and forces Windows to check an NTFS partition.
ntfsls	lists directory contents on an NTFS filesystem.
ntfscat	prints NTFS files and streams on the standard output.
ntfsclone	clones an NTFS filesystem.
ntfscmp	compares two NTFS filesystems and tells the differences.
ntfsinfo	dumps a file's attributes.
ntfslabel	displays or changes the label on an ntfs file system.
ntfsresize	resizes an NTFS filesystem without data loss.
ntfsundelete	recovers a deleted file from an NTFS volume.
libntfs-3g.so	contains the Ntfs-3g API functions.

Last updated on 2014-09-13 17:48:40 -0700

gptfdisk-0.8.10

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 inteface similar to the classic fdisk program.

This package is known to build and work properly using an LFS-7.6 platform.

Package Information

- Download (HTTP): **http://downloads.sourceforge.net/project/gptfdisk/gptfdisk/0.8.10/gptfdisk-0.8.10.tar.gz**
- Download MD5 sum: 9cf4246c181c324bdbd553fe9b348373
- Download size: 192 KB
- Estimated disk space required: 2.9 MB
- Estimated build time: less than 0.1 SBU

Additional Downloads

- Recommended patch: **http://www.linuxfromscratch.org/patches/blfs/7.6/gptfdisk-0.8.10-convenience-1.patch**

gptfdisk Dependencies

popt-1.16 (required to build sgdisk) and ICU-53.1 (for Unicode partition names)

User Notes: *http://wiki.linuxfromscratch.org/blfs/wiki/gptdisk*

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-0.8.10-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`.

Last updated on 2014-09-09 14:11:38 -0700

parted-3.2

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-7.6 platform.

Package Information

- Download (HTTP): **http://ftp.gnu.org/gnu/parted/parted-3.2.tar.xz**
- Download MD5 sum: 0247b6a7b314f8edeb618159fa95f9cb
- Download size: 1.6 MB
- Estimated disk space required: 27 MB (additional 2 MB for the tests and additional 1 MB for optional PDF and Postscript documentation)
- Estimated build time: 0.4 SBU (additional 0.6 SBU for the tests)

Additional Downloads

- Optional, to fix build without device mapper support: **http://www.linuxfromscratch.org/patches/blfs/7.6/parted-3.2-devmapper-1.patch**

Parted Dependencies

Recommended

LVM2-2.02.111 (device-mapper, required if building udisks)

Pth-2.0.7

User Notes: *http://wiki.linuxfromscratch.org/blfs/wiki/parted*

Installation of parted

If you want to build without device mapper support, a fix is necessary:

```
patch -Np1 -i ../parted-3.2-devmapper-1.patch
```

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-20140525 installed and wish to create PDF and Postcript 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
```

If you wish to run the test suite, first remove a test that normally fails in BLFS, because it needs a locale C.UTF-8:

```
sed -i '/t0251-gpt-unicode.sh/d' tests/Makefile
```

To test the results, issue: `make check`. Note that many tests are skipped if not run as the `root` user.

Now, as the `root` user:

```
make install &&
install -v -m755 -d /usr/share/doc/parted-3.2/html &&
install -v -m644    doc/html/* \
                    /usr/share/doc/parted-3.2/html &&
install -v -m644    doc/{FAT,API,parted.{txt,html}} \
                    /usr/share/doc/parted-3.2
```

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-3.2
```

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

Installed Programs: parted and partprobe
Installed Libraries: libparted.so and libparted-fs-resize.so
Installed Directories: /usr/include/parted and /usr/share/doc/parted-3.2

Short Descriptions

`parted`	is a partition manipulation program.
`partprobe`	informs the OS of partition table changes.
`libparted.so`	contains the Parted API functions.

Last updated on 2014-09-17 11:48:47 -0700

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reiserfsprogs-3.6.24

Introduction to reiserfsprogs

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

This package is known to build and work properly using an LFS-7.6 platform.

Package Information

- Download (HTTP):
  http://ftp.kernel.org/pub/linux/kernel/people/jeffm/reiserfsprogs/v3.6.24/reiserfsprogs-3.6.24.tar.xz
- Download MD5 sum: 66787380fb418ff7d88a23e47cda7af6
- Download size: 316 KB
- Estimated disk space required: 13 MB
- Estimated build time: 0.1 SBU

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/reiser

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
```

Command Explanations

--sbindir=/sbin: This ensures that the reiserfsprogs utilities are installed in */sbin*.

Contents

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

Short Descriptions

debugreiserfs	can sometimes help to solve problems with ReiserFS file systems. If it is called without options, it prints the super block of any ReiserFS file system found on the device.
mkreiserfs	creates a ReiserFS file system.
reiserfsck	is used to check or repair a ReiserFS file system.
reiserfstune	is used for tuning the ReiserFS journal. *WARNING*: Don't use this utility without first reading the man page thoroughly.
resize_reiserfs	is used to resize an unmounted ReiserFS file system.

Last updated on 2014-09-19 13:27:36 -0700

---

sshfs-fuse-2.5

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-7.6 platform.

- Download (HTTP): **http://downloads.sourceforge.net/fuse/sshfs-fuse-2.5.tar.gz**
- Download MD5 sum: 17494910db8383a366b1301e5f5148a9
- Download size: 136 KB
- Estimated disk space required: 1.8 MB
- Estimated build time: less than 0.1 SBU

Sshfs Fuse Dependencies

Required

Fuse-2.9.3, GLib-2.40.0, and OpenSSH-6.6p1.

User Notes: *http://wiki.linuxfromscratch.org/blfs/wiki/sshfs-fuse*

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

Installed Program: sshfs
Installed Libraries: None
Installed Directories: None

Short Descriptions

sshfs   mounts an `ssh` server as a local file system.

Last updated on 2014-09-14 12:09:32 -0700

xfsprogs-3.2.1

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-7.6 platform.

Package Information

- Download (FTP): **ftp://oss.sgi.com/projects/xfs/cmd_tars/xfsprogs-3.2.1.tar.gz**
- Download MD5 sum: 5c6905932029c8f9207fe5a0a8aac24b
- Download size: 1.5 MB
- Estimated disk space required: 45 MB
- Estimated build time: 0.6 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     &&
make 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

Installed Programs: fsck.xfs, mkfs.xfs, xfs_admin, xfs_bmap, xfs_copy, xfs_db, xfs_estimate, xfs_freeze, xfs_fsr, xfs_growfs, xfs_info, xfs_io, xfs_logprint, xfs_mdrestore, xfs_metadump, xfs_mkfile, xfs_ncheck, xfs_quota, xfs_repair, and xfs_rtcp

Installed Libraries: libhandle.{so,a}

Installed Directories: /usr/include/xfs and /usr/share/doc/xfsprogs

Short Descriptions

`fsck.xfs`	simply exits with a zero status, since XFS partitions are checked at mount time.
`mkfs.xfs`	constructs an XFS file system.
`xfs_admin`	changes the parameters of an XFS file system.
`xfs_bmap`	prints block mapping for an XFS file.
`xfs_copy`	copies the contents of an XFS file system to one or more targets in parallel.
`xfs_estimate`	for each directory argument, estimates the space that directory would take if it were copied to an XFS filesystem (does not cross mount points).
`xfs_db`	is used to debug an XFS file system.
`xfs_freeze`	suspends access to an XFS file system.
`xfs_fsr`	applicable only to XFS filesystems, improves the organization of mounted filesystems, the reorganization algorithm operates on one file at a time, compacting or othewise improving the layout of the file extents (contiguous blocks of file data).
`xfs_growfs`	expands an XFS file system.
`xfs_info`	is equivalent to invoking `xfs_growfs`, but specifying that no change to the file system is to be made.
`xfs_io`	is a debugging tool like `xfs_db`, but is aimed at examining the regular file I/O path rather than the raw XFS volume itself.
`xfs_logprint`	prints the log of an XFS file system.

`xfs_mdrestore`	restores an XFS metadump image to a filesystem image.
`xfs_metadump`	copies XFS filesystem metadata to a file.
`xfs_mkfile`	creates an XFS file, padded with zeroes by default.
`xfs_ncheck`	generates pathnames from inode numbers for an XFS file system.
`xfs_quota`	is a utility for reporting and editing various aspects of filesystem quota.
`xfs_repair`	repairs corrupt or damaged XFS file systems.
`xfs_rtcp`	copies a file to the real-time partition on an XFS file system.
`libhandle.so`	contains XFS-specific functions that provide a way to perform certain filesystem operations without using a file descriptor to access filesystem objects.

Last updated on 2014-09-17 11:48:47 -0700

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-2.2.6

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-7.6 platform.

Package Information

- Download (HTTP): **http://www.bennewitz.com/bluefish/stable/source/bluefish-2.2.6.tar.bz2**
- Download MD5 sum: f15919e6a7b012a16e6b1f49d9db2b33
- Download size: 3.7 MB
- Estimated disk space required: 72 MB
- Estimated build time: 0.4 SBU

Bluefish Dependencies

Required

GTK+-2.24.24 or GTK+-3.12.2. If both are installed, `configure` defaults to using GTK+ 3.

Optional

enchant-1.6.0 (for spell checking), Gucharmap-3.12.1, **Jing** and PCRE-8.35

User Notes: *http://wiki.linuxfromscratch.org/blfs/wiki/bluefish*

Installation of Bluefish

Install Bluefish by running the following commands:

```
./configure --prefix=/usr --docdir=/usr/share/doc/bluefish-2.2.6 &&
make
```

This package does not come with a test suite.

Now, as the *root* user:

```
make install
```

Contents

Installed Program: bluefish

Installed Libraries: several under /usr/lib/bluefish/

Installed Directories: /usr/lib/bluefish, /usr/share/bluefish, /usr/share/doc/bluefish-2.2.6, and /usr/share/xml/bluefish

> **bluefish**   is a GTK+ text editor for markup and programming.

Last updated on 2014-09-19 13:27:36 -0700

Ed-1.10

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-7.6 platform.

Package Information

- Download (HTTP): **http://ftp.gnu.org/pub/gnu/ed/ed-1.10.tar.lz**
- Download (FTP): **ftp://ftp.gnu.org/pub/gnu/ed/ed-1.10.tar.lz**
- Download MD5 sum: d1e51bb6e78417af8fb12684c31fd9eb
- Download size: 64 KB
- Estimated disk space required: 1.4 MB
- Estimated build time: less than 0.1 SBU

Ed Dependencies

Required to uncompress the tarball

libarchive-3.1.2 (for bsdtar)

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/ed

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

Installed Programs: ed and red
Installed Libraries: None
Installed Directories: None

Short Descriptions

> **ed**   is a line-oriented text editor.
>
> **red**   is a restricted `ed` —it can only edit files in the current directory and cannot execute shell commands.

Last updated on 2014-09-19 13:27:36 -0700

Emacs-24.3

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-7.6 platform.

- Download (HTTP): **http://ftp.gnu.org/pub/gnu/emacs/emacs-24.3.tar.xz**
- Download (FTP): **ftp://ftp.gnu.org/pub/gnu/emacs/emacs-24.3.tar.xz**
- Download MD5 sum: ea9ed000ca165280265aabb55b9afbd7
- Download size: 34 MB
- Estimated disk space required: 458 MB
- Estimated build time: 6.8 SBU

Emacs Dependencies

Optional

X Window System, alsa-lib-1.0.28, D-Bus-1.8.8, GnuTLS-3.3.7, gobject-introspection-1.40.0, GPM-1.20.7, GTK+-2.24.24 or GTK+-3.12.2, ImageMagick-6.8.9-7, libjpeg-turbo-1.3.1, libpng-1.6.13, librsvg-2.40.3, LibTIFF-4.0.3, and **libungif**

User Notes: *http://wiki.linuxfromscratch.org/blfs/wiki/emacs*

Installation of Emacs

Install Emacs by running the following commands:

```
./configure --prefix=/usr          \
            --with-gif=no           \
            --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/24.3
```

If you have GTK+-2.24.24 or GTK+-3.12.2 installed, run, as *root* user:

```
gtk-update-icon-cache -qf /usr/share/icons/hicolor
```

Command Explanations

`--with-gif=no`: This option is required if **libungif** is not installed.

`--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

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

Short Descriptions

ctags	creates cross-reference tagfile database files for source code.
ebrowse	permits browsing of C++ class hierarchies from within `emacs`.
emacs	is an editor.
emacsclient	attaches an `emacs` session to an already running `emacsserver` instance.
etags	is another program to generate source code cross-reference tagfiles.
grep-changelog	prints entries in Change Logs matching various criteria.
rcs-checkin	is a shell script used to check files into RCS.

Last updated on 2014-09-19 13:27:36 -0700

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-7.6 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

User Notes: *http://wiki.linuxfromscratch.org/blfs/wiki/joe*

Installation of JOE

Install JOE by running the following commands:

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

This package does not come with a test suite.

Now, as the *root* user:

```
make install
```

Configuring JOE

Config Files

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

Contents

Installed Programs: jmacs, joe, jpico, jstar, rjoe, and termidx
Installed Libraries: None
Installed Directories: /etc/joe, /usr/share/joe, and /usr/share/doc/joe

Short Descriptions

`jmacs`	is a symbolic link to `joe` used to launch Emacs emulation mode.
`joe`	is a small text editor capable of emulating WordStar, Pico, and Emacs.
`jpico`	is a symbolic link to `joe` used to launch Pico emulation mode.
`jstar`	is a symbolic link to `joe` used to launch WordStar emulation mode.
`rjoe`	is a symbolic link to `joe` that restricts JOE to editing only files which are specified on the command-line.
`termidx`	is a program used by `joe` to generate the termcap index file.

Last updated on 2014-09-19 13:27:36 -0700

Nano-2.3.6

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-7.6 platform.

Package Information

- Download (HTTP): **http://ftp.gnu.org/gnu/nano/nano-2.3.6.tar.gz**
- Download (FTP): **ftp://ftp.gnu.org/gnu/nano/nano-2.3.6.tar.gz**

- Download MD5 sum: df5d201aecb5155a00055990cc407851
- Download size: 1.8 MB
- Estimated disk space required: 11 MB
- Estimated build time: 0.1 SBU

Nano Dependencies

Optional

[S-Lang-2.2.4](#)

User Notes: [*http://wiki.linuxfromscratch.org/blfs/wiki/Nano*](http://wiki.linuxfromscratch.org/blfs/wiki/Nano)

Installation of Nano

Install Nano by running the following commands:

```
./configure --prefix=/usr    \
            --sysconfdir=/etc \
            --enable-utf8    \
            --docdir=/usr/share/doc/nano-2.3.6 &&
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 -m644 doc/texinfo/nano.html /usr/share/doc/nano-2.3.6
```

Command Explanations

--enable-utf8: This switch enables unicode support in Nano.

--with-slang: 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

Installed Programs: nano and rnano (symlink)
Installed Libraries: None
Installed Directories: /usr/share/nano and /usr/share/doc/nano-2.3.6

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-7.4

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-7.6 platform.

Package Information

- Download (FTP): **ftp://ftp.vim.org/pub/vim/unix/vim-7.4.tar.bz2**
- Download MD5 sum: 607e135c559be642f210094ad023dc65
- Download size: 9.4 MB
- Estimated disk space required: 90 MB
- Estimated build time: 1.7 SBU

Vim Dependencies

Recommended

X Window System and GTK+-2.24.24

Optional

LessTif, Python-2.7.8, Tcl-8.6.2, Ruby-2.1.2, and GPM-1.20.7

User Notes: *http://wiki.linuxfromscratch.org/blfs/wiki/vim*

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`.

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-7.4`, making it consistent with the location of documentation for other packages:

```
ln -snfv ../vim/vim74/doc /usr/share/doc/vim-7.4
```

If you wish to update the runtime files, issue the following command (requires rsync-3.1.1):

```
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-7.4" -c ":q"
```

Command Explanations

--with-features=huge: This switch enables all the additional features available in Vim, including support for multibyte characters.

--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

Desktop File

If desired, create a menu entry for graphical vim, gvim.desktop, as the *root* user

```
cat > /usr/share/applications/gvim.desktop << "EOF"
[Desktop Entry]
Name=GVim Text Editor
Comment=Edit text files
Comment[pt_BR]=Edite arquivos de texto
TryExec=gvim
Exec=gvim -f %F
Terminal=false
Type=Application
Icon=gvim.png
Categories=Utility;TextEditor;
StartupNotify=true
MimeType=text/plain;
EOF
```

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/vim74/spell/.

To find out what's new in Vim-7.4 issue the following command:

```
:help version-7.4
```

For additional information on setting up Vim configuration files, see The vimrc Files and **http://vim.wikia.com/wiki/Example_vimrc**.

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

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`.

Last updated on 2014-09-17 15:52:31 -0700

Other Editors

`pico` is a text editor installed as a part of Re-alpine-2.03.

`mcedit` is a text editor installed as part of MC-4.8.13.

Last updated on 2012-04-17 10:53:55 -0700

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-7.6 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)

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/dash

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

Installed Program: dash
Installed Libraries: None
Installed Directories: None

Short Description

`dash` is a POSIX compliant shell.

Last updated on 2014-09-19 13:27:36 -0700

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-7.6 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

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/tcsh

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

Installed Program: tcsh
Installed Libraries: None
Installed Directory: /usr/share/doc/tcsh-6.18.01

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.

Last updated on 2014-09-19 13:27:36 -0700

zsh-5.0.6

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-7.6 platform.

Package Information

- Download (HTTP): **http://www.zsh.org/pub/zsh-5.0.6.tar.bz2**
- Download MD5 sum: 7150a6abc2aa1a79d81ed9a282594225
- Download size: 3.1 MB
- Estimated disk space required: 64 MB (includes installing documentation - additional 2 MB for PDF documentation)
- Estimated build time: 0.9 SBU (additional less than 0.1 SBU for PDF documentation and additional 0.2 SBU for the tests)

- Optional Documentation: **http://www.zsh.org/pub/zsh-5.0.6-doc.tar.bz2**
- Documentation MD5 sum: 3333759b5ae9710ceed11b02645a0049
- Documentation download size: 2.9 MB

zsh Dependencies

Optional

libcap-2.24 with PAM, PCRE-8.35, and Valgrind-3.10.0,

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/zsh

Installation of zsh

If you downloaded the optional documentation, unpack it with the following command:

```
tar --strip-components=1 -xvf ../zsh-5.0.6-doc.tar.bz2
```

Install zsh by running the following commands:

```
sed -e '/attr.mdh/ d' -e '/attr.pro/ d'                              \
    -e '/include <sys\/xattr.h>/ a\\n#include "attr.mdh"\n#include "attr.pro"' \
    -i Src/Modules/attr.c                        &&

./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-20140525 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-5.0.6/html &&
install -v -m644    Doc/html/* \
                    /usr/share/doc/zsh-5.0.6/html &&
install -v -m644    Doc/zsh.{html,txt} \
                    /usr/share/doc/zsh-5.0.6
```

If you downloaded the optional documentation, install it by issuing the following commands as the *root* user:

```
make htmldir=/usr/share/doc/zsh-5.0.6/html install.html &&
install -v -m644 Doc/zsh.dvi /usr/share/doc/zsh-5.0.6
```

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-5.0.6
```

Command Explanations

`sed ... Src/Modules/attr.c`: Fix zsh-5.0.6 to build with libcap-2.x (x > 23).

--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.

--disable-gdbm: This option disables the use of the GDBM library.

--enable-pcre: This option allows zsh 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.

The first time zsh is executed, you will be prompted by messages asking several questions. The answers will be used to create a ~/.zshrc file. If you wish to run these questions again, run **zsh /usr/share/zsh/5.0.6/functions/zsh-newuser-install -f**.

There are several built-in advanced prompts. In the **zsh** shell, start advanced prompt support with **autoload -U promptinit**, then **promptinit**. Available prompt names are listed with **prompt -l**. Select a particular one with **prompt <prompt-name>**. Display all available prompts with **prompt -p**. Except for the list and display commands above, you can insert the other ones in ~/.zshrc to be automatically executed at shell start, with the prompt you chose.

Configuration Information

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

```
cat >> /etc/shells << "EOF"
/bin/zsh
/bin/zsh-5.0.6
EOF
```

Contents

Installed Programs: zsh (hardlink to zsh-5.0.6) and zsh-5.0.6
Installed Libraries: Numerous plugin helper modules under /usr/lib/zsh/5.0.6/
Installed Directories: /etc/zsh, /usr/lib/zsh, /usr/share/doc/zsh-5.0.6 and /usr/share/zsh

Short Description

zsh   is a shell which has command-line editing, built-in spelling correction, programmable command completion, shell functions (with autoloading), a history mechanism, and a host of other features.

Last updated on 2014-09-19 13:27:36 -0700

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-2.1.0

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 7.6 platform.

Package Information

- Download (HTTP): **http://wiki.qemu.org/download/qemu-2.1.0.tar.bz2**
- Download MD5 sum: 6726977292b448cbc7f89998fac6983b
- Download size: 23 MB
- Estimated disk space required: 287 MB
- Estimated build time: 1.4 SBU

Qemu Dependencies

Required

GLib-2.40.0, Python-2.7.8, and X Window System

Recommended

SDL-1.2.15

Optional

ALSA-1.0.28, Check-0.9.14, cURL-7.37.1, MesaLib-10.2.7, and Cyrus SASL-2.1.26

> **Note**
>
> 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 enabing, reboot back to your LFS instance.

Kernel Configuration

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

```
Virtualization:  --->
  Kernel-based Virtual Machine (KVM) support: Y or M
    KVM for Intel processors support: Y or M
    KVM for AMD processors support: Y or M
```

The Intel or AMD settings are not both required, but the one matching your system processor is required.

For networking, check that bridge-utils-1.5 is installed and the following options in the kernel configuration are enabled:

```
Networking support  --->
  Networking options  --->
    802.1d Ethernet Bridging: Y or M
Device Drivers  --->
  Network device support  --->
    Universal TUN/TAP device driver support: Y or M
```

Installation of qemu

Install qemu by running the following commands:

```
sed -e '/#include <sys\/capability.h>/ d' \
    -e '/#include "virtio-9p-marshal.h"/ i#include <sys\/capability.h>' \
    -i fsdev/virtfs-proxy-helper.c &&

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

```
                --docdir=/usr/share/doc/qemu-2.1.0 \
                --target-list=x86_64-softmmu &&
    make
```

To run the built in tests, run `make V=1 check`.

Now, as the *root* user:

```
make install &&
[ -e  /usr/lib/libcacard.so ] && chmod -v 755 /usr/lib/libcacard.so
```

You will need a dedicated group that will contain users (other than root) allowed to access the KVM device. Add the group by running the following command as the *root* user:

```
groupadd -g 61 kvm
```

Add any users that might use the KVM device to that group:

```
usermod -a -G kvm <username>
```

You will also need to add a Udev rule so that the KVM device gets correct permissions:

```
cat > /lib/udev/rules.d/65-kvm.rules << "EOF"
KERNEL=="kvm", GROUP="kvm", MODE="0660"
EOF
```

> **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

`sed -e '/#include ... fsdev/virtfs-proxy-helper.c`: Fixes qemu-2.1.0 to build with libcap-2.24.

--target-list=x86_64-softmmu: This switch 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.

--audio-drv-list=alsa: This switch sets the audio driver to ALSA. For other drivers see the --audio-drv-list list in `configure`'s help output. The default audio driver is OSS.

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 Window System based terminal.

To install an operating system, download an iso of your choice or use a pre-installed 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 though 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/syssysctl.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

Installed Programs: qemu-ga, qemu-img, qemu-io, qemu-nbd, qemu-system-x86_64, virtfs-proxy-helper, and vscclient

Installed Library: libcacard.so

Installed Directories: /etc/qemu, /usr/include/cacard, /usr/lib/qemu, /usr/share/qemu, and /usr/share/doc/qemu-2.1.0

Short Description

`qemu-ga`	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.
`qemu-img`	provides commands to manage QEMU disk images.
`qemu-io`	is a diagnostic and manipulation program for (virtual) memory media. It is still at an early stage of development.
`qemu-nbd`	exports Qemu disk images using the QEMU Disk Network Block Device (NBD) protocol.
`qemu-system-x86_64`	is the QEMU PC System emulator.
`libcacard.so`	is the Virtual Smart Card Emulator library.

Last updated on 2014-09-19 13:27:36 -0700

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-1.5.1

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-7.6 platform.

Package Information

- Download (HTTP): **http://archive.apache.org/dist/apr/apr-1.5.1.tar.bz2**
- Download (FTP): **ftp://ftp.mirrorservice.org/sites/ftp.apache.org/apr/apr-1.5.1.tar.bz2**
- Download MD5 sum: 5486180ec5a23efb5cae6d4292b300ab
- Download size: 800 KB
- Estimated disk space required: 12 MB (additional 2 MB for the tests)
- Estimated build time: 0.3 SBU (1.1 with tests)

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/apr

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 switch prevents installation of static versions of the libraries.

Contents

Installed Program: apr-1-config
Installed Library: libapr-1.so
Installed Directories: /usr/include/apr-1 and /usr/share/apr-1

Short Descriptions

apr-1-config   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.

libapr-1.so   is the Apache Portable Runtime library.

Last updated on 2014-09-10 06:19:10 -0700

Apr-Util-1.5.3

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-7.6 platform.

Package Information

- Download (HTTP): **http://archive.apache.org/dist/apr/apr-util-1.5.3.tar.bz2**
- Download (FTP): **ftp://ftp.mirrorservice.org/sites/ftp.apache.org/apr/apr-util-1.5.3.tar.bz2**
- Download MD5 sum: 6f3417691c7a27090f36e7cf4d94b36e
- Download size: 680 KB
- Estimated disk space required: 11 MB
- Estimated build time: 0.2 SBU

Apr Util Dependencies

Required

Apr-1.5.1

Recommended

OpenSSL-1.0.1i

Optional

Berkeley DB-6.1.19, **FreeTDS**, MariaDB-10.0.13 or **MySQL**, OpenLDAP-2.4.39, PostgreSQL-9.3.5, SQLite-3.8.6 and unixODBC-2.3.2

User Notes: *http://wiki.linuxfromscratch.org/blfs/wiki/apr-util*

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-1.0.1i.

`--with-berkeley-db=/usr`: If you have installed Berkeley DB-6.1.19, use this switch to compile the `apr_dbm_db-1.so` plugin.

`--with-ldap`: If you have installed OpenLDAP-2.4.39, use this switch to compile the `apr_ldap.so` plugin.

Contents

Installed Program: apu-1-config
Installed Library: libaprutil-1.so and several plugins under /usr/lib/apr-util-1/
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.

Last updated on 2014-09-10 06:19:10 -0700

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-7.6 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)

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/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

Installed Programs: aspell, aspell-import, precat, preunzip, prezip, prezip-bin, pspell-config, run-with-aspell, word-list-compress and optionally, ispell and spell.

Installed Libraries: libaspell.so and libpspell.so

Installed Directories: /usr/include/pspell and /usr/lib/aspell-0.60

Short Descriptions

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

Boost-1.56.0

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-7.6 platform.

Package Information

- Download (HTTP): **http://downloads.sourceforge.net/boost/boost_1_56_0.tar.bz2**
- Download MD5 sum: a744cf167b05d72335f27c88115f211d
- Download size: 90 MB
- Estimated disk space required: 955 MB
- Estimated build time: 7.1 SBU

Boost Dependencies

Optional

ICU-53.1 and Python-2.7.8

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/boost

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_test_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_coroutine.so, libboost_date_time.so, libboost_exception.a, libboost_filesystem.so, libboost_graph.so, libboost_iostreams.so, libboost_locale.so, libboost_log_setup.so, libboost_log.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

Last updated on 2014-09-13 22:25:33 -0700

CLucene-2.3.3.4

Introduction to CLucene

CLucene is a C++ version of Lucene, a high performance text search engine.

This package is known to build and work properly using an LFS-7.6 platform.

Package Information

- Download (HTTP): **http://downloads.sourceforge.net/clucene/clucene-core-2.3.3.4.tar.gz**
- Download MD5 sum: 48d647fbd8ef8889e5a7f422c1bfda94
- Download size: 2.2 MB
- Estimated disk space required: 78 MB
- Estimated build time: 0.8 SBU

Additional Downloads

- Required patch: **http://www.linuxfromscratch.org/patches/blfs/7.6/clucene-2.3.3.4-contribs_lib-1.patch**

CLucene Dependencies

Required

CMake-3.0.1

Recommended

Boost-1.56.0

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/clucene

Installation of CLucene

Install CLucene by running the following commands:

```
patch -Np1 -i ../clucene-2.3.3.4-contribs_lib-1.patch &&
mkdir build &&
cd build &&
cmake -DCMAKE_INSTALL_PREFIX=/usr \
      -DBUILD_CONTRIBS_LIB=ON .. &&
make
```

Now, as the *root* user:

```
make install
```

Command Explanations

-DBUILD_CONTRIBS_LIB=ON: This cmake variable enables building the CLucene contribs library necessary for running applications that use language specific text analyzers like LibreOffice for example.

Contents

Installed Programs: None
Installed Libraries: libclucene-contribs-lib.so, libclucene-core.so, and libclucene-shared.so
Installed Directories: /usr/include/CLucene and /usr/lib/CLuceneConfig.cmake

Last updated on 2014-09-20 21:51:52 -0700

dbus-glib-0.102

Introduction to D-Bus GLib

The D-Bus GLib package contains GLib interfaces to the D-Bus API.

This package is known to build and work properly using an LFS-7.6 platform.

Package Information

- Download (HTTP): **http://dbus.freedesktop.org/releases/dbus-glib/dbus-glib-0.102.tar.gz**

- Download MD5 sum: f76b8558fd575d0106c3a556eaa49184
- Download size: 768 KB
- Estimated disk space required: 9.9 MB
- Estimated build time: 0.1 SBU

D-Bus GLib Dependencies

Required

D-Bus-1.8.8 and GLib-2.40.0

Optional

Doxygen-1.8.8

User Notes: *http://wiki.linuxfromscratch.org/blfs/wiki/dbus-glib*

Installation of D-Bus GLib

Install D-Bus GLib by running the following commands:

```
./configure --prefix=/usr     \
            --sysconfdir=/etc \
            --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-0.102

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.

Last updated on 2014-09-12 09:27:12 -0700

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-7.6 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-2.40.0

Recommended

Aspell-0.60.6.1

Optional

dbus-glib-0.102, **Hspell**, **Hunspell**, and **Voikko**

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/enchant

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

Installed Programs: enchant and enchant-lsmod
Installed Libraries: libenchant.{so,a} and various backend libraries
Installed Directories: /usr/{include/enchant,lib/enchant,share/enchant}

Short Descriptions

enchant	is a spellchecker
enchant-lsmod	lists available backends, languages, and dictionaries.
libenchant.{so,a}	contains spell checking interface API functions.

Last updated on 2014-09-16 13:49:04 -0700

Exempi-2.2.2

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-7.6 platform.

Package Information

- Download (HTTP): **http://libopenraw.freedesktop.org/download/exempi-2.2.2.tar.bz2**
- Download MD5 sum: b55db1031a3b4609c2241f7fc870ce32
- Download size: 3.3 MB

- Estimated disk space required: 123 MB (additional 13 MB for the tests)
- Estimated build time: less than 1.0 SBU (additional 0,3 SBU for the tests)

Exempi Dependencies

Required

Boost-1.56.0

Optional

Valgrind-3.10.0

User Notes: _http://wiki.linuxfromscratch.org/blfs/wiki/exempi_

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

Installed Program: exempi
Installed Library: libexempi.so
Installed Directory: /usr/include/exempi-2.0

Short Descriptions

`libexempi.so` is a library used to parse XMP metadata.

Last updated on 2014-09-19 13:13:19 -0700

GLib-2.40.0

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-7.6 platform.

Package Information

- Download (HTTP): **http://ftp.gnome.org/pub/gnome/sources/glib/2.40/glib-2.40.0.tar.xz**
- Download (FTP): **ftp://ftp.gnome.org/pub/gnome/sources/glib/2.40/glib-2.40.0.tar.xz**
- Download MD5 sum: 05fb7cb17eacbc718e90366a1eae60d9
- Download size: 6.5 MB
- Estimated disk space required: 161 MB (additional 54 MB to run the test suite)
- Estimated build time: 0.9 SBU (additional 3.4 SBU to run the test suite)

GLib Dependencies

Required

libffi-3.1 and Python-2.7.8

Recommended

[PCRE-8.35](#) (built with Unicode properties)

Optional

[D-Bus-1.8.8](#) (required to run the tests), [elfutils-0.160](#), **[FAM library](#)**, and [GTK-Doc-1.20](#)

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-1.3](#) and [desktop-file-utils-0.22](#), respectively.

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/glib2

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-0.22](#) and proceed to run the test suite.

To test the results, after installed the package, issue: `make -k check`. The tests need to be run in a graphical environment. Some tests may fail, for unknown reasons. One test (regex) fails when using the system pcre package.

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

Installed Programs: gapplication, 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

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

Installed Directories: /usr/include/gio-unix-2.0, /usr/include/glib-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

gdbus	is a simple tool used for working with D-Bus objects.
gdbus-codegen	is used to generate code and/or documentation for one or more D-Bus interfaces.
gio-querymodules	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.
glib-compile-resources	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.
glib-compile-schemas	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.
glib-genmarshal	is a C code marshaller generation utility for GLib closures.
glib-gettextize	is a variant of the gettext internationalization utility.

glib-mkenums	is a C language enum description generation utility.
gobject-query	is a small utility that draws a tree of types.
gresource	offers a simple commandline interface to GResource.
gsettings	offers a simple commandline interface to GSettings.
gtester	is a test running utility.
gtester-report	is a test report formatting utility.
GLib libraries	contain a low-level core libraries for the GIMP Toolkit.

Last updated on 2014-09-09 12:00:35 -0700

GLibmm-2.40.0

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-7.6 platform.

Package Information

- Download (HTTP): **http://ftp.gnome.org/pub/gnome/sources/glibmm/2.40/glibmm-2.40.0.tar.xz**
- Download (FTP): **ftp://ftp.gnome.org/pub/gnome/sources/glibmm/2.40/glibmm-2.40.0.tar.xz**
- Download MD5 sum: f62754f4f5c9030f8ff43c7ed20556c2
- Download size: 5.4 MB
- Estimated disk space required: 153 MB (additional 18 MB to run the test suite)
- Estimated build time: 1.0 SBU (additional 0.3 SBU to run the test suite)

GLibmm Dependencies

Required

GLib-2.40.0, GnuTLS-3.3.7 (for the tests), and libsigc++-2.3.2

Optional

Doxygen-1.8.8 and libxslt-1.1.28

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/glibmm

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

Installed Programs: None
Installed Libraries: libgiomm-2.4.so, libglibmm-2.4.so and libglibmm_generate_extra_defs-2.4.so
Installed Directories: /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-2.6.20

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-7.6 platform.

Package Information

- Download (HTTP): **http://ftp.gnome.org/pub/gnome/sources/gmime/2.6/gmime-2.6.20.tar.xz**
- Download (FTP): **ftp://ftp.gnome.org/pub/gnome/sources/gmime/2.6/gmime-2.6.20.tar.xz**
- Download MD5 sum: 82612c42f39f6e75273a92e6de44554f
- Download size: 724 KB
- Estimated disk space required: 19 MB (additional 1 MB for the tests)
- Estimated build time: 0.3 SBU

GMime Dependencies

Required

GLib-2.40.0 and libgpg-error-1.13

Recommended

gobject-introspection-1.40.0 and Vala-0.24.0

Optional

DocBook-utils-0.6.14, GPGME-1.5.1, GTK-Doc-1.20 and **Gtk#** (requires **Mono**)

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/gmime

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-1.5.1 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

Installed Programs: None
Installed Library: libgmime-2.6.so
Installed Directories: /usr/include/gmime-2.6 and /usr/share/gtk-doc/html/gmime-2.6

Short Descriptions

`libgmime-2.6.so`   contains API functions used by programs that need to comply to the MIME standards.

gobject-introspection-1.40.0

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-7.6 platform.

Package Information

- Download (HTTP): **http://ftp.gnome.org/pub/gnome/sources/gobject-introspection/1.40/gobject-introspection-1.40.0.tar.xz**
- Download (FTP): **ftp://ftp.gnome.org/pub/gnome/sources/gobject-introspection/1.40/gobject-introspection-1.40.0.tar.xz**
- Download MD5 sum: bbb103b5d88dbf2a257b7a26ae9bc666
- Download size: 1.3 MB
- Estimated disk space required: 45 MB (additional 5 MB for the tests)
- Estimated build time: 0.3 SBU (additional 0.2 SBU for the tests)

Required

GLib-2.40.0

Optional

Cairo-1.12.16 (required for the tests), GTK-Doc-1.20 and **Mako**

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/gobject-introspection

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

Installed Program: g-ir-annotation-tool, g-ir-compiler, g-ir-doc-tool, g-ir-generate, and g-ir-scanner
Installed Libraries: libgirepository-1.0.so and /usr/lib/gobject-introspection/giscanner/_giscanner.so
Installed Directories: /usr/include/gobject-introspection-1.0, /usr/lib/girepository-1.0, /usr/lib/gobject-introspection, /usr/share/gir-1.0, and /usr/share/gobject-introspection-1.0

Short Descriptions

`g-ir-compiler`	converts one or more GIR files into one or more typelib.
`g-ir-scanner`	is a tool which generates GIR XML files by parsing headers and introspecting GObject based libraries.
`g-ir-generate`	is a GIR generator using the repository API.
`libgirepository-1.0.so`	provides an API to access to the typelib metadata.

Grantlee-0.4.0

Introduction to grantlee

Grantlee is a set of free software libraries written using the Qt framework. Currently two libraries are shipped with Grantlee: Grantlee Templates and Grantlee TextDocument. The goal of Grantlee Templates is to make it easier for application developers to separate the structure of documents from the data they contain, opening the door for theming.

This package is known to build and work properly using an LFS-7.6 platform.

Package Information

- Download (HTTP): **http://downloads.grantlee.org/grantlee-0.4.0.tar.gz**
- Download MD5 sum: fa8a2e9be7be7e3a89e700679e6f3014
- Download size: 1.1 MB
- Estimated disk space required: 31 MB
- Estimated build time: 0.8 SBU

Grantlee Dependencies

Required

CMake-3.0.1 and Qt-4.8.6

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/grantlee

Installation of Grantlee

Install Grantlee 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 test suite.

Now, as the *root* user:

```
make install
```

Contents

Installed Programs: none
Installed Libraries: libgrantlee_core.so and libgrantlee_gui.so
Installed Directories: $KDE_PREFIX/lib/cmake/grantlee, $KDE_PREFIX/lib/grantlee/0.4, and $KDE_PREFIX/include/grantlee

Last updated on 2013-08-04 11:28:54 -0500

Gsl-1.16

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-7.6 platform.

Package Information

- Download (HTTP): **http://ftp.gnu.org/pub/gnu/gsl/gsl-1.16.tar.gz**
- Download (FTP): **ftp://ftp.gnu.org/pub/gnu/gsl/gsl-1.16.tar.gz**

- Download MD5 sum: e49a664db15d81c968415cd55f62bc8b
- Download size: 3.4 MB
- Estimated disk space required: 208 MB
- Estimated build time: 2.2 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-1.16 &&
cp doc/gsl-ref.html/* /usr/share/doc/gsl-1.16
```

Command Explanations

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

Contents

Installed Programs: gsl-config, gsl-histogram, and gsl-randist.
Installed Libraries: libgslcblas.so and libgsl.so.
Installed Directory: /usr/include/gsl

Short Descriptions

`gsl-config`	is a shell script to get the version number and compiler flags of the installed Gsl library.
`gsl-histogram`	is a demonstration program for the GNU Scientific Library that computes a histogram from data taken from stdin.
`gsl-randist`	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.

Last updated on 2014-09-14 13:18:45 -0700

ICU-53.1

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-7.6 platform.

Package Information

- Download (HTTP): **http://download.icu-project.org/files/icu4c/53.1/icu4c-53_1-src.tgz**
- Download MD5 sum: b73baa6fbdfef197608d1f69300919b9
- Download size: 23 MB
- Estimated disk space required: 294 MB (additional 25 MB for the tests)
- Estimated build time: 1.2 SBU (additional 1.5 SBU for the tests)

ICU Dependencies

Optional

LLVM-3.5.0 (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
```

Command Explanations

`CXX=g++`: If you prefer, this environment variable, used in the configure line, forces use of `g++` compiler insted of `clang++`, if the latter is installed.

Contents

Installed Programs: derb, genbrk, genccode, gencfu, gencmn, gencnval, gendict, gennorm2, genrb, gensprep, icu-config, icuinfo, icupkg, makeconv, pkgdata and uconv

Installed Libraries: libicudata.so, libicui18n.so, libicuio.so, libicule.so, libiculx.so, libicutest.so, libicutu.so and libicuuc.so

Installed Directories: /usr/include/layout, /usr/include/unicode, /usr/lib/icu and /usr/share/icu

Short Descriptions

`derb`	disassembles a resource bundle.
`genbrk`	compiles ICU break iteration rules source files into binary data files.
`genccode`	generates C or platform specific assembly code from an ICU data file.
`gencfu`	reads in Unicode confusable character definitions and writes out the binary data.
`gencmn`	generates an ICU memory-mappable data file.
`gencnval`	compiles the converter's aliases file.
`gendict`	compiles word list into ICU string trie dictionary.
`genrb`	compiles a resource bundle.
`gensprep`	compiles StringPrep data from filtered RFC 3454 files.
`icu-config`	outputs ICU build options.
`icuinfo`	outputs configuration information about the current ICU.
`icupkg`	extracts or modifies an ICU .dat archive.
`makeconv`	compiles a converter table.
`pkgdata`	packages data for use by ICU.
`uconv`	converts data from one encoding to another.
`libicudata.so`	is the data library.
`libicui18n.so`	is the internationalization (i18n) library.
`libicuio.so`	is the ICU I/O (unicode stdio) library.
`libicule.so`	is the layout engine.
`libiculx.so`	is the layout extensions engine.
`libicutest.so`	is the test library.
`libicutu.so`	is the tool utility library.
`libicuuc.so`	is the common library.

Last updated on 2014-09-15 12:23:10 -0700

JS-17.0.0

Introduction to JS

JS is Mozilla's JavaScript engine written in C/C++.

This package is known to build and work properly using an LFS 7.6 platform.

Package Information

- Download (HTTP): **http://ftp.mozilla.org/pub/mozilla.org/js/mozjs17.0.0.tar.gz**
- Download (FTP): **ftp://ftp.mozilla.org/pub/mozilla.org/js/mozjs17.0.0.tar.gz**
- Download MD5 sum: 20b6f8f1140ef6e47daa3b16965c9202
- Download size: 6.5 MB
- Estimated disk space required: 1.2 GB
- Estimated build time: 2.0 SBU

JS Dependencies

Required

libffi-3.1, NSPR-4.10.7, Python-2.7.8 and Zip-3.0

Optional

Doxygen-1.8.8

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/JS

Installation of JS

Install JS by running the following commands:

```
cd js/src &&
./configure --prefix=/usr        \
            --enable-readline    \
            --enable-threadsafe  \
            --with-system-ffi    \
            --with-system-nspr && 
make
```

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

Now, as the *root* user:

```
make install &&
find /usr/include/js-17.0/            \
     /usr/lib/libmozjs-17.0.a         \
     /usr/lib/pkgconfig/mozjs-17.0.pc \
     -type f -exec chmod -v 644 {} \;
```

Command Explanations

`--enable-threadsafe`: This switch enables support for multiple threads.

`--enable-readline`: This switch enables Readline support in JS shell.

`--with-system-ffi`: This switch forces the package to link to the system version of libffi instead of using its included, and now old, version.

`--with-system-nspr`: This switch forces the package to link to the system version of NSPR instead of using its included, and now old, version.

Contents

Installed Programs: js17 and js17-config
Installed Libraries: libmozjs-17.0.a and libmozjs-17.0.so
Installed Directory: /usr/include/js-17.0

Short Descriptions

`js17`	provides a command line interface to the JavaScript engine.
`js17-config`	is used to find out JS compiler and linker flags.
`libmozjs-17.0.so`	contains the Mozilla JavaScript API functions.

Last updated on 2014-09-09 12:00:35 -0700

JS-24.2.0

Introduction to JS

JS is Mozilla's JavaScript engine written in C/C++.

This package is known to build and work properly using an LFS-7.6 platform.

Package Information

- Download (HTTP): **http://ftp.mozilla.org/pub/mozilla.org/js/mozjs-24.2.0.tar.bz2**
- Download (FTP): **ftp://ftp.mozilla.org/pub/mozilla.org/js/mozjs-24.2.0.tar.bz2**
- Download MD5 sum: 5db79c10e049a2dc117a6e6a3bc78a8e
- Download size: 15 MB
- Estimated disk space required: 1.8 GB
- Estimated build time: 4.2 SBU (additional 1.6 SBU for the tests)

JS Dependencies

Required

libffi-3.1, NSPR-4.10.7, Python-2.7.8 and Zip-3.0

Optional

Doxygen-1.8.8

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/JS2

Installation of JS

> ### Note
>
> This package can be installed without problems, if you have installed JS-17.0.0. It is necessary to set `SHELL=/bin/bash` if you are working in chroot.

Install JS by running the following commands:

```
cd js/src &&
./configure --prefix=/usr        \
            --enable-readline   \
            --enable-threadsafe \
            --with-system-ffi   \
            --with-system-nspr &&
make
```

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

Now, as the *root* user:

```
make install &&
find /usr/include/mozjs-24/          \
     /usr/lib/libmozjs-24.a          \
     /usr/lib/pkgconfig/mozjs-24.pc \
     -type f -exec chmod -v 644 {} \;
```

Command Explanations

`--enable-threadsafe`: This switch enables support for multiple threads.

`--enable-readline`: This switch enables Readline support in JS shell.

`--with-system-ffi`: This switch forces the package to link to the system version of libffi instead of using its included, and now old, version.

`--with-system-nspr`: This switch forces the package to link to the system version of NSPR instead of using its included, and now old, version.

Installed Programs: js24 and js24-config
Installed Libraries: libmozjs-24.a and libmozjs-24.so
Installed Directory: /usr/include/mozjs-24

Short Descriptions

js24	provides a command line interface to the JavaScript engine.
js24-config	is used to find out JS compiler and linker flags.
libmozjs-24.so	contains the Mozilla JavaScript API functions.

Last updated on 2014-09-21 16:43:46 -0700

JSON-C-0.12

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-7.6 platform.

Package Information

- Download (HTTP): **https://s3.amazonaws.com/json-c_releases/releases/json-c-0.12.tar.gz**
- Download MD5 sum: 3ca4bbb881dfc4017e8021b5e0a8c491
- Download size: 496 KB
- Estimated disk space required: 6.7 MB
- Estimated build time: less than 0.1 SBU (add 1.0 SBU for tests)

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/json-c

Installation of JSON-C

> **Note**
>
> This package does not support parallel build.

Install JSON-C by running the following commands:

```
sed -i s/-Werror// Makefile.in              &&
./configure --prefix=/usr --disable-static &&
make -j1
```

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

Now, as the *root* user:

```
make install
```

Command Explanations

`sed ...`: This instruction removes a flag that prevents one file from compiling.

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

Contents

Installed Programs: None
Installed Libraries: libjson-c.so and libjson.so
Installed Directories: /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. |

Last updated on 2014-09-16 13:49:04 -0700

JSON-GLib-1.0.2

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-7.6 platform.

Package Information

- Download (HTTP): **http://ftp.gnome.org/pub/gnome/sources/json-glib/1.0/json-glib-1.0.2.tar.xz**
- Download (FTP): **ftp://ftp.gnome.org/pub/gnome/sources/json-glib/1.0/json-glib-1.0.2.tar.xz**
- Download MD5 sum: e43efaf6852958207982e79141bf371e
- Download size: 540 KB
- Estimated disk space required: 11 MB (additional 2 MB for the tests)
- Estimated build time: 0.1 SBU

JSON-GLib Dependencies

Required

GLib-2.40.0

Optional (Required if building GNOME)

gobject-introspection-1.40.0

Optional

GTK-Doc-1.20

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/json-glib

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: json-glib-format and json-glib-validate
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. |

Last updated on 2014-09-18 14:33:53 -0700

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keyutils-1.5.9

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-7.6 platform.

Package Information

- Download (HTTP): **http://people.redhat.com/~dhowells/keyutils/keyutils-1.5.9.tar.bz2**
- Download MD5 sum: 7f8ac985c45086b5fbcd12cecd23cf07
- Download size: 76 KB
- Estimated disk space required: 1.7 MB
- Estimated build time: less than 0.1 SBU

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/keyutils

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 NO_ARLIB=1 install
```

Command Explanations

NO_ARLIB=1: This make flag disables installing the static library.

Configuring keyutils

Config Files

/etc/request-key.conf and /etc/request-key.d/*

Contents

Installed Programs: keyctl, key.dns_resolver, and request-key
Installed Library: libkeyutils.so
Installed Directory: /etc/request-key.d and /usr/share/keyutils

Short Descriptions

keyctl   is to control the key management facility in various ways using a variety of subcommands.

libkeyutils.so   contains the keyuils library API instantiation.

Last updated on 2014-09-17 11:48:47 -0700

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-7.6 platform.

Package Information

- Download (HTTP): **http://www.libarchive.org/downloads/libarchive-3.1.2.tar.gz**
- Download MD5 sum: efad5a503f66329bb9d2f4308b5de98a

- Estimated disk space required: 60 MB
- Estimated build time: 0.5 SBU

libarchive Dependencies

Optional

libxml2-2.9.1, LZO-2.08, and Nettle-2.7.1 or OpenSSL-1.0.1i

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/libarchive

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.

`--without-xml2`: This switch sets expat for xar archive format support instead of preferred libxml2 if both packages are installed.

`--without-nettle`: This switch sets OpenSSL for crypto support instead of preferred Nettle if both packages are installed.

Contents

Installed Programs: bsdcpio and bsdtar
Installed Libraries: libarchive.so
Installed Directories: None

Short Descriptions

`bsdcpio`	is a tool similar to `cpio`.
`bsdtar`	is a tool similar to GNU `tar`.
`libarchive.so`	is a library that can create and read several streaming archive formats.

Last updated on 2014-09-10 09:45:01 -0700

libassuan-2.1.2

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-7.6 platform.

Package Information

- Download (FTP): **ftp://ftp.gnupg.org/gcrypt/libassuan/libassuan-2.1.2.tar.bz2**
- Download MD5 sum: 1dc4c3e1dbfb3939bfa2d72db8e136ba
- Download size: 504 KB
- Estimated disk space required: 5.6 MB (additional 0.1 MB for the tests and 2.1 MB to build and install documentation)
- Estimated build time: less than 0.1 SBU

- Optional, to fix the docummentation build: **http://www.linuxfromscratch.org/patches/blfs/7.6/libassuan-2.1.2-fix_doc_build-1.patch**

libassuan Dependencies

Required

libgpg-error-1.13

Optional

texlive-20140525

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/libassuan

Installation of libassuan

Install libassuan by running the following commands:

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

If you wish to build documentation, you must have texlive-20140525 installed and issue the following commands:

```
patch -Np1 -i ../libassuan-2.1.2-fix_doc_build-1.patch &&
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-2.1.2 &&
install -v -m644  doc/assuan.{pdf,ps,dvi} \
                  /usr/share/doc/libassuan-2.1.2
```

Contents

Installed Program: libassuan-config
Installed Library: libassuan.so
Installed Directory: /usr/share/doc/libassuan-2.1.2

Short Descriptions

`libassuan.so`   is an inter process communication library which implements the Assuan protocol.

Last updated on 2014-09-21 04:01:10 -0700

---

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-7.6 platform.

Package Information

- Download (HTTP): **http://pkgs.fedoraproject.org/repo/pkgs/libatasmart/libatasmart-0.19.tar.xz/53afe2b155c36f658e121fe6def33e77/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

Installed Programs: skdump and sktest
Installed Library: libatasmart.so
Installed Directory: /usr/share/doc/libatasmart-0.19

Short Descriptions

`skdump`	is a utility that reports on the status of the disk.
`sktest`	is a utility to issue disks tests.
`libatasmart.so`	contains the ATA S.M.A.R.T API functions.

Last updated on 2014-09-17 04:20:33 -0700

libatomic_ops-7.4.2

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-7.6 platform.

Package Information

- Download (HTTP): **http://www.ivmaisoft.com/_bin/atomic_ops//libatomic_ops-7.4.2.tar.gz**
- Download MD5 sum: 1d6538604b314d2fccdf86915e5c0857
- Download size: 456 KB
- Estimated disk space required: 5.3 MB (additional 1.9 MB for tests)
- Estimated build time: less than 0.1 SBU (additional less than 0.1 SBU for tests)

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/libatomic_ops

Installation of libatomic_ops

Install libatomic_ops by running the following commands:

```
sed -i 's#pkgdata#doc#' doc/Makefile.am &&
autoreconf -fi &&
./configure --prefix=/usr    \
            --enable-shared  \
            --disable-static \
            --docdir=/usr/share/doc/libatomic_ops-7.4.2 &&
make
```

To check the results, issue `LD_LIBRARY_PATH=../src/.libs make check`.

Now, as the *root* user:

```
make install &&
mv -v  /usr/share/libatomic_ops/* \
       /usr/share/doc/libatomic_ops-7.4.2 &&
rm -vrf /usr/share/libatomic_ops
```

Command Explanations

`sed -i ...`: This `sed` makes the docs to be installed in an appropriate directory.

`autoreconf -fi`: This regenerates the `configure` script and the `Makefile.in`.

--enable-shared: This switch enables building of the `libatomic_ops` shared libraries.

--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 and /usr/share/doc/libatomic_ops-7.4.2

Short Descriptions

`libatomic_ops.so`   contains functions for atomic memory operations.

Last updated on 2014-09-13 17:48:40 -0700

---

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-7.6 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-2.40.0 and libxml2-2.9.1

Optional

GTK-Doc-1.20

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/libcroco

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
```

--*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: croco-0.6-config and csslint-0.6
Installed Library: libcroco-0.6.so
Installed Directories:/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.

Last updated on 2014-09-13 17:48:40 -0700

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-7.6 platform.

Package Information

- Download (HTTP): **http://pkgs.fedoraproject.org/repo/pkgs/libdaemon/libdaemon-0.14.tar.gz/509dc27107c21bcd9fbf2f95f5669563/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-1.8.8 and Lynx-2.8.8rel.2

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/libdaemon

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

license clause. This switch prevents installation of static versions of the libraries.

Contents

Installed Programs: None
Installed Library: libdaemon.so
Installed Directories: /usr/include/libdaemon and /usr/share/doc/libdaemon-0.14

Short Descriptions

`libdaemon.so`   contains the libdaemon API functions.

Last updated on 2014-09-17 11:48:47 -0700

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-7.6 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-4.8.6

Optional

QJson-0.8.1 (for building the test suite) and Doxygen-1.8.8 (for building the API documentation)

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/libdbusmenu-qt

Installation of libdbusmenu-qt

Install libdbusmenu-qt by running the following commands:

```
mkdir build &&
cd    build &&

cmake -DCMAKE_INSTALL_PREFIX=/usr \
      -DCMAKE_BUILD_TYPE=Release  \
      -DWITH_DOC=OFF .. &&
make
```

To test the results (**QJson** must be installed), issue: `make -k check`.

Now, as the *root* user:

```
make install
```

Command Explanations

`-DCMAKE_BUILD_TYPE=Release`: This switch is used to build without debugging symbols and apply a higher level of compiler optimizations.

`-DWITH_DOC=OFF`: This option is set to avoid building the API documentation. Omit it if you have doxygen installed and want the documentation.

Installed Programs: None
Installed Library: libdbusmenu-qt.so
Installed Directory: $QT4DIR/include/dbusmenu-qt

Last updated on 2014-09-15 22:13:43 -0700

---

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-7.6 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-1.0.1i

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/libesmtp

Installation of libESMTP

Install libESMTP by running the following commands:

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

This package does not come with a test suite.

Now, as the *root* user:

```
make install
```

Contents

Installed Program: libesmtp-config
Installed Libraries: libesmtp.{so,a} and libESMTP SASL plugins
Installed Directory: /usr/lib/esmtp-plugins

Short Descriptions

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

Last updated on 2014-09-20 21:51:52 -0700

---

libffi-3.1

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.

Package Information

- Download (FTP): **ftp://sourceware.org/pub/libffi/libffi-3.1.tar.gz**
- Download MD5 sum: f5898b29bbfd70502831a212d9249d10
- Download size: 916 KB
- Estimated disk space required: 6.5 MB (additional 1.7 MB for the tests)
- Estimated build time: less than 0.1 SBU (additional 0.6 SBU for the tests)

libffi Dependencies

Optional

DejaGnu-1.5.1 (required to run the testsuite)

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/libffi

Installation of libffi

Install libffi by running the following commands:

```
sed -e '/^includesdir/ s:$(libdir)/@PACKAGE_NAME@-@PACKAGE_VERSION@/include:$(includedir):' \
    -i include/Makefile.in &&
sed -e '/^includedir/ s:${libdir}/@PACKAGE_NAME@-@PACKAGE_VERSION@/include:@includedir@:' \
    -e 's/^Cflags: -I${includedir}/Cflags:/' \
    -i libffi.pc.in         &&
./configure --prefix=/usr --disable-static &&
make
```

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

Now, as the *root* user:

```
make install
```

Command Explanations

`sed ... include/Makefile.in` and `sed ... libffi.pc.in`: Make package install headers into /usr/include instead of /usr/lib/libffi-3.1/include.

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

Contents

Installed Programs: None
Installed Library: libffi.so
Installed Directories: None

Short Descriptions

`libffi.so`   contains the libffi API functions.

Last updated on 2014-09-09 12:00:35 -0700

libgee-0.6.8

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-7.6 platform.

Package Information

- Download (HTTP): **http://ftp.gnome.org/pub/gnome/sources/libgee/0.6/libgee-0.6.8.tar.xz**
- Download (FTP): **ftp://ftp.gnome.org/pub/gnome/sources/libgee/0.6/libgee-0.6.8.tar.xz**
- Download MD5 sum: 2688c24f9a12e7616ee808f9092d0afe

- Download size: 455 KB
- Estimated disk space required: 21 MB
- Estimated build time: 0.2 SBU

libgee Dependencies

Required

GLib-2.40.0

Recommended

gobject-introspection-1.40.0 and Vala-0.24.0

User Notes: _http://wiki.linuxfromscratch.org/blfs/wiki/libgee_

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

Installed Programs: None
Installed Library: libgee.so
Installed Directory: /usr/include/gee-1.0

Short Descriptions

`libgee.so`   contains the libgee API functions.

**Last updated on 2014-09-13 22:25:33 -0700**

libgcrypt-1.6.2

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-7.6 platform.

Package Information

- Download (FTP): **ftp://ftp.gnupg.org/gcrypt/libgcrypt/libgcrypt-1.6.2.tar.bz2**
- Download MD5 sum: b54395a93cb1e57619943c082da09d5f
- Download size: 2.4 MB
- Estimated disk space required: 38 MB (additional 7 MB SBU for docs)
- Estimated build time: 0.3 SBU (additional 0.1 SBU for docs and 0.8 SBU for tests)

libgcrypt Dependencies

Required

libgpg-error-1.13

Optional

libcap-2.24 with PAM and Pth-2.0.7

Installation of libgcrypt

Install libgcrypt by running the following commands:

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

Only `info` documentation is shipped in the package tarball. If you wish to build alternate formats of the documentation, (you must have [texlive-20140525](#) 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-1.6.2 &&
install -v -m644     README doc/{README.apichanges,fips*,libgcrypt*} \
                     /usr/share/doc/libgcrypt-1.6.2
```

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

```
install -v -dm755    /usr/share/doc/libgcrypt-1.6.2/html &&
install -v -m644 doc/gcrypt.html/* \
                     /usr/share/doc/libgcrypt-1.6.2/html &&
install -v -m644 doc/gcrypt_nochunks.html \
                     /usr/share/doc/libgcrypt-1.6.2 &&
install -v -m644 doc/gcrypt.{pdf,ps,dvi,txt,texi} \
                     /usr/share/doc/libgcrypt-1.6.2
```

Command Explanations

`--with-capabilities`: This option enables libcap2 support.

Contents

Installed Programs: dumpsexp, hmac256, libgcrypt-config, and mpicalc
Installed Library: libgcrypt.so
Installed Directory: /usr/share/doc/libgcrypt-1.6.2

Short Descriptions

`libgcrypt.so`   contains the cryptographic API functions.

Last updated on 2014-09-10 06:19:10 -0700

---

libgpg-error-1.13

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-7.6 platform.

Package Information

- Download (FTP): ftp://ftp.gnupg.org/gcrypt/libgpg-error/libgpg-error-1.13.tar.bz2
- Download MD5 sum: fe0cfa7e15262ef8fdeee366109e9ff6
- Download size: 484 KB
- Estimated disk space required: 6.9 MB
- Estimated build time: less than 0.1 SBU

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/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-1.13/README
```

Command Explanations

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

Contents

Installed Programs: gpg-error and gpg-error-config
Installed Library: libgpg-error.so
Installed Directories: /usr/share/common-lisp and /usr/share/doc/libgpg-error-1.13

Short Descriptions

`gpg-error`	is used to determine libgpg-error error codes.
`gpg-error-config`	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.
`libgpg-error.so`	contains the libgpg-error API functions.

Last updated on 2014-09-10 06:19:10 -0700

libgsf-1.14.30

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-7.6 platform.

Package Information

- Download (HTTP): **http://ftp.gnome.org/pub/gnome/sources/libgsf/1.14/libgsf-1.14.30.tar.xz**
- Download (FTP): **ftp://ftp.gnome.org/pub/gnome/sources/libgsf/1.14/libgsf-1.14.30.tar.xz**
- Download MD5 sum: e7b672ef37ef6a853ce149c03e4d3a63
- Download size: 572 KB
- Estimated disk space required: 14 MB (additional 2 MB for tests)
- Estimated build time: 0.2 SBU (additional 0.1 SBU for tests)

libgsf Dependencies

Required

GLib-2.40.0 and libxml2-2.9.1

Recommended

gdk-pixbuf-2.30.8 (To build gsf-office-thumbnailer)

Optional

gobject-introspection-1.40.0 and GTK-Doc-1.20

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, /usr/share/gtk-doc/html/gsf and /usr/share/thumbnailers

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.

Last updated on 2014-09-19 13:13:19 -0700

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-7.6 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

libusb-1.0.19 and udev-extras (from eudev) (for GUdev)

Recommended

gobject-introspection-1.40.0 and Vala-0.24.0

Optional

GTK-Doc-1.20

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

Installed Programs: None
Installed Library: libgusb.so
Installed Directories: /usr/include/gusb-1 and /usr/share/gtk-doc/html/gusb

Short Descriptions

`libgusb.so`   contains the libgusb API functions.

Last updated on 2014-09-17 21:56:07 -0700

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-7.6 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-3.0.1

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/libical

Installation of libical

Install libical 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
```

Command Explanations

-DCMAKE_BUILD_TYPE=Release: This switch is used to apply higher level of the compiler optimizations.

Contents

Installed Programs: None
Installed Libraries: libical.{so,a}, libicalss.{so,a} and libicalvcal.{so,a}
Installed Directory: /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.

Last updated on 2014-09-12 09:27:12 -0700

libidn-1.29

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-7.6 platform.

Package Information

- Download (HTTP): **http://ftp.gnu.org/gnu/libidn/libidn-1.29.tar.gz**
- Download (FTP): **ftp://ftp.gnu.org/gnu/libidn/libidn-1.29.tar.gz**
- Download MD5 sum: 2b67bb507207af379f9461e1307dc84b
- Download size: 3.3 MB
- Estimated disk space required: 23 MB
- Estimated build time: 0.2 SBU

libidn Dependencies

Optional

Pth-2.0.7, Emacs-24.3, GTK-Doc-1.20, OpenJDK-1.7.0.65/IcedTea-2.5.2, **DotGNU Portable.NET** or Mono, and Valgrind-3.10.0

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/libidn

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            &&
```

```
mkdir -v        /usr/share/doc/libidn-1.29    &&
cp -r -v doc/* /usr/share/doc/libidn-1.29
```

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-1.29 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.

Last updated on 2014-09-14 12:09:32 -0700

libiodbc-3.52.9

Introduction to libiodbc

libiodbc is an API to ODBC compatible databases.

This package is known to build and work properly using an LFS-7.6 platform.

Package Information

- Download (HTTP): **http://downloads.sourceforge.net/project/iodbc/iodbc/3.52.9/libiodbc-3.52.9.tar.gz**
- Download MD5 sum: 98a681e06a1df809af9ff9a16951b8b6
- Download size: 1.0 MB
- Estimated disk space required: 28 MB
- Estimated build time: 0.3 SBU

libiodbc Dependencies

Recommended

GTK+-2.24.24 (to create the GUI admin tool)

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/libiodbc

Installation of libiodbc

Install libiodbc by running the following commands:

```
./configure --prefix=/usr                  \
            --with-iodbc-inidir=/etc/iodbc  \
            --includedir=/usr/include/iodbc \
            --disable-libodbc               \
            --disable-static                &&
make
```

This package does not come with a test suite.

Now, as the *root* user:

```
make install
```

Command Explanations

--with-iodbc-inidir=/etc/iodbc: 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.

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

Contents

Installed Programs: iodbc-config, iodbctest, iodbctestw, and iodbcadm
Installed Libraries: libiodbc.so, libiodbcinst.so, and libiodbcadm.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.

Last updated on 2014-09-20 21:51:52 -0700

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-7.6 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-1.13

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/libksba

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

Installed Program: ksba-config
Installed Library: libksba.{so,a}
Installed Directory: None

`ksba-config`	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.
`libksba.{so,a}`	contains the cryptographic API functions.

Last updated on 2014-09-17 11:48:47 -0700

---

liblinear-1.94

Introduction to liblinear

This package provides a library for learning linear classifiers for large scale applications. It supports Support Vector Machines (SVM) with L2 and L1 loss, logistic regression, multi class classification and also Linear Programming Machines (L1-regularized SVMs). Its computational complexity scales linearly with the number of training examples making it one of the fastest SVM solvers around.

This package is known to build and work properly using an LFS-7.6 platform.

Package Information

- Download (HTTP): **http://www.csie.ntu.edu.tw/~cjlin/liblinear/oldfiles/liblinear-1.94.tar.gz**
- Download MD5 sum: f52e1f2dd6bccb58977a334bba0bbf90
- Download size: 328 KB
- Estimated disk space required: 1.1 MB
- Estimated build time: 0.1 SBU

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/liblinear

Installation of liblinear

Install liblinear by running the following commands:

```
make lib
```

This package does not come with a test suite.

Now, as the *root* user:

```
install -vm644 linear.h /usr/include &&
install -vm755 liblinear.so.1 /usr/lib &&
ln -sfv liblinear.so.1 /usr/lib/liblinear.so
```

Contents

Installed Programs: None
Installed Library: liblinear.so
Installed Directories: None

Short Descriptions

`liblinear.so`	is a large linear classification library.

Last updated on 2014-09-14 12:09:32 -0700

---

libpaper-1.1.24+nmu3

Introduction to libpaper

This package is intended to provide a simple way for applications to take actions based on a system or user-specified paper size.

This package is known to build and work properly using an LFS-7.6 platform.

Package Information

- Download (HTTP): **http://ftp.debian.org/debian/pool/main/libp/libpaper/libpaper_1.1.24+nmu3.tar.gz**

- Download MD5 sum: 2d7239e4e7cb295aff54814f0d97992d
- Download size: 361 KB
- Estimated disk space required: 2.6 MB
- Estimated build time: less than 0.1 SBU

User Notes: <u>http://wiki.linuxfromscratch.org/blfs/wiki/libpaper</u>

Installation of libpaper

Install libpaper 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 &&
mkdir -vp /etc/libpaper.d &&

cat > /usr/bin/run-parts << "EOF"
#!/bin/sh
# run-parts:  Runs all the scripts found in a directory.
# from Slackware, by Patrick J. Volkerding with ideas borrowed
# from the Red Hat and Debian versions of this utility.

# keep going when something fails
set +e

if [ $# -lt 1 ]; then
  echo "Usage: run-parts <directory>"
  exit 1
fi

if [ ! -d $1 ]; then
  echo "Not a directory: $1"
  echo "Usage: run-parts <directory>"
  exit 1
fi

# There are several types of files that we would like to
# ignore automatically, as they are likely to be backups
# of other scripts:
IGNORE_SUFFIXES="~ ^ , .bak .new .rpmsave .rpmorig .rpmnew .swp"

# Main loop:
for SCRIPT in $1/* ; do
  # If this is not a regular file, skip it:
  if [ ! -f $SCRIPT ]; then
    continue
  fi
  # Determine if this file should be skipped by suffix:
  SKIP=false
  for SUFFIX in $IGNORE_SUFFIXES ; do
    if [ ! "$(basename $SCRIPT $SUFFIX)" = "$(basename $SCRIPT)" ]; then
      SKIP=true
      break
    fi
  done
  if [ "$SKIP" = "true" ]; then
    continue
  fi
  # If we've made it this far, then run the script if it's executable:
  if [ -x $SCRIPT ]; then
    $SCRIPT || echo "$SCRIPT failed."
  fi
done

exit 0
EOF

chmod -v 755 /usr/bin/run-parts
```

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

`mkdir -pv /etc/libpaper.d`: libpaper expects that packages will install files into this directory.

`cat > /usr/bin/run-parts << "EOF"` : `paperconfig` is a script which will invoke `run-parts` if `/etc/libpaper.d` exists. No other BLFS package installs this, so we create it here.

Configuring libpaper

Configuration Information

Create `/etc/papersize` to set the default system paper size. Issue the following command as the `root` user to set this to 'A4' (libpaper prefers the lowercase form). You may wish to use a different size, such as letter.

```
cat > /etc/papersize << "EOF"
a4
EOF
```

Contents

Installed Programs: paperconf, paperconfig, run-parts
Installed Library: libpaper.so
Installed Directories: /etc/libpaper.d

Short Descriptions

`paperconf`	print paper configuration information.
`paperconfig`	configure the system default paper size.
`run-parts`	run all the scripts found in a directory.
`libpaper.so`	contains functions for interrogating the paper library.

Last updated on 2014-09-17 21:56:07 -0700

libsigc++-2.3.2

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-7.6 platform.

Package Information

- Download (HTTP): **http://ftp.gnome.org/pub/gnome/sources/libsigc++/2.3/libsigc++-2.3.2.tar.xz**
- Download (FTP): **ftp://ftp.gnome.org/pub/gnome/sources/libsigc++/2.3/libsigc++-2.3.2.tar.xz**
- Download MD5 sum: e75fbd6f5cc34d058a9dabec96245dc8
- Download size: 3.5 MB
- Estimated disk space required: 34 MB (additional 12 MB for the tests)
- Estimated build time: less than 0.1 SBU (additional 0.1 SBU for the tests)

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/libsigc++

Installation of libsigc++

Install libsigc++ by running the following commands:

```
sed -i '/type_traits.h/i\#include <sigc++/visit_each.h>' \
  sigc++/macros/limit_reference.h.m4 &&
./configure --prefix=/usr &&
make
```

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

Now, as the `root` user:

```
make install
```

Command Explanations

`sed -i '/type_traits.h/i\#include <sigc++/visit_each.h>' sigc++/macros/limit_reference.h.m4`: This sed fixes a bug which prevents inkscape compiling.

Contents

Installed Programs: None

Installed Library: libsigc-2.0.so

Installed Directories: /usr/include/sigc++-2.0, /usr/lib/sigc++-2.0, /usr/share/devhelp/books/libsigc++-2.0 and /usr/share/doc/libsigc++-2.0

Short Descriptions

`libsigc-2.0.so` contains the libsigc++ API methods.

Last updated on 2014-09-14 13:18:45 -0700

libsigsegv-2.10

Introduction to libsigsegv

This is a library for handling page faults in user mode. A page fault occurs when a program tries to access to a region of memory that is currently not available. Catching and handling a page fault is a useful technique for implementing pageable virtual memory, memory-mapped access to persistent databases, generational garbage collectors, stack overflow handlers, and distributed shared memory.

This package is known to build and work properly using an LFS-7.6 platform.

Package Information

- Download (HTTP): **http://ftp.gnu.org/gnu/libsigsegv/libsigsegv-2.10.tar.gz**
- Download (FTP): **ftp://ftp.gnu.org/gnu/libsigsegv/libsigsegv-2.10.tar.gz**
- Download MD5 sum: 7f96fb1f65b3b8cbc1582fb7be774f0f
- Download size: 393 KB
- Estimated disk space required: 3.2 MB
- Estimated build time: less than 0.1 SBU

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/libsigsegv

Installation of libsigsegv

Install libsigsegv 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 switch ensures that shared libraries are compiled.

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

Contents

Installed Programs: None
Installed Library: libsigsegv.so
Installed Directories: None

Short Descriptions

libsigsegv.so is a library for handling page faults in user mode.

libtasn1-4.1

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-7.6 platform.

Package Information

- Download (HTTP): **http://ftp.gnu.org/gnu/libtasn1/libtasn1-4.1.tar.gz**
- Download (FTP): **ftp://ftp.gnu.org/gnu/libtasn1/libtasn1-4.1.tar.gz**
- Download MD5 sum: f9b37df3c2c9c6439d8bf427bfbfc521
- Download size: 1.8 MB
- Estimated disk space required: 11 MB
- Estimated build time: 0.2 SBU (additional 0.1 SBU for the tests)

libtasn1 Dependencies

Optional

GTK-Doc-1.20 and Valgrind-3.10.0

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/libtasn1

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, you can 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

Installed Programs: asn1Coding, asn1Decoding and asn1Parser
Installed Library: libtasn1.so
Installed Directory: /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.

libunistring-0.9.4

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-7.6 platform.

Package Information

- Download (HTTP): **http://ftp.gnu.org/gnu/libunistring/libunistring-0.9.4.tar.gz**
- Download (FTP): **ftp://ftp.gnu.org/gnu/libunistring/libunistring-0.9.4.tar.gz**
- Download MD5 sum: c24a6a3838d9ad4a41a62549312c4226
- Download size: 2.9 MB
- Estimated disk space required: 53 MB
- Estimated build time: 1 SBU

libunistring Dependencies

Optional

texlive-20140525 (to rebuild the documentation)

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/libunistring

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

Installed Programs: None
Installed Libraries: libunistring.{a,so}
Installed Directory: /usr/share/doc/libunistring and /usr/share/libunistring

Short Descriptions

`libunistring.{a,so}`   provides the unicode string library API.

Last updated on 2014-09-13 22:25:33 -0700

libusb-1.0.19

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-7.6 platform.

Package Information

- Download (HTTP): **http://downloads.sourceforge.net/libusb/libusb-1.0.19.tar.bz2**
- Download MD5 sum: f9e2bb5879968467e5ca756cb4e1fa7e
- Download size: 512 KB
- Estimated disk space required: 7.3 MB (additional 2.8 MB for API documentation)

- Estimated build time: less than 0.1 SBU

libusb Dependencies

Optional

Doxygen-1.8.8

User Notes: *http://wiki.linuxfromscratch.org/blfs/wiki/libusb*

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-1.0.19/apidocs &&
install -v -m644    doc/html/* \
                    /usr/share/doc/libusb-1.0.19/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 ⇒ USB support ⇒ 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

Installed Programs: None
Installed Library: libusb-1.0.so
Installed Directories: /usr/include/libusb-1.0 and /usr/share/doc/libusb-1.0.19

Short Descriptions

libusb-1.0.so   contains API functions used for accessing USB hardware.

Last updated on 2014-09-13 17:48:40 -0700

libusb-compat-0.1.5

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-7.6 platform.

Package Information

- Download (HTTP): **http://downloads.sourceforge.net/libusb/libusb-compat-0.1.5.tar.bz2**
- Download MD5 sum: 2780b6a758a1e2c2943bdbf7faf740e4
- Download size: 276 KB
- Estimated disk space required: 2.4 MB
- Estimated build time: less than 0.1 SBU

Required

   libusb-1.0.19

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/libusb-compat

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

Installed Program: libusb-config
Installed Library: libusb.so
Installed Directories: None

Short Descriptions

    `libusb.so`   is a library that is compatible with `libusb-0.1`, but uses `libusb-1.0` to provide functionality.

  Last updated on 2014-09-17 11:48:47 -0700

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-7.6 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: 9c0cfef285d5c4a5c80d00904ddab380
- 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/xmlts20130923.tar.gz** - This enables `make check` to do complete testing.

libxml2 Dependencies

Recommended

Python-2.7.8 (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 will not build properly if the Python module is not available.

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/libxml2

If you downloaded the testsuite, issue the following command:

```
tar xf ../xmlts20130923.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

Installed Programs: xml2-config, xmlcatalog and xmllint
Installed Libraries: libxml2.so and optionally, the libxml2mod.so Python module
Installed Directories: /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

xml2-config	determines the compile and linker flags that should be used to compile and link programs that use `libxml2`.
xmlcatalog	is used to monitor and manipulate XML and SGML catalogs.
xmllint	parses XML files and outputs reports (based upon options) to detect errors in XML coding.
libxml2.so	provides functions for programs to parse files that use the XML format.

Last updated on 2014-09-10 06:19:10 -0700

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-7.6 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-1.78.1

libgcrypt-1.6.2 and Python-2.7.8

> **Note**
>
> Although it is not a direct dependency, many applications using libxslt will expect docbook-xml-4.5 and docbook-xsl-1.78.1 to be present.

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/libxslt

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

Installed Programs: xslt-config and xsltproc
Installed Libraries: libexslt.so, libxslt.so and optionally, libxsltmod.so Python modules
Installed Directories: /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

xslt-config	is used to find out the pre-processor, linking and compiling flags necessary to use the libxslt libraries in 3rd-party programs.
xsltproc	is used to apply XSLT stylesheets to XML documents.
libexslt.so	is used to provide extensions to XSLT functions.
libxslt.so	provides extensions to the libxml2 libraries to parse files that use the XSLT format.

Last updated on 2014-09-10 06:19:10 -0700

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 hold 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-7.6 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

Optional

GTK-Doc-1.20

User Notes: *http://wiki.linuxfromscratch.org/blfs/wiki/libzeitgeist*

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

Installed Programs: None
Installed Library: libzeitgeist-1.0.so
Installed Directories:/usr/include/libzeitgeist-1.0 and /usr/share/doc/libzeitgeist

Short Descriptions

`libzeitgeist-1.0.so`   contains the libzeitgeist API functions.

Last updated on 2014-09-15 22:13:43 -0700

LZO-2.08

Introduction to LZO

LZO is a data compression library which is suitable for data decompression and compression in real-time. This means it favors speed over compression ratio.

This package is known to build and work properly using an LFS-7.6 platform.

Package Information

- Download (HTTP): **http://www.oberhumer.com/opensource/lzo/download/lzo-2.08.tar.gz**
- Download MD5 sum: fcec64c26a0f4f4901468f360029678f
- Download size: 575 KB
- Estimated disk space required: 8.4 MB
- Estimated build time: 0.3 SBU (additional 0.3 SBU to run the tests)

User Notes: *http://wiki.linuxfromscratch.org/blfs/wiki/lzo*

Installation of LZO

Install LZO by running the following commands:

```
./configure --prefix=/usr                  \
            --enable-shared                \
            --disable-static               \
            --docdir=/usr/share/doc/lzo-2.08 &&
make
```

To test the results, issue: `make check`. All the checks should pass. Now issue `make test` to run the full suite of tests.

```
make install
```

Command Explanations

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

Contents

Installed Programs: None
Installed Libraries: liblzo2.so
Installed Directories: /usr/include/lzo and /usr/share/doc/lzo

Short Descriptions

liblzo2.so   is a data compression and decompression library.

Last updated on 2014-09-11 23:27:59 -0700

mtdev-1.1.5

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-7.6 platform.

Package Information

- Download (HTTP): **http://bitmath.org/code/mtdev/mtdev-1.1.5.tar.bz2**
- Download MD5 sum: 52c9610b6002f71d1642dc1a1cca5ec1
- Download size: 268 KB
- Estimated disk space required: 2.4 MB
- Estimated build time: less than 0.1 SBU

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/mtdev

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

Installed Program: mtdev-test
Installed Library: libmtdev.so
Installed Directories: None

Short Descriptions

libmtdev.so   contains Multitouch Protocol Translation API functions.

Last updated on 2014-09-10 06:19:10 -0700

NSPR-4.10.7

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-7.6 platform.

Package Information

- Download (HTTP): **http://ftp.mozilla.org/pub/mozilla.org/nspr/releases/v4.10.7/src/nspr-4.10.7.tar.gz**
- Download (FTP): **ftp://ftp.mozilla.org/pub/mozilla.org/nspr/releases/v4.10.7/src/nspr-4.10.7.tar.gz**
- Download MD5 sum: 6e06919e4b56efed501e05d8b45ec10e
- Download size: 1.1 MB
- Estimated disk space required: 11 MB
- Estimated build time: less than 0.1 SBU

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/nspr

Installation of NSPR

Install NSPR by running the following commands:

```
cd nspr                                               &&
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

`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.

--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 parameter 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.

Contents

Installed Programs: nspr-config
Installed Libraries: libnspr4.so, libplc4.so and libplds4.so
Installed Directories: /usr/include/nspr

Short Descriptions

nspr-config	provides compiler and linker options to other packages that use NSPR .
libnspr4.so	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.
libplc4.so	contains functions that implement many of the features offered by libnspr4
libplds4.so	contains functions that provide data structures.

OpenOBEX-1.7.1

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-7.6 platform.

Package Information

- Download (HTTP): **http://downloads.sourceforge.net/openobex/openobex-1.7.1-Source.tar.gz**
- Download MD5 sum: 3181bfed9cb7db591605391068cb0085
- Download size: 136 KB
- Estimated disk space required: 3.6 MB
- Estimated build time: less than 0.1 SBU

OpenOBEX Dependencies

Required

CMake-3.0.1 and libusb-1.0.19

Recommended

BlueZ-5.23

Optional

Doxygen-1.8.8, libxslt-1.1.28, OpenJDK-1.7.0.65/IcedTea-2.5.2, and xmlto-0.0.26

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/openobex

Installation of OpenOBEX

OpenOBEX installs a udev rule that requires a group named plugdev. Create that group as the *root* user:

```
groupadd -g 90 plugdev
```

Install OpenOBEX by running the following commands:

```
mkdir build &&
cd    build &&

cmake -DCMAKE_INSTALL_PREFIX=/usr \
      -DCMAKE_INSTALL_LIBDIR=lib  \
      -DCMAKE_BUILD_TYPE=Release  \
      .. &&
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

Last updated on 2014-09-22 15:13:35 -0700

PCRE-8.35

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-7.6 platform.

Package Information

- Download (HTTP): **http://downloads.sourceforge.net/pcre/pcre-8.35.tar.bz2**
- Download (FTP): **ftp://ftp.csx.cam.ac.uk/pub/software/programming/pcre/pcre-8.35.tar.bz2**
- Download MD5 sum: 6aacb23986adccd9b3bc626c00979958
- Download size: 1.5 MB
- Estimated disk space required: 21 MB (additional 1 MB for the tests)
- Estimated build time: 0.3 SBU

PCRE Dependencies

Optional

Valgrind-3.10.0

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/pcre

Installation of PCRE

Install PCRE by running the following commands:

```
./configure --prefix=/usr                \
            --docdir=/usr/share/doc/pcre-8.35 \
            --enable-unicode-properties       \
            --enable-pcre16                  \
            --enable-pcre32                  \
            --enable-pcregrep-libz           \
            --enable-pcregrep-libbz2         \
            --enable-pcretest-libreadline    \
            --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/$(readlink /usr/lib/libpcre.so) /usr/lib/libpcre.so
```

Command Explanations

--enable-unicode-properties: This switch enables Unicode properties support and includes the code for handling UTF-8/16/32 character strings in the library. You need this switch if you are going to build GLib-2.40.0 with the *--with-pcre=system* switch.

--enable-pcre16: This switch enables 16 bit character support.

--enable-pcre32: This switch enables 32 bit character support.

--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.

--enable-pcretest-libreadline: This switch adds line editing and history features to `pcretest` program.

--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

Contents

Installed Programs: pcregrep, pcretest and pcre-config
Installed Libraries: libpcre.so, libpcre16.so, libpcre32.so, libpcrecpp.so and libpcreposix.so
Installed Directory: /usr/share/doc/pcre-8.35

Short Descriptions

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

Last updated on 2014-09-09 12:00:35 -0700

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-7.6 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

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/popt

Installation of Popt

Install popt by running the following commands:

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

If you have Doxygen-1.8.8 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
```

Command Explanations

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

Contents

Installed Programs: None
Installed Library: libpopt.so
Installed Directories:/usr/share/doc/popt-1.16

Short Descriptions

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-7.6 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

User Notes: *http://wiki.linuxfromscratch.org/blfs/wiki/pth*

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#$(LOBJS): Makefile#$(LOBJS): pth_p.h 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

Installed Program: pth-config
Installed Library: libpth.so
Installed Directory: /usr/share/doc/pth-2.0.7

Short Descriptions

is a utility used to configure and build applications based on the pth(3) library. It can be used to

config	application against the pth(3) library.
libpth.so	contains the API functions used by the GNU Portable Threads Library.

Last updated on 2014-09-12 12:02:55 -0700

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-7.6 platform.

Package Information

- Download (HTTP): **http://ftp.gnome.org/pub/gnome/sources/ptlib/2.10/ptlib-2.10.10.tar.xz**
- Download (FTP): **ftp://ftp.gnome.org/pub/gnome/sources/ptlib/2.10/ptlib-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

Additional Downloads

- Required patch: **http://www.linuxfromscratch.org/patches/blfs/7.6/ptlib-2.10.10-bison_fixes-1.patch**

Ptlib Dependencies

Recommended

alsa-lib-1.0.28 and OpenSSL-1.0.1i

Optional

Cyrus SASL-2.1.26, **libdc1394**, **libraw1394**, Lua-5.2.3, OpenLDAP-2.4.39, PulseAudio-5.0, SDL-1.2.15, unixODBC-2.3.2, and **Video4Linux**

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/ptlib

Installation of Ptlib

Install Ptlib by running the following commands:

```
patch -Np1 -i ../ptlib-2.10.10-bison_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/libpt.so.2.10.10
```

Contents

Installed Program: ptlib-config
Installed Libraries: libpt.so and libpt_s.a
Installed Directories: /usr/include/ptclib, /usr/include/ptlib, /usr/lib/ptlib-2.10.10, and /usr/share/ptlib

Short Descriptions

libpt.so	contains the Ptlib API functions.

Last updated on 2014-09-18 14:33:53 -0700

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-7.6 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-4.8.6 and Which-2.20

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/qca

Installation of Qca

Install Qca by running the following commands:

```
sed -i '217s@set@this->set@' src/botantools/botan/botan/secmem.h &&

./configure --prefix=/usr            \
            --no-separate-debug-info \
        --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 and newer. 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.

`--no-separate-debug-info`: Prevents installation of a separate library and program file with debug information.

Contents

Installed Programs: qcatool2
Installed Libraries: libqca.so
Installed Directories: $QT4DIR/include/QtCrypto

Short Descriptions

`qcatool2`   is a command line tool for performing various cryptographic operations with Qca.

`libqca.so`   is the Qt Cryptography Architecture (Qca) library.

Last updated on 2014-09-15 22:13:43 -0700

QJson-0.8.1

Introduction to QJson

This package is known to build and work properly using an LFS-7.6 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-4.8.6 and CMake-3.0.1

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/qjson

Installation of QJson

Install QJson by running the following commands:

```
mkdir build &&
cd build &&
cmake -DCMAKE_INSTALL_PREFIX=/usr \
      -DCMAKE_BUILD_TYPE=Release  \
      .. &&
make
```

This package does not contain a test suite.

Now, as the *root* user:

```
make install
```

Command Explanations

`-DCMAKE_BUILD_TYPE=Release`: This switch is used to build without debugging symbols and apply a higher level of compiler optimizations.

Contents

Installed Programs: none
Installed Library: libqjson.so
Installed Directory: $QT4DIR/include/json and $QT4DIR/lib/cmake/qjson

Short Descriptions

`libqjson.so` contains QJson API functions.

Last updated on 2014-09-15 22:13:43 -0700

Talloc-2.1.1

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-7.6 platform.

Package Information

- Download (HTTP): **http://samba.org/ftp/talloc/talloc-2.1.1.tar.gz**
- Download (FTP): **ftp://samba.org/pub/talloc/talloc-2.1.1.tar.gz**
- Download MD5 sum: 5dffb86414218a91864ed4453ba9be07
- Download size: 409 KB

- Estimated build time: 0.3 SBU

Talloc Dependencies

Optional

docbook-xml-4.5, docbook-xsl-1.78.1 and libxslt-1.1.28 (To generate man pages) and Python-2.7.8 (To build Python module).

User Notes: *http://wiki.linuxfromscratch.org/blfs/wiki/talloc*

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

Installed Programs: None
Installed Libraries: libpytalloc-util.so, libtalloc.so and talloc.so (Python Module)
Installed Directories: None

Short Descriptions

`libtalloc.so`   contains a replacemnt for the Glibc malloc function.

Last updated on 2014-09-20 19:22:09 -0700

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 and work properly using an LFS-7.6 platform.

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-1.14.30 and libpng-1.6.13

Optional

libwmf

User Notes: *http://wiki.linuxfromscratch.org/blfs/wiki/wv*

Installation of wv

```
./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 installation of static versions of the libraries.

Contents

Installed Programs: wvSummary and several other wv* programs which are deprecated in favour of abiword: see
http://wvware.sourceforge.net/
Installed Library: libwv-1.2.so
Installed Directory: /usr/share/wv

Short Descriptions

wvSummary   displays the summary information from an MS Word document.

libwv-1.2.so   provides functions to access MS Word documents.

Last updated on 2014-09-22 11:20:08 -0700

Xapian-1.2.17

Introduction to xapian

Xapian is an open source search engine library.

This package is known to build and work properly using an LFS-7.6 platform.

Package Information

- Download (HTTP): **http://oligarchy.co.uk/xapian/1.2.17/xapian-core-1.2.17.tar.xz**
- Download MD5 sum: 493117bf45e5471e86b4fc5d6d8069dc
- Download size: 3.0 MB
- Estimated disk space required: 45 MB (Additioansl 220 MB for tests)
- Estimated build time: 1.5 SBU (Additioanl 22 SBU for tsts)

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/xapian

Installation of Xapian

Install Xapian by running the following commands:

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

To run the test suite, issue: `make check`.

Now, as the *root* user:

```
make install
```

Contents

Installed Programs: copydatabase, delve, quest, simpleexpand, simpleindex, simplesearch, xapian-check, xapian-chert-update, xapian-compact, xapian-config, xapian-inspect, xapian-metadata, xapian-progsrv, xapian-replicate, xapian-replicate-server and xapian-tcpsrv
Installed Libraries: libxapian.so
Installed Directories: /usr/include/xapian, /usr/lib/cmake/xapian and /usr/share/doc/xapian-core

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-7.6 platform.

Package Information

- Download (HTTP): **http://downloads.sourceforge.net/aa-project/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

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/aalib

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

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

Short Descriptions

aafire	is little toy of AAlib , rendering an animated fire in ASCII Art.
aainfo	provides information for your current settings related to AAlib .
aalib-config	provides configuration info for AAlib .
aatest	shows the abilities of AAlib in a little test.
libaa.{so,a}	is a collection of routines to render any graphical input in portable format to ASCII Art. It can be used through many programs and has a very well documented API, so you can easily put it into

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-7.6 platform.

Package Information

- Download (HTTP): **http://download.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

Optional

gobject-introspection-1.40.0 and Vala-0.24.0

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/babl

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/graphics
```

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

Installed Programs: None
Installed Libraries: libbabl.so and libraries in /usr/lib/babl-0.1
Installed Directories: /usr/include/babl-0.1

Short Descriptions

`libbabl.so`   contains functions to access BablFishes to convert between formats.

Exiv2-0.24

Introduction to Exiv2

This package is known to build and work properly using an LFS-7.6 platform.

Package Information

- Download (HTTP): **http://www.exiv2.org/exiv2-0.24.tar.gz**
- Download MD5 sum: b8a23dc56a98ede85c00718a97a8d6fc
- Download size: 4.5 MB
- Estimated disk space required: 36 MB
- Estimated build time: 0.9 SBU

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/exiv2

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 &&
chmod -v 755 /usr/lib/libexiv2.so
```

Command Explanations

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

Contents

Installed Program: exiv2
Installed Library: libexiv2.so
Installed Directory: /usr/include/exiv2

Short Descriptions

      `exiv2`   is an utility used to dump Exif data.

Last updated on 2014-09-17 11:48:47 -0700

FreeType-2.5.3

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-7.6 platform.

Package Information

- Download (HTTP): **http://downloads.sourceforge.net/freetype/freetype-2.5.3.tar.bz2**
- Download MD5 sum: d6b60f06bfc046e43ab2a6cbfd171d65
- Download size: 1.7 MB
- Estimated disk space required: 28 MB (includes installing additional documentation)
- Estimated build time: 0.2 SBU

Additional Downloads

Additional Documentation

- Download (HTTP): **http://downloads.sourceforge.net/freetype/freetype-doc-2.5.3.tar.bz2**
- Download MD5 sum: e192ef88e84ddf10665f34cf418652fb
- Download size: 108 KB

Recommended

Which-2.20, Harfbuzz-0.9.35, (first, install without it, after it is installed, reinstall FreeType-2.5.3), and libpng-1.6.13

User Notes: *http://wiki.linuxfromscratch.org/blfs/wiki/freetype2*

Installation of FreeType2

If you downloaded the additional documentation, unpack it into the source tree using the following command:

```
tar -xf ../freetype-doc-2.5.3.tar.bz2 --strip-components=2 -C docs
```

Install FreeType2 by running the following commands:

```
sed -i  -e "/AUX.*.gxvalid/s@^# @@" \
        -e "/AUX.*.otvalid/s@^# @@" \
        modules.cfg                     &&

sed -ri -e 's:.*(#.*SUBPIXEL.*) .*:\1:' \
        include/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-2.5.3 &&
cp -v -R docs/*      /usr/share/doc/freetype-2.5.3
```

Command Explanations

`sed -e ...`: First command enables GX/AAT and OpenType table validation and second command enables Subpixel Rendering and Subpixel Hinting in order to improve font rendering. Note that Subpixel Rendering may have 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-2.5.3

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.

Last updated on 2014-09-10 06:19:10 -0700

Fontconfig-2.11.1

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-7.6 platform.

Package Information

- Download (HTTP): **http://www.freedesktop.org/software/fontconfig/release/fontconfig-2.11.1.tar.bz2**
- Download MD5 sum: 824d000eb737af6e16c826dd3b2d6c90
- Download size: 1.5 MB
- Estimated disk space required: 17 MB

- Estimated build time: 0.2 SBU

Fontconfig Dependencies

Required

[FreeType-2.5.3](#)

Optional

[DocBook-utils-0.6.14](#) and [libxml2-2.9.1](#)

> **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](#) and [texlive-20140525](#) installed also, or the Fontconfig build will fail.

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/Fontconfig

Installation of Fontconfig

Install Fontconfig by running the following commands:

```
./configure --prefix=/usr        \
            --sysconfdir=/etc     \
            --localstatedir=/var  \
            --disable-docs        \
            --docdir=/usr/share/doc/fontconfig-2.11.1 &&
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-2.11.1/fontconfig-devel} &&
install -v -m644 fc-*/*.1          /usr/share/man/man1 &&
install -v -m644 doc/*.3           /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-2.11.1/fontconfig-devel &&
install -v -m644 doc/*.{pdf,sgml,txt,html} \
        /usr/share/doc/fontconfig-2.11.1
```

Command Explanations

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

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

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-2.11.1/fontconfig-user.html**

Contents

Installed Programs: fc-cache, fc-cat, fc-list, fc-match, fc-pattern, fc-query, fc-scan and fc-validate
Installed Library: libfontconfig.so
Installed Directories: /etc/fonts, /usr/include/fontconfig, /usr/share/doc/fontconfig-2.11.1, /usr/share/fontconfig, /usr/share/xml/fontconfig and /var/cache/fontconfig

Short Descriptions

fc-cache	is used to create font information caches.
fc-cat	is used to read font information caches.
fc-list	is used to create font lists.
fc-match	is used to match available fonts, or find fonts that match a given pattern.
fc-pattern	is used to parse pattern (empty pattern by default) and show the parsed result.
fc-query	is used to query fonts files and print resulting patterns.
fc-scan	is used to scan font files and directories, and print resulting patterns.
fc-validate	is used to validate font files.
libfontconfig.so	contains functions used by the Fontconfig programs and also by other programs to configure or customize font access.

Last updated on 2014-09-10 06:19:10 -0700

FriBidi-0.19.6

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-7.6 platform.

Package Information

- Download (HTTP): **http://fribidi.org/download/fribidi-0.19.6.tar.bz2**
- Download MD5 sum: ce93d862344991173dabb609bf93ca1d
- Download size: 625 KB
- Estimated disk space required: 6.5 MB
- Estimated build time: 0.1 SBU

FriBidi Dependencies

Optional

GLib-2.40.0

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/fribidi

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:

Command Explanations

`sed -i ...`: These commands fix two header files if GLib-2 is linked into the build.

Contents

Installed Program: fribidi
Installed Library: libfribidi.so
Installed Directory: /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**.

Last updated on 2014-09-11 23:27:59 -0700

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-7.6 platform.

Package Information

- Download (HTTP): **http://download.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

Additional Downloads

- Required patch: **http://www.linuxfromscratch.org/patches/blfs/7.6/gegl-0.2.0-ffmpeg2-1.patch**

gegl Dependencies

Required

babl-0.1.10

Optional

AsciiDoc, Cairo-1.12.16, Enscript-1.6.6, Exiv2-0.24, FFmpeg-2.3.3, gdk-pixbuf-2.30.8, Graphviz-2.38.0, **lensfun**, libjpeg-turbo-1.3.1, **libopenraw**, libpng-1.6.13, librsvg-2.40.3, **libspiro**, Lua-5.2.3, **OpenEXR**, Pango-1.36.7, Python-2.7.8, Ruby-2.1.2, SDL-1.2.15, gobject-introspection-1.40.0, Vala-0.24.0, w3m-0.5.3 and **libumfpack**

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/gegl

Installation of gegl

Install gegl by running the following commands:

```
patch -Np1 -i ../gegl-0.2.0-ffmpeg2-1.patch &&
./configure --prefix=/usr &&
LC_ALL=en_US 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 -v -m644 docs/images/* /usr/share/gtk-doc/html/gegl/images
```

Command Explanations

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.

`LC_ALL=en_US`: In some locales with [Ruby-2.1.2](#) installed, one build component fails and prevents completion of the procedure. Using this variable avoids the problem.

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.

Last updated on 2014-09-13 17:48:40 -0700

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giflib-5.1.0

Introduction to giflib

The giflib package contains libraries for reading and writing GIFs as well as programs for converting and working with GIF files.

This package is known to build and work properly using an LFS-7.6 platform.

Package Information

- Download (HTTP): **http://downloads.sourceforge.net/giflib/giflib-5.1.0.tar.bz2**
- Download (HTTP) MD5 sum: c7e9f1c10b755ab955156d4c1ac7fc5d
- Download (HTTP) size: 607 KB
- Estimated disk space required: 6.5 MB (with generated html documentation; additional 0.7 MB for the tests)
- Estimated build time: 0.2 SBU (with generated html documentation)

giflib Dependencies

Optional

[xmlto-0.0.26](#) (for html documentation)

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/giflib

Installation of giflib

Install giflib by running the following commands:

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

To test the results, issue: `make check`. The test results are in `test.sh.log`.

Now, as the *root* user:

```
make install
```

If you generated html documentation, install it as the *root* user:

```
install -v -dm755        /usr/share/doc/giflib-5.1.0/html &&
install -v -m644 doc/*.html /usr/share/doc/giflib-5.1.0/html
```

Command Explanations

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

Contents

Installed Programs: gif2rgb, gifbuild, gifclrmp, gifecho, giffix, gifinto, giftext and giftool
Installed Library: libgif.so
Installed Directory: /usr/share/doc/giflib-5.1.0

Short Descriptions

gif2rgb	converts images saved as GIF to 24-bit RGB images.
gifbuild	dumps GIF data in a textual format, or undumps it to a GIF.
gifclrmp	modifies GIF image colormaps.
gifecho	generates a GIF from ASCII text.
giffix	clumsily attempts to fix truncated GIF images.
gifinto	is an end-of-pipe fitting for GIF-processing pipelines.
giftext	prints (text only) general information about a GIF file.
giftool	is a GIF transformation tool.
libgif.so	contains API functions required by the giflib programs and any other programs needing library functionality to read, write and manipulate GIF images.

Last updated on 2014-09-14 14:01:57 -0700

Graphite2-1.2.4

Introduction to Graphite2

Graphite2 is a rendering engine for graphite fonts. These are TrueType fonts with additional tables containing smart rendering information and were originally developed to support complex non-Roman writing systems. They may contain rules for e.g. ligatures, glyph substitution, kerning, justification - this can make them useful even on text written in Roman writing systems such as English. Note that firefox provides an internal copy of the graphite engine and cannot use a system version, but it too should benefit from the availability of graphite fonts.

This package is known to build and work properly using an LFS-7.6 platform.

Package Information

- Download (HTTP): **http://downloads.sourceforge.net/silgraphite/graphite2-1.2.4.tgz**
- Download MD5 sum: 2ef839348fe28e3b923bf8cced440227
- Download size: 6.7 MB
- Estimated disk space required: 44 MB
- Estimated build time: 0.2 SBU

Graphite2 Dependencies

Required

CMake-3.0.1

Optional

FreeType-2.5.3, Python-2.7.8, and **silgraphite** to build the comparerender test and benchmarking tool, and if that is present, Harfbuzz-0.9.35 to add more functionality to it (this is a circular dependency, you would need to first build graphite2 without harfbuzz).

To build the documentation, which is reported to be broken, would require all of **AsciiDoc**, Doxygen-1.8.8 and texlive-20140525.

Optional (at runtime)

You will need at least one suitable **graphite font** for the package to be useful.

Installation of Graphite2

Install Graphite2 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

Installed Programs: gr2fonttest, and optionally comparerender
Installed Libraries: libgraphite2.so
Installed Directories: /usr/include/graphite2 and /usr/share/graphite2

Short Descriptions

`comparerender`	is a test and benchmarking tool.
`gr2fonttest`	is a diagnostic console tool for graphite fonts.
`libgraphite2.so`	is a rendering engine for graphite fonts.

Last updated on 2014-09-10 09:45:01 -0700

Harfbuzz-0.9.35

Introduction to Harfbuzz

The Harfbuzz package contains an OpenType text shaping engine.

This package is known to build and work properly using an LFS-7.6 platform.

Package Information

- Download (HTTP): **http://www.freedesktop.org/software/harfbuzz/release/harfbuzz-0.9.35.tar.bz2**
- Download MD5 sum: 531ee8650626ecddcd90b2a4637e31d4
- Download size: 1.2 MB
- Estimated disk space required: 25 MB (additional 2 MB for the API documentation and additional 2 MB for the tests)
- Estimated build time: 0.3 SBU

Harfbuzz Dependencies

Recommended

GLib-2.40.0, ICU-53.1 and FreeType-2.5.3 (after Harfbuzz-0.9.35 is installed, reinstall FreeType-2.5.3)

Optional

Cairo-1.12.16, gobject-introspection-1.40.0, GTK-Doc-1.20, and Graphite2-1.2.4

> **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.

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/harfbuzz

Installation of Harfbuzz

```
sed -i '/arabic-fallback-shaping.tests/d' test/shaping/Makefile.am &&
autoreconf -f -i
```

Install Harfbuzz by running the following commands:

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

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

Now, as the *root* user:

```
make install
```

Command Explanations

`--with-gobject`: This switch enables building of the Harfbuzz GObject wrapper. Remove it if you did not install GLib.

`--with-graphite2`: This switch enables Graphite2 support.

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

Contents

Installed Programs: hb-ot-shape-closure, hb-shape, and hb-view
Installed Libraries: libharfbuzz.so, libharfbuzz-gobject.so and libharfbuzz-icu.so
Installed Directories: /usr/include/harfbuzz and /usr/share/gtk-doc/html/harfbuzz

Short Descriptions

`libharfbuzz.so`   contains functions for complex text shaping.

Last updated on 2014-09-10 06:19:10 -0700

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-7.6 platform.

Package Information

- Download (HTTP): **http://www.openprinting.org/download/ijs/download/ijs-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

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/ijs

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
```

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

Contents

Installed Programs: ijs_client_example, ijs-config and ijs_server_example
Installed Library: libijs.so
Installed Directory: /usr/include/ijs

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.

Last updated on 2014-09-17 04:20:33 -0700

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-7.6 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/7.6/jasper-1.900.1-security_fixes-1.patch**

JasPer Dependencies

Required

UnZip-6.0

Recommended

libjpeg-turbo-1.3.1

Optional

Freeglut-2.8.1 (required for `jiv`)

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/jasper

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  \
            --disable-static \
```

```
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 switch prevents installation of static versions of the libraries.

--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
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 library used by programs for reading and writing JPEG2000 format files.

Last updated on 2014-09-16 13:49:04 -0700

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-7.6 platform.

Package Information

- Download (HTTP): **http://downloads.sourceforge.net/lcms/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-1.3.1, and Python-2.7.8 (with SWIG-3.0.2 also)

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/lcms

Installation of Little CMS

Install Little CMS 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 -m755 -d /usr/share/doc/lcms-1.19 &&
install -v -m644    README.1ST doc/* \
                    /usr/share/doc/lcms-1.19
```

Command Explanations

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

`--with-python`: Use this parameter if Python and SWIG are installed.

Contents

Installed Programs: icc2ps, icclink, icctrans, wtpt and optionally, jpegicc, tiffdiff and tifficc
Installed Libraries: liblcms.so and the optional _lcms.so Python module
Installed Directory: /usr/share/doc/lcms-1.19

Short Descriptions

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

Last updated on 2014-09-11 23:27:59 -0700

Little CMS-2.6

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-7.6 platform.

Package Information

- Download (HTTP): **http://downloads.sourceforge.net/lcms/lcms2-2.6.tar.gz**
- Download MD5 sum: f4c08d38ceade4a664ebff7228910a33
- Download size: 4.4 MB
- Estimated disk space required: 15 MB (additional 1 MB for the tests)
- Estimated build time: 0.1 SBU (additional 0.1 SBU for the tests)

Little CMS2 Dependencies

Optional

libjpeg-turbo-1.3.1 and LibTIFF-4.0.3

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/lcms2

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

Installed Programs: jpgicc, linkicc, psicc, tificc, and transicc
Installed Library: liblcms2.so
Installed Directories: None

Short Descriptions

`jpgicc`	is the Little CMS ICC profile applier for JPEG.
`linkicc`	is the Little CMS ICC device link generator
`psicc`	is the Little CMS ICC PostScript generator.
`tificc`	is the Little CMS ICC tiff generator.
`transicc`	is the Little CMS ColorSpace conversion calculator.
`liblcms2.so`	contains functions implement the lcms2 API.

Last updated on 2014-09-11 23:27:59 -0700

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-7.6 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-1.8.8 and Graphviz-2.38.0

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/libexif

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`.

```
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

Installed Programs: None
Installed Library: libexif.so
Installed Directories: /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.

Last updated on 2014-09-12 12:02:55 -0700

libjpeg-turbo-1.3.1

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-7.6 platform.

Package Information

- Download (HTTP): **http://downloads.sourceforge.net/libjpeg-turbo/libjpeg-turbo-1.3.1.tar.gz**
- Download MD5 sum: 2c3a68129dac443a72815ff5bb374b05
- Download size: 1.3 MB
- Estimated disk space required: 14 MB
- Estimated build time: 0.3 SBU

libjpeg-turbo Dependencies

Required

NASM-2.11.05 or yasm-1.3.0

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/libjpeg-turbo

Installation of libjpeg-turbo

Install libjpeg-turbo by running the following commands:

```
sed -i -e '/^docdir/     s:$:/libjpeg-turbo-1.3.1:' \
       -e '/^exampledir/ s:$:/libjpeg-turbo-1.3.1:' Makefile.in &&

./configure --prefix=/usr            \
            --mandir=/usr/share/man \
            --with-jpeg8            \
            --disable-static &&
make
```

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

Now, as the *root* user:

```
make install
```

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

Installed Programs: cjpeg, djpeg, jpegtran, rdjpgcom, tjbench, and wrjpgcom
Installed Libraries: libjpeg.so and libturbojpeg.so
Installed Directories: /usr/share/doc/libjpeg-turbo-1.3.1

Short Descriptions

cjpeg	compresses image files to produce a JPEG/JFIF file on the standard output. Currently supported input file formats are: PPM (PBMPLUS color format), PGM (PBMPLUS gray-scale format), BMP, and Targa.
djpeg	decompresses image files from JPEG/JFIF format to either PPM (PBMPLUS color format), PGM (PBMPLUS gray-scale format), BMP, or Targa format.
jpegtran	is used for lossless transformation of JPEG files.
rdjpgcom	displays text comments from within a JPEG file.
tjbench	is used to benchmark the performance of libjpeg-turbo.
wrjpgcom	inserts text comments into a JPEG file.
libjpeg.so	contains functions used for reading and writing JPEG images.

Last updated on 2014-09-10 09:45:01 -0700

libmng-2.0.2

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-7.6 platform.

Package Information

- Download (HTTP): **http://downloads.sourceforge.net/libmng/libmng-2.0.2.tar.xz**
- Download MD5 sum: 3804bf2523af9b4e0670b5982b3bf984
- Download size: 932 KB
- Estimated disk space required: 15 MB
- Estimated build time: 0.2 SBU

libmng Dependencies

Required

libjpeg-turbo-1.3.1 and Little CMS-2.6

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/libmng

Installation of libmng

Install libmng by running the following commands:

```
sed -i "s:#include <jpeg:#include <stdio.h>\n&:" libmng_types.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/libmng-2.0.2 &&
install -v -m644 doc/*.txt /usr/share/doc/libmng-2.0.2
```

Command Explanations

`sed -i "..." libmng_types.h`: This command adds a missing header which would cause other apps that link to this package fail to compile.

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

Contents

Installed Programs: None
Installed Library: libmng.so
Installed Directory: /usr/share/doc/libmng-2.0.2

Short Descriptions

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

Last updated on 2014-09-12 12:02:55 -0700

libpng-1.6.13

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-7.6 platform.

Package Information

- Download (HTTP): **http://downloads.sourceforge.net/libpng/libpng-1.6.13.tar.xz**
- Download MD5 sum: 9822c25466f060142359f80ed142c9e5
- Download size: 884 KB
- Estimated disk space required: 12 MB (additional 1 MB for the tests)
- Estimated build time: 0.1 SBU (additional 0.3 SBU for the tests)

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-1.6.13-apng.patch.gz**

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/libpng

Installation of libpng

If you want to patch libpng to support apng files, apply the patch:

```
gzip -cd ../libpng-1.6.13-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-1.6.13 &&
cp -v README libpng-manual.txt /usr/share/doc/libpng-1.6.13
```

Command Explanations

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

Installed Programs: libpng-config (symlink), libpng16-config, pngfix and png-fix-itxt
Installed Libraries: libpng.so and libpng16.so
Installed Directories: /usr/include/libpng16 and /usr/share/doc/libpng-1.6.13

Short Descriptions

pngfix	tests, optimizes and optionally fixes the zlib header in PNG files. Optionally, when fixing, strips ancillary chunks from the file.
png-fix-itxt	fixes PNG files that have an incorrect length field in the iTXt chunks.
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.

Last updated on 2014-09-10 06:19:10 -0700

libraw-0.16.0

Introduction to libraw

Libraw is a library for reading RAW files obtained from digital photo cameras (CRW/CR2, NEF, RAF, DNG, and others).

This package is known to build and work properly using an LFS-7.6 platform.

Package Information

- Download (HTTP): **http://www.libraw.org/data/LibRaw-0.16.0.tar.gz**
- Download MD5 sum: 21f569be043057b754d87e3062e2345a
- Download size: 1.4 MB
- Estimated disk space required: 21 MB
- Estimated build time: 0.4 SBU

libraw Dependencies

Recommended

libjpeg-turbo-1.3.1, JasPer-1.900.1, and Little CMS-2.6

Optional

LibRaw-demosaic-pack-GPL2 and **LibRaw-demosaic-pack-GPL3**

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/libraw

Installation of libraw

Install libraw by running the following commands:

```
./configure --prefix=/usr     \
            --enable-jpeg    \
            --enable-jasper  \
            --enable-lcms    \
            --disable-static \
            --docdir=/usr/share/doc/libraw-0.16.0 &&
make
```

This package does not come with a test suite.

Now, as the *root* user:

```
make install
```

Command Explanations

--enable-jpeg: This switch enables support for jpeg. Remove if you don't have libjpeg-turbo-1.3.1 installed.

--enable-jasper: This switch enables support for jasper. Remove if you don't have JasPer-1.900.1 installed.

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

Contents

Installed Programs: 4channels, dcraw_half, mem_image, postprocessing_benchmark, simple_dcraw, dcraw_emu, half_mt, multirender_test, raw-identify, and unprocessed_raw

Installed Library: libraw.so and libraw_r.so

Installed Directories: /usr/include/libraw and /usr/share/doc/libraw-0.16.0

Last updated on 2014-02-20 08:45:35 -0600

librsvg-2.40.3

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-7.6 platform.

Package Information

- Download (HTTP): **http://ftp.gnome.org/pub/gnome/sources/librsvg/2.40/librsvg-2.40.3.tar.xz**
- Download (FTP): **ftp://ftp.gnome.org/pub/gnome/sources/librsvg/2.40/librsvg-2.40.3.tar.xz**
- Download MD5 sum: 33d5c3811c915a5e29a219824249e265
- Download size: 500 KB
- Estimated disk space required: 11 MB
- Estimated build time: 0.2 SBU

librsvg Dependencies

Required

gdk-pixbuf-2.30.8, libcroco-0.6.8 and Pango-1.36.7

Recommended

GTK+-3.12.2 (For the `rsvg-view-3`)

Optional (Required if building GNOME)

gobject-introspection-1.40.0 and Vala-0.24.0

Optional

GTK-Doc-1.20

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/librsvg

Installation of librsvg

Install librsvg 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-0.24.0 installed.

`--disable-introspection`: Use this switch if you have not installed Gobject Introspection.

`--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-2.0 and /usr/share/gtk-doc/html/rsvg-2.0

Short Descriptions

`rsvg-convert`	is used to convert images into PNG, PDF, PS, SVG and other formats.
`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.

Last updated on 2014-09-14 14:01:57 -0700

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-7.6 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

libjpeg-turbo-1.3.1, Freeglut-2.8.1 (required for `tiffgt`), and **JBIG-KIT**

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/libtiff

Installation of LibTIFF

Install LibTIFF by running the following commands:

```
sed -i '/glDrawPixels/a glFlush();' tools/tiffgt.c &&
./configure --prefix=/usr --disable-static &&
make
```

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

Now, as the *root* user:

```
make install
```

Command Explanations

`sed -i ...`: This command fixes a bug which is causing `tiffgt` to open blank windows in some cases.

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

Installed Programs:		bmp2tiff, fax2ps, fax2tiff, gif2tiff, pal2rgb, ppm2tiff, ras2tiff, raw2tiff, rgb2ycbcr, thumbnail, tiff2bw, tiff2pdf, tiff2ps, tiff2rgba, tiffcmp, tiffcp, tiffcrop, tiffdither, tiffdump, tiffgt tiffinfo, tiffmedian, tiffset and tiffsplit
Installed Libraries:		libtiff.so and libtiffxx.so
Installed Directory:		/usr/share/doc/tiff-4.0.3

Short Descriptions

bmp2tiff	converts a Microsoft Windows Device Independent Bitmap image file to a TIFF image.
fax2ps	converts a TIFF facsimile to compressed PostScript file.
fax2tiff	creates a TIFF Class F fax file from raw fax data.
gif2tiff	creates a TIFF file from a GIF87 format image file.
pal2rgb	converts a palette color TIFF image to a full color image.
ppm2tiff	creates a TIFF file from a PPM image file.
ras2tiff	creates a TIFF file from a Sun rasterfile.
raw2tiff	converts a raw byte sequence into TIFF.
rgb2ycbcr	converts non-YCbCr TIFF images to YCbCr TIFF images.
thumbnail	creates a TIFF file with thumbnail images.
tiff2bw	converts a color TIFF image to grayscale.
tiff2pdf	converts a TIFF image to a PDF document.
tiff2ps	converts a TIFF image to a PostScript file.
tiff2rgba	converts a wide variety of TIFF images into an RGBA TIFF image.
tiffcmp	compares two TIFF files.
tiffcp	copies (and possibly converts) a TIFF file.
tiffcrop	selects, copies, crops, converts, extracts and/or processes one or more TIFF files.
tiffdither	converts a grayscale image to bilevel using dithering.
tiffdump	prints verbatim information about TIFF files.
tiffgt	displays an image stored in a TIFF file.
tiffinfo	prints information about TIFF files.
tiffmedian	applies the median cut algorithm to data in a TIFF file.
tiffset	sets the value of a TIFF header to a specified value.
tiffsplit	splits a multi-image TIFF into single-image TIFF files.
libtiff.so	contains the API functions used by the libtiff programs as well as other programs to read and write TIFF files.
libtiffxx.so	contains the C++ API functions used by programs to read and write TIFF files.

Last updated on 2014-09-17 04:20:33 -0700

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libwebp-0.4.1

Introduction to libwebp

The libwebp package contains a library and support programs to encode and decode images in WebP format.

This package is known to build and work properly using an LFS-7.6 platform.

Package Information

- Download (HTTP): **http://downloads.webmproject.org/releases/webp/libwebp-0.4.1.tar.gz**
- Download MD5 sum: 42bc79613ec5ee5b0e68ba97839c981e
- Download size: 944 KB
- Estimated disk space required: 14 MB
- Estimated build time: 0.2 SBU

libwebp Dependencies

Recommended

libjpeg-turbo-1.3.1, libpng-1.6.13 and LibTIFF-4.0.3

Freeglut-2.8.1 and giflib-5.1.0

Installation of libwebp

Install libwebp 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: cwebp and dwebp
Installed Library: libwebp.so
Installed Directory: /usr/include/webp

Short Descriptions

cwebp	compresses an image using the WebP format.
dwebp	decompresses WebP files into PNG, PAM, PPM or PGM images.
libwebp.so	contains the API functions for WebP encoding and decoding.

Last updated on 2014-09-16 13:49:04 -0700

newt-0.52.17

Introduction to newt

Newt is a programming library for color text mode, widget based user interfaces. It can be used to add stacked windows, entry widgets, checkboxes, radio buttons, labels, plain text fields, scrollbars, etc., to text mode user interfaces. Newt is based on the S-Lang library.

This package is known to build and work properly using an LFS-7.6 platform.

Package Information

- Download (HTTP): **http://fedorahosted.org/releases/n/e/newt/newt-0.52.17.tar.gz**
- Download MD5 sum: f36d4d908965a0c89fd6fd8b61a6118b
- Download size: 176 KB
- Estimated disk space required: 5.1 MB
- Estimated build time: less than 0.1 SBU

Newt Dependencies

Required

popt-1.16 and S-Lang-2.2.4

Recommended

GPM-1.20.7 (runtime)

Optional

Python-2.7.8 and Python-3.4.1

Installation of newt

Install newt by running the following command:

```
sed -e 's/^LIBNEWT =/#&/' \
    -e '/install -m 644 $(LIBNEWT)/ s/^/#/' \
    -e 's/$(LIBNEWT)/$(LIBNEWTSONAME)/g' \
    -i Makefile.in                          &&
./configure --prefix=/usr --with-gpm-support &&
make
```

This package does not come with a test suite.

Now, as the *root* user:

```
make install
```

Command Explanations

`sed -e ... -i Makefile.in`: Disables installation of an static library.

Contents

Installed Programs: whiptail
Installed Library: libnewt.so, whiptcl.so, and /usr/lib/python{2.7,3.4}/site-packages/_snack.so
Installed Directories: None

Short Descriptions

whiptail   displays dialog boxes from shell scripts.

libnewt.so   is the library for color text mode, widget based user interfaces.

Last updated on 2014-09-17 21:56:07 -0700

OpenJPEG-1.5.2

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-7.6 platform.

Package Information

- Download (HTTP): **http://downloads.sourceforge.net/project/openjpeg.mirror/1.5.2/openjpeg-1.5.2.tar.gz**
- Download MD5 sum: c41772c30fb1c272358b3707233134a1
- Download size: 1.4 MB
- Estimated disk space required: 16 MB
- Estimated build time: 0.2 SBU

OpenJPEG Dependencies

Optional

Little CMS-2.6, libpng-1.6.13, LibTIFF-4.0.3 and Doxygen-1.8.8 (to build the API documentation)

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/openjpeg

Installation of OpenJPEG

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

This package does not come with a testsuite.

```
make install
```

Command Explanations

--disable-static: This prevents the static library from being built.

Contents

Installed Programs: image_to_j2k, j2k_dump and j2k_to_image
Installed Libraries: libopenjpeg.so
Installed Directories: /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.

Last updated on 2014-09-11 23:27:59 -0700

Pixman-0.32.6

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-7.6 platform.

Package Information

- Download (HTTP): **http://cairographics.org/releases/pixman-0.32.6.tar.gz**
- Download MD5 sum: 3a30859719a41bd0f5cccffbfefdd4c2
- Download size: 800 KB
- Estimated disk space required: 32 MB (additional 3 MB for tests)
- Estimated build time: 0.4 SBU (additional 0.8 SBU for tests)

Pixman Dependencies

Optional

GTK+-2.24.24 and libpng-1.6.13 (for tests and demos)

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/pixman

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

Installed Programs: None

Installed Directory: /usr/include/pixman-1

Short Descriptions

`libpixman-1.so`   contains functions that provide low-level pixel manipulation features.

Last updated on 2014-09-10 06:19:10 -0700

Poppler-0.26.4

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-7.6 platform.

Package Information

- Download (HTTP): **http://poppler.freedesktop.org/poppler-0.26.4.tar.xz**
- Download MD5 sum: e58cdddfc7dc01f00bf7394e0e4f21ce
- Download size: 1.6 MB
- Estimated disk space required: 145 MB (building Qt4 and Qt5 libraries, additional 46 MB for the test suite and 24 MB for poppler-data)
- Estimated build time: 1.7 SBU (building Qt4 and Qt5 libraries, additional 0.2 SBU for the test suite for each Qt)

Additional Downloads

Poppler Encoding Data

- Download (HTTP): **http://poppler.freedesktop.org/poppler-data-0.4.7.tar.gz**
- Download MD5 sum: 636a8f2b9f6df9e7ced8ec0946961eaf
- 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-2.11.1

Recommended

Cairo-1.12.16, libjpeg-turbo-1.3.1, and libpng-1.6.13

Optional

cURL-7.37.1, gobject-introspection-1.40.0, GTK+-2.24.24, Little CMS-1.19 or Little CMS-2.6, LibTIFF-4.0.3, OpenJPEG-1.5.2, Qt-4.8.6 (the `libpoppler-qt4.so` library is needed for PDF support in Okular), and Qt-5.3.1

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/poppler

Installation of Poppler

In order to optionally run the test suite, additional download of about 9 MB, using git-2.1.0, is necessary. Make sure that you do not have the directory ../test.

```
git clone git://git.freedesktop.org/git/poppler/test ../test
```

If you are not building both Qt libraries, jump to the following paragraph. In order to build both Qt4 and Qt5 libraries, you need to run the install commands twice, because although both are detected, only wrapper for the first Qt version in PATH is built. Either can be built first, but to facilitate the explanation, we choose first the Qt4 library. You can do this using `source setqt4` (script from Qt-4.8.6).

Install Poppler by running the following commands:

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

```
        --disable-static \
        --enable-xpdf-headers &&
make
```

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

Now, as the *root* user:

```
make install
```

If you are not building both Qt libraries, jump to the following paragraph. If you want to build both Qt libraries, first switch back to unpriviledged user, run `source setqt5`, from Qt-5.3.1, and repeat the instructions from configuration until install. After that, proceed to install the documents until the end.

The documents are installed using the following commands:

```
install -v -m755 -d      /usr/share/doc/poppler-0.26.4 &&
install -v -m644 README* /usr/share/doc/poppler-0.26.4
```

If you downloaded the additional encoding data package, install it by issuing the following commands as the *root* user:

```
tar -xf ../poppler-data-0.4.7.tar.gz &&
cd poppler-data-0.4.7
```

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).

`--enable-libcurl`: Use libcurl for HTTP support.

Contents

Installed Programs: pdfdetach, pdffonts, pdfimages, pdfinfo, pdfseparate, pdftocairo, pdftohtml, pdftoppm, pdftops, pdftotext, pdfunite, and poppler-glib-demo

Installed Libraries: libpoppler.so, libpoppler-cpp.so, libpoppler-glib.so, libpoppler-qt4.so, and libpoppler-qt5.so

Installed Directories: /usr/include/poppler, /usr/share/doc/poppler-0.26.4, /usr/share/gtk-doc/html/poppler, and /usr/share/poppler

Short Descriptions

pdfdetach	lists or extracts embedded files from PDF files.
pdffonts	lists the fonts used in a PDF file along with various information for each font.
pdfimages	saves images from a PDF file as PPM, PBM, or JPEG files.
pdfinfo	prints the contents of the 'Info' dictionary (plus some other useful information) from a PDF file.
pdfseparate	extracts single pages from a PDF file.
pdftocairo	converts a PDF file to one of several formats (PNG, JPEG, PDF, PS, EPS, SVG) using the cairo output device of the poppler library.
pdftohtml	converts a PDF file to HTML.
pdftoppm	converts PDF files to PBM, PGM and PPM formats.
pdftops	converts PDF files to Postscript format.
pdftotext	converts PDF files to plain text.
pdfunite	merges several PDF files, in the order of their occurrence on the command line, to one PDF output file.
poppler-glib-demo	is a tool to demonstrate the API, and for use when debugging and testing Poppler .
libpoppler.so	contains the API functions to render PDF files.
libpoppler-cpp.so	is a C++ backend for rendering PDF files.
libpoppler-	is a wrapper library used to interface the PDF rendering functions with GTK+ .

`libpoppler-` `qt4.so`	is a wrapper library used to interface the PDF rendering functions with Qt 4.
`libpoppler-` `qt5.so`	is a wrapper library used to interface the PDF rendering functions with Qt 5.

Last updated on 2014-09-13 17:48:40 -0700

Qpdf-5.1.2

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-7.6 platform.

Package Information

- Download (HTTP): **http://downloads.sourceforge.net/qpdf/qpdf-5.1.2.tar.gz**
- Download MD5 sum: 0bd15ef5eea5f628951ab456c84e78ec
- Download size: 7.4 MB
- Estimated disk space required: 67 MB (76 MB, running the tests)
- Estimated build time: 0.5 SBU (plus 0.4 for the tests)

Qpdf Dependencies

Required

PCRE-8.35

Optional

fop-1.1 and libxslt-1.1.28

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/qpdf

Installation of Qpdf

Install Qpdf by running the following commands:

```
./configure --prefix=/usr    \
            --disable-static \
            --docdir=/usr/share/doc/qpdf-5.1.2 &&
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

Installed Programs: fix-qdf, qpdf, and zlib-flate
Installed Library: libqpdf.so
Installed Directories: /usr/include/qpdf and /usr/share/doc/qpdf-5.1.2

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.

appdata-tools-0.1.8

Introduction to appdata-tools

The appdata-tools is used to validate AppData files to conform to standard specification.

This package is known to build and work properly using an LFS-7.6 platform.

Package Information

- Download (HTTP): **http://people.freedesktop.org/~hughsient/releases/appdata-tools-0.1.8.tar.xz**
- Download MD5 sum: 47d8500b7b96fac6667c3173c77c1e66
- Download size: 248 KB
- Estimated disk space required: 2.3 MB
- Estimated build time: less than 0.1 SBU

appdata-tools Dependencies

Required

appstream-glib-0.3.0

Recommended

gobject-introspection-1.40.0

Optional

libxml2-2.9.1, libxslt-1.1.28, docbook-xml-4.5, docbook-xsl-1.78.1, **trang**, and **lxml**

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/appdata-tools

Installation of appdata-tools

Install appdata-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

Installed Programs: appdata-validate
Installed Libraries: None
Installed Directories: None

Short Descriptions

appdata-validate   validates AppData metadata.

Last updated on 2014-09-19 13:13:19 -0700

appstream-glib-0.3.0

The appstream-glib provides GObjects and helper methods to make it easy to read and write AppStream metadata. It also provides a simple DOM implementation that makes it easy to edit nodes and convert to and from the standardized XML representation.

This package is known to build and work properly using an LFS-7.6 platform.

Package Information

- Download (HTTP): **http://people.freedesktop.org/~hughsient/appstream-glib/releases/appstream-glib-0.3.0.tar.xz**
- Download MD5 sum: f4be91093be4d43856258766684e7744
- Download size: 1.6 MB
- Estimated disk space required: 14 MB (additional 1 MB for the tests)
- Estimated build time: 0.3 SBU

appstream-glib Dependencies

Required

gdk-pixbuf-2.30.8, libarchive-3.1.2 libsoup-2.46.0, and Pango-1.36.7

Recommended

gobject-introspection-1.40.0

Optional

docbook-xml-4.5, docbook-xsl-1.78.1, GTK-Doc-1.20, libxslt-1.1.28, and **yaml**

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/appstream-glib

Installation of appstream-glib

Install appstream-glib by running the following commands:

```
./configure --prefix=/usr    \
            --disable-static \
            --disable-dep11  &&
make
```

To test the results, issue: `make -k check`. One test fails, if **yaml** is not installed.

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-dep11`: Remove this witch, if you have **yaml** installed.

Contents

Installed Programs: appstream-builder and appstream-util
Installed Libraries: libappstream-builder.so and libappstream-glib.so
Installed Directories: /usr/include/libappstream-{builder,glib}, /usr/lib/asb-plugins, /usr/share/gtk-doc/html/appstream-glib, and /usr/share/installed-tests/appstream-glib

Short Descriptions

`appstream-builder`	Is a developers tool to build metadata.
`appstream-util`	Is a management tool for appstream-builder.
`libappstream-builder.so`	contains functions that aid the developers tool appstream-builder.
`libappstream-glib.so`	contains the api functions.

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-7.6 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

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/compface

Installation of Compface

Install Compface by running the following commands:

```
./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 -m755 -v xbm2xface.pl /usr/bin
```

Contents

Installed Programs: compface, uncompface and xbm2xface.pl
Installed Library: libcompface.{so,a}
Installed Directories: None

Short Descriptions

compface	is a filter for generating highly compressed representations of 48x48x1 face image files.
uncompface	is an inverse filter which performs an inverse transformation with no loss of data.
xbm2xface.pl	is a script to generate xfaces.
libcompface. {so,a}	allows the compression and decompression algorithms to be used in other programs such as MTAs.

Last updated on 2014-09-20 19:22:09 -0700

desktop-file-utils-0.22

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-7.6 platform.

Package Information

- Download (HTTP): **http://freedesktop.org/software/desktop-file-utils/releases/desktop-file-utils-0.22.tar.xz**
- Download MD5 sum: c6b9f9aac1ea143091178c23437e6cd0
- Download size: 128 KB

- Estimated build time: less than 0.1 SBU

Desktop File Utils Dependencies

Required

GLib-2.40.0

Optional

Emacs-24.3

User Notes: ***http://wiki.linuxfromscratch.org/blfs/wiki/desktop-file-utils***

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

Installed Programs: desktop-file-edit, desktop-file-install, desktop-file-validate and update-desktop-database
Installed Libraries: None
Installed Directories: None

Short Descriptions

`desktop-file-edit`	is used to modify an existing desktop file entry.
`desktop-file-install`	is used to install a new desktop file entry. It is also used to rebuild or modify the MIME-types application database.
`desktop-file-validate`	is used to verify the integrity of a desktop file.
`update-desktop-database`	is used to update the MIME-types application database.

Last updated on 2014-09-10 09:45:01 -0700

Graphviz-2.38.0

Introduction to Graphviz

The Graphviz package contains graph visualization software. Graph visualization is a way of representing structural

has web and interactive graphical interfaces, auxiliary tools, libraries, and language bindings.

This package is known to build and work properly using an LFS-7.6 platform.

Package Information

- Download (HTTP): **http://graphviz.org/pub/graphviz/stable/SOURCES/graphviz-2.38.0.tar.gz**
- Download MD5 sum: 5b6a829b2ac94efcd5fa3c223ed6d3ae
- Download size: 25 MB
- Estimated disk space required: 350 MB
- Estimated build time: 1.6 SBU

Graphviz Dependencies

Recommended

FreeType-2.5.3, Fontconfig-2.11.1, Freeglut-2.8.1, gdk-pixbuf-2.30.8, libjpeg-turbo-1.3.1, libpng-1.6.13, librsvg-2.40.3, Pango-1.36.7 and Xorg Libraries

Optional

DevIL, **Electric Fence**, libglade-2.6.4, **libLASi**, **GD Library**, **glitz**, ghostscript-9.14, GTK+-2.24.24 and Qt-4.8.6

Optional (To Build Language Bindings)

SWIG-3.0.2 (SWIG must be installed or no bindings will be built), Guile-2.0.11, OpenJDK-1.7.0.65/IcedTea-2.5.2, **Io**, Lua-5.2.3, **Mono**, **OCaml**, PHP-5.6.0, Python-2.7.8, **R**, Ruby-2.1.2, Tcl-8.6.2 and Tk-8.6.2

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/graphviz

Installation of Graphviz

Install Graphviz by running the following commands:

```
./configure --prefix=/usr &&
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-2.38.0
```

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** 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

Installed Programs: acyclic, bcomps, ccomps, circo, cluster, diffimg, dijkstra, dot, dot2gxl, dot_builtins, dotty, edgepaint, fdp, gc, gml2gv, graphml2gv, gv2gml, 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

Installed Libraries: libcdt.so, libcgraph.so, libgvc.so, libgvpr.so, libpathplan.so, libxdot.so, and several plugins in /usr/lib/graphviz. There are also several in subdirectories of

Installed Directories: /usr/include/graphviz, /usr/lib/graphviz, /usr/lib/tcl8.6/graphviz, /usr/share/doc/graphviz-2.38.0, and /usr/share/graphviz

Short Descriptions

`acyclic`	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.
`bcomps`	decomposes graphs into their biconnected components, printing the components to standard output.
`ccomps`	decomposes graphs into their connected components, printing the components to standard output.
`circo`	draws graphs using a circular layout.
`cluster`	takes as input a graph in DOT format, finds node clusters and augments the graph with this information.
`diffimg`	(needs **GD Library**) generates an image where each pixel is the difference between the corresponding pixel in each of the two source images.
`dijkstra`	reads a stream of graphs and for each computes the distance of every node from sourcenode.
`dot`	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.
`dot2gxl`	converts between graphs represented in GXL and in the DOT language. Unless a conversion type is specified using a flag, `gxl2dot` 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.
`dotty`	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.
`edgepaint`	edge coloring to disambiguate crossing edges.
`fdp`	draws undirected graphs using a " spring " model. It relies on a force-directed approach in the spirit of Fruchterman and Reingold.
`gc`	is a graph analogue to `wc` 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.
`gml2gv`	converts a graph specified in the GML format to a graph in the GV (formerly DOT) format.
`gxl2gv`	converts between graphs represented in GXL and in the GV language.
`gvcolor`	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.
`gvedit`	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.
`gvgen`	generates a variety of simple, regularly-structured abstract graphs.
`gvmap`	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.
`gvpack`	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.
`gvpr`	is a graph stream editor inspired by `awk` . It copies input graphs to its output, possibly transforming their structure and attributes, creating new graphs, or printing arbitrary information.
`gxl2dot`	converts between graphs represented in GXL and in the DOT language. Unless a conversion type is specified using a flag, `gxl2dot` 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.
`lefty`	is a two-view graphics editor for technical pictures.
`lneato`	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.
`mm2gv`	converts a sparse matrix of the Matrix Market format to a graph in the GV (formerly DOT) format.
`neato`	draws undirected graphs using " spring " models. Input files must be formatted in the `dot` attributed graph language. By default, the output of `neato` is the input graph with layout coordinates appended.
`nop`	reads a stream of graphs and prints each in pretty-printed (canonical) format on stdout. If no files are given, it reads from stdin.
`osage`	draws clustered graphs. As input, it takes any graph in the DOT format.
`patchwork`	draws clustered graphs using a squarified treemap layout. As input, it takes any graph in the

prune	reads directed graphs in the same format used by `dot` and removes subgraphs rooted at nodes specified on the command line via options.
sccmap	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.
sfdp	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.
tred	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.
twopi	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.
unflatten	is a preprocessor to `dot` 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.
vimdot	is a simple script which launches the `gvim` or `vim` editor along with a GUI window showing the `dot` output of the edited file.
libcdt.so	manages run-time dictionaries using standard container data types: unordered set/multiset, ordered set/multiset, list, stack, and queue.
libcgraph.so	supports graph programming by maintaining graphs in memory and reading and writing graph files. Graphs are composed of nodes, edges, and nested subgraphs.
libgvc.so	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.
libpathplan.so	contains functions to find the shortest path between two points in a simple polygon.
libxdot.so	provides support for parsing and deparsing graphical operations specified by the xdot language.

Last updated on 2014-09-17 21:56:07 -0700

GTK-Doc-1.20

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-7.6 platform.

Package Information

- Download (HTTP): **http://ftp.gnome.org/pub/gnome/sources/gtk-doc/1.20/gtk-doc-1.20.tar.xz**
- Download (FTP): **ftp://ftp.gnome.org/pub/gnome/sources/gtk-doc/1.20/gtk-doc-1.20.tar.xz**
- Download MD5 sum: 58532fed036f72fc3bfd4fe79473247b
- Download size: 632 KB
- Estimated disk space required: 13 MB (additional 2 MB for the tests)
- Estimated build time: 0.1 SBU (additional 0.2 SBU for the tests)

GTK-Doc Dependencies

Required

docbook-xml-4.5, docbook-xsl-1.78.1, Itstool-2.0.2 and libxslt-1.1.28

Optional

dblatex or fop-1.1 (XML PDF support), GLib-2.40.0 (for the test suite), **GNOME Doc Utils** 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-2.7.8 (builds gtkdoc-depscan), and Rarian-0.8.1

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/gtk-doc

Installation of GTK-Doc

Install GTK-Doc by running the following commands:

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

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

Now, as the `root` user:

```
make install
```

Contents

Installed Programs: 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

Installed Libraries: None

Installed Directories: /usr/share/{gtk-doc,help/*/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.

Last updated on 2014-09-12 12:02:55 -0700

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-7.6 platform.

Package Information

- Download (HTTP): **http://hany.sk/~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

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/hd2u

Installation of Hd2u

Install hd2u by running the following commands:

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

This package does not come with a test suite.

Now, as the `root` user:

```
make install
```

Contents

Installed Program: dos2unix

Installed Libraries: None

Installed Directories: None

Short Descriptions

hicolor-icon-theme-0.13

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-7.6 platform.

Package Information

- Download (HTTP): **http://icon-theme.freedesktop.org/releases/hicolor-icon-theme-0.13.tar.gz**
- Download MD5 sum: 21d0f50aa6b8eef02846cda9e5e9324c
- Download size: 40 KB
- Estimated disk space required: 1.6 MB
- Estimated build time: less than 0.1 SBU

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/hicolor-icon-theme

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

Installed Programs: None
Installed Libraries: None
Installed Directory: /usr/share/icons/hicolor

Short Descriptions

/usr/share/icons/hicolor/*   contains icon definitions used as defaults.

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-7.6 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

Installation of icon-naming-utils

Install icon-naming-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
```

Command Explanations

`--libexecdir=/usr/lib/icon-naming-utils`: This option installs `icon-name-mapping` into `/usr/lib/icon-naming-utils` instead of `/usr/libexec` in accordance with the old version of the FHS used before LFS-7.5

Contents

Installed Programs: icon-name-mapping
Installed Libraries: None
Installed Directories: /usr/share/dtds and /usr/share/icon-naming-utils

Short Descriptions

`icon-name-mapping`	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.

Last updated on 2014-09-10 09:45:01 -0700

ImageMagick-6.8.9-7

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-7.6 platform.

Package Information

- Download (FTP): ftp://ftp.imagemagick.org/pub/ImageMagick/ImageMagick-6.8.9-7.tar.xz
- Download MD5 sum: 763db53af657867e067cc74d6a532f49
- Download size: 7.3 MB
- Estimated disk space required: 148 MB (with typical dependencies, additional 29 MB to run the test suite, reputedly 450 MB with all dependencies)
- Estimated build time: 2.4 SBU (typical build - additional 5.4 SBU to run the test suite and 12.6 SBU to run the validation 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.ImageMagick.org/pub/ImageMagick you can download it from the BLFS package server at http://anduin.linuxfromscratch.org/sources/BLFS/svn/i/ImageMagick-6.8.9-7.tar.xz.

ImageMagick Dependencies

Recommended

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

Cups-1.7.5, cURL-7.37.1, FFmpeg-2.3.3, p7zip-9.20.1 (LZMA), SANE-1.0.24, Wget-1.15, xdg-utils-1.1.0-rc2, xterm-310, **Dmalloc**, **Electric Fence**, **FFTW**, **PGP** or GnuPG-2.0.26 (you'll have to do some hacking to use GnuPG), **Profiles**, and **ufraw** (for raw formats listed in www/formats.html)

Optional Graphics Libraries

JasPer-1.900.1, Little CMS-1.19 or Little CMS-2.6, libexif-0.6.21, libjpeg-turbo-1.3.1, libpng-1.6.13, librsvg-2.40.3, LibTIFF-4.0.3, libwebp-0.4.1, Pango-1.36.7, **DjVuLibre**, **FlashPIX (libfpx)**, **JBIG-KIT**, **libgxps**, **Liquid Rescale**, **OpenEXR**, **OpenJPEG 2**, and **RALCGM** (or **ralcgm**)

Optional Graphics Utilities

ghostscript-9.14, Gimp-2.8.14, Graphviz-2.38.0, Inkscape-0.48.5, **Blender**, **corefonts**, **DejaVu fonts**, **GhostPCL**, **Gnuplot**, **POV-Ray**, and **Radiance**

Optional Conversion Tools

Enscript-1.6.6, texlive-20140525, **AutoTrace**, **GeoExpress Command Line Utilities, AKA MrSID Utilities (binary package)**, **hp2xx**, **html2ps**, **libwmf**, **UniConvertor**, and **Utah Raster Toolkit** (or **URT-3.1b**)

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/imagemagick

Installation of ImageMagick

Install ImageMagick by running the following commands:

```
./configure --prefix=/usr     \
            --sysconfdir=/etc \
            --enable-hdri     \
            --with-modules    \
            --with-perl       \
            --disable-static  &&
make
```

Now, as the *root* user:

```
make install
```

To test the installation, issue: make check. For a more comprehensive test, run the ImageMagick validation suite, also after the package is installed. Note that the EPS, PS, and PDF tests require a working Ghostscript. One test needs "Helvetica" from "Standard Fonts" which are optionally installed in ghostscript-9.14.

Command Explanations

--enable-hdri: Enables building of a high dynamic range version of ImageMagick.

--with-modules: Enables support for dynamically loadable modules.

--with-perl: Enables building and installing of PerlMagick.

--disable-static: Prevents the static libraries being built and installed.

--with-gslib: 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.

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

Installed Programs: animate, compare, composite, conjure, convert, display, identify, import, Magick-config, Magick++-config, MagickCore-config, MagickWand-config, mogrify, montage, stream, and Wand-config

Installed Libraries: libMagickCore-6.Q16HDRI.so, libMagickWand-6.Q16HDRI.so, libMagick++-6.Q16HDRI.so, /usr/lib/perl5/site_perl/<5.x.y>/<arch-linux>/auto/Image/Magick/Magick.so, and /usr/lib/perl5/site_perl/<5.x.y>/<arch-linux>/auto/Image/Magick/Q16HDRI/Q16HDRI.so

Installed Directories: /etc/ImageMagick-6, /usr/include/ImageMagick-6, /usr/lib/ImageMagick-6.8.9, /usr/lib/perl5/site_perl/<5.x.y>/<arch-linux>/auto/Image/Magick, /usr/lib/perl5/site_perl/<5.x.y>/<arch-linux>/Image/Magick, /usr/share/ImageMagick-6, and /usr/share/doc/ImageMagick-6

Short Descriptions

`animate`	animates a sequence of images.
`compare`	compares an image to a reconstructed image.
`composite`	composites various images into the given base image.
`conjure`	processes a MSL script to create an image.
`convert`	converts image(s) from one format to another.
`display`	displays an image.
`identify`	describes the format and characteristics of an image file.
`import`	captures an X window.
`Magick{,++,Core,Wand}-config`	show information about the installed versions of the ImageMagick libraries.
`mogrify`	transforms an image.
`montage`	composites various images into a new image.
`stream`	streams one or more pixel components of an image or portion of the image to your choice of storage formats.
`Wand-config`	shows the options required to use the Wand library.
`Image::Magick`	allows the reading, manipulation and writing of a large number of image file formats using the ImageMagick library. Run `make` in the `PerlMagick/demo` directory of the package source tree after the package is installed to see a nice demo of the module's capabilities.

Last updated on 2014-09-17 21:56:07 -0700

ISO Codes-3.56

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-7.6 platform.

Package Information

- Download (HTTP): **http://pkg-isocodes.alioth.debian.org/downloads/iso-codes-3.56.tar.xz**
- Download MD5 sum: d032b2f9750bd59d350e0ccb060c8710
- Download size: 3.7 MB
- Estimated disk space required: 110 MB
- Estimated build time: 0.2 SBU (additional less than 0.1 SBU for the tests)

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/iso-codes

Installation of ISO Codes

Install ISO Codes by running the following commands:

```
make
```

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

Now, as the *root* user:

```
make install
```

Contents

Installed Programs: None
Installed Libraries: None
Installed Directory: /usr/share/xml/iso-codes

Last updated on 2014-09-10 09:45:01 -0700

lsof-4.87

Introduction to lsof

The lsof package is useful to LiSt Open Files for a given running application or process.

This package is known to build and work properly using an LFS-7.6 platform.

Package Information

- Download (FTP): **ftp://sunsite.ualberta.ca/pub/Mirror/lsof/lsof_4.87.tar.bz2**
- Download MD5 sum: 80e2a76d0e05826db910ec88e631296c
- Download size: 756 KB
- Estimated disk space required: 9.6 MB
- Estimated build time: less than 0.1 SBU

lsof Dependencies

Required

libtirpc-0.2.5

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/lsof

Installation of lsof

The lsof tarball includes several files, between them, another tarball with the source code, which needs, in turn, to be unpacked. Install lsof by running the following commands:

```
tar -xf lsof_4.87_src.tar   &&
cd lsof_4.87_src            &&
./Configure -n linux       &&
make CFGL="-L./lib -ltirpc"
```

This package does not come with a working test suite.

Now, as the *root* user:

```
install -v -m0755 -o root -g root lsof /usr/bin &&
install -v lsof.8 /usr/share/man/man8
```

Command Explanations

`./Configure -n linux`: Avoid AFS, customization, and inventory checks, and use target-dialect Linux.

`make CFGL="-L./lib -ltirpc"`: Instruct the libtirpc libraries location to `make` command.

Contents

Installed Program: lsof
Installed Libraries: None
Installed Directories: None

lsof	lists open files for running processes.

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-7.6 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+-2.24.24, libcap-2.24 with PAM and Qt-4.8.6

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/pinentry

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

Installed Programs: pinentry, pinentry-curses, pinentry-gtk, pinentry-gtk-2, pinentry-qt, and pinentry-qt4
Installed Libraries: None
Installed Directory: None

Short Descriptions

`pinentry`	is a symbolic link to the default PIN-Entry program.
`pinentry-curses`	is an Ncurses text-based PIN-Entry program.
`pinentry-gtk`	is a GTK+ GUI PIN-Entry program.
`pinentry-gtk-2`	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

designed to be a replacement for ScrollKeeper.

This package is known to build and work properly using an LFS-7.6 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)

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/rarian

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

Installed Programs: 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

Installed Library: librarian.{so,a}

Installed Directories: /usr/include/rarian, /usr/share/help, /usr/share/librarian/manual, /usr/share/librarian/Templates/C, and /usr/var/lib/rarian

Short Descriptions

`rarian-example`	prints a nice list of all available documents found by the library.
`rarian-sk-config`	emulates `scrollkeeper-config`.
`rarian-sk-extract`	is a wrapper around xsltproc to mimic `scrollkeeper-extract`.
`rarian-sk-gen-uuid`	generates a unique (random) uuid.
`rarian-sk-get-cl`	gets a content list (category tree).
`rarian-sk-get-content-list`	is a simple wrapper to make calling `scrollkeeper-get-cl` easier.
`rarian-sk-get-extended-content-list`	is a simple wrapper to make calling `scrollkeeper-get-cl` (extended) easier.
`rarian-sk-get-scripts`	emulates `scrollkeeper-get-index-from-index-from-docpath`, `scrollkeeper-get-toc-from-docpath`, and `scrollkeeper-get-toc-from-id`.
`rarian-sk-install`	emulates `scrollkeeper-install` and `scrollkeeper-uninstall`.
`rarian-sk-migrate`	takes in a directory full of omf's, reads and parses them and spews out an equivalent scroll file.
`rarian-sk-preinstall`	creates the omf file by reading an existing omf file and replacing the url for a resource with the url.
`rarian-sk-rebuild`	is a simple wrapper script to emulate `scrollkeeper-rebuilddb`.

	installing new omf files. It converts the omf files into new-style scrolls.
librarian.{so,a}	is the API to build a list of available meta data files and allows access to these.

Last updated on 2014-09-12 12:02:55 -0700

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-7.6 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-0.92.3

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/rep-gtk

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

Installed Programs: None
Installed Libraries: Lisp bindings
Installed Directory: /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.

Last updated on 2014-09-20 21:51:52 -0700

Screen-4.2.1

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-7.6 platform.

- Download (HTTP): **http://ftp.gnu.org/gnu/screen/screen-4.2.1.tar.gz**
- Download (FTP): **ftp://ftp.gnu.org/gnu/screen/screen-4.2.1.tar.gz**
- Download MD5 sum: 419a0594e2b25039239af8b90eda7d92
- Download size: 1.1 MB
- Estimated disk space required: 8.2 MB
- Estimated build time: 0.2 SBU

Screen Dependencies

Optional

Linux-PAM-1.1.8

User Notes: *http://wiki.linuxfromscratch.org/blfs/wiki/screen*

Installation of Screen

Install Screen by running the following commands:

```
./configure --prefix=/usr                  \
            --infodir=/usr/share/info      \
            --mandir=/usr/share/man        \
            --with-socket-dir=/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=/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/screenrc%" {etc,doc}/*`: This command corrects the configuration and documentation files to the location that is used here for the global screenrc file.

Configuring Screen

Config Files

`/etc/screenrc` and `~/.screenrc`

Configuration Information

You may want to look at the example configuration file that was installed and customize it for your needs.

Contents

Installed Program: screen (symlink) and screen-4.2.1
Installed Libraries: None

Short Descriptions

>   `screen`   is a terminal multiplexor with VT100/ANSI terminal emulation.

shared-mime-info-1.3

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-7.6 platform.

Package Information

- Download (HTTP): **http://freedesktop.org/~hadess/shared-mime-info-1.3.tar.xz**
- Download MD5 sum: 743720bc4803dd69f55449013d350f31
- Download size: 508 KB
- Estimated disk space required: 17 MB
- Estimated build time: 0.1 SBU

Shared Mime Info Dependencies

Required

GLib-2.40.0 and libxml2-2.9.1

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/shared-mime-info

Installation of Shared Mime Info

> ### Note
>
> This package does not support parallel build.

Install Shared Mime Info by running the following commands:

```
./configure --prefix=/usr &&
make -j1
```

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

Now, as the *root* user:

```
make install
```

Contents

Installed Program: update-mime-database
Installed Library: None
Installed Directory: /usr/share/mime

Short Descriptions

>   `update-mime-database`   assists in adding MIME data to the database.

Sharutils-4.14

Introduction to Sharutils

This package is known to build and work properly using an LFS-7.6 platform.

Package Information

- Download (HTTP): **http://ftp.gnu.org/gnu/sharutils/sharutils-4.14.tar.xz**
- Download (FTP): **ftp://ftp.gnu.org/gnu/sharutils/sharutils-4.14.tar.xz**
- Download MD5 sum: 77ede22951bdb67279c6e78e79a04784
- Download size: 1.1 MB
- Estimated disk space required: 21 MB
- Estimated build time: 0.8 SBU

User Notes: *http://wiki.linuxfromscratch.org/blfs/wiki/sharutils*

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

Installed Programs: shar, unshar, uudecode and uuencode
Installed Libraries: None
Installed Directories: None

Short Descriptions

`shar`	creates "shell archives" (or shar files) which are in text format and can be mailed.
`unshar`	unpacks a shar file.
`uudecode`	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.
`uuencode`	reads a file (or by default the standard input) and decodes the uuencoded version to the standard output.

Last updated on 2014-09-15 14:09:24 -0700

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-7.6 platform.

Package Information

- Download (HTTP): **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.

Optional

Dmalloc

User Notes: *http://wiki.linuxfromscratch.org/blfs/wiki/tidy*

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 htmldoc/tidy.1 \
                  /usr/share/man/man1/tidy.1 &&
install -v -m755 -d /usr/share/doc/tidy-cvs_20101110 &&
install -v -m644    htmldoc/*.{html,gif,css} \
                  /usr/share/doc/tidy-cvs_20101110
```

If you wish to install the API documentation you must have Doxygen-1.8.8 installed, then change directories into the `htmldoc` 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.

Last updated on 2014-09-10 06:19:10 -0700

Time-1.7

Introduction to Time

The time utility is a program that measures many of the CPU resources, such as time and memory, that other programs use. The GNU version can format the output in arbitrary ways by using a printf-style format string to include various resource measurements.

Although the shell has a builtin command providing similar functionalities, this utility is reuired by the LSB.

Package Information

- Download (HTTP): **http://ftp.gnu.org/gnu/time/time-1.7.tar.gz**
- Download (FTP): **ftp://ftp.gnu.org/gnu/time/time-1.7.tar.gz**
- Download MD5 sum: e38d2b8b34b1ca259cf7b053caac32b3
- Download size: 101 KB
- Estimated disk space required: 640 KB
- Estimated build time: Less than 0.1 SBU

User Notes: *http://wiki.linuxfromscratch.org/blfs/wiki/time*

Installation of Time

Install Time by running the following commands:

```
sed -i 's/$(ACLOCAL)//' Makefile.in                              &&
sed -i 's/lu", ptok ((UL) resp->ru.ru_maxrss)/ld", resp->ru.ru_maxrss/' time.c &&
./configure --prefix=/usr --infodir=/usr/share/info              &&
make
```

This package does not come with a test suite.

Now, as the *root* user:

```
make install
```

Contents

Installed Program(s):time.

Short Descriptions

time   reports various srtatistics about an executed command.

Last updated on 2014-09-20 21:51:52 -0700

tree-1.7.0

Introduction to tree

The tree application, as the name suggests, is useful to display, in a terminal, directory contents, including directories, files, links.

This package is known to build and work properly using an LFS-7.6 platform.

Package Information

- Download (HTTP): **http://mama.indstate.edu/users/ice/tree/src/tree-1.7.0.tgz**
- Download (FTP): **ftp://mama.indstate.edu/linux/tree/tree-1.7.0.tgz**
- Download MD5 sum: abe3e03e469c542d8e157cdd93f4d8a6
- Download size: 48 KB
- Estimated disk space required: 656 KB
- Estimated build time: less than 0.1 SBU

User Notes: *http://wiki.linuxfromscratch.org/blfs/wiki/tree*

Installation of tree

Install tree by running the following commands:

```
make
```

This package does not come with a test suite.

Now, as the *root* user:

Contents

Installed Program: tree
Installed Libraries: None
Installed Directories: None

Short Descriptions

> `tree`   displays a directory tree in a terminal.

Last updated on 2014-09-17 15:52:31 -0700

---

unixODBC-2.3.2

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-7.6 platform.

Package Information

- Download (HTTP): **http://www.unixodbc.org/unixODBC-2.3.2.tar.gz**
- Download (FTP): **ftp://mirror.ovh.net/gentoo-distfiles/distfiles/unixODBC-2.3.2.tar.gz**
- Download MD5 sum: 5e4528851eda5d3d4aed249b669bd05b
- Download size: 1.8 MB
- Estimated disk space required: 33 MB
- Estimated build time: 0.4 SBU

unixODBC Dependencies

Optional

Mini SQL and Pth-2.0.7

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/unixodbc

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*" -delete            &&
chmod 644 doc/{lst,ProgrammerManual/Tutorial}/* &&

install -v -m755 -d /usr/share/doc/unixODBC-2.3.2 &&
cp      -v -R doc/* /usr/share/doc/unixODBC-2.3.2
```

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 many man or any 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-2.3.2, 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

Installed Programs: dltest, isql, iusql, odbc_config, odbcinst, and slencheck
Installed Libraries: libodbc.so, libodbccr.so, and libodbcinst.so
Installed Directories: /etc/unixODBC and /usr/share/doc/unixODBC-2.3.2

Short Descriptions

dltest	is a utility used to check a share library to see if it can be loaded and if a given symbol exists in it.
isql	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.
iusql	provides the same functionality as the isql program.
odbc_config	is used to find out details about the installation of the unixODBC package.
odbcinst	is an utility created for install script/RPM writers. It is a command line interface to key functionality in the libodbcinst library. It does not copy any files (i.e., libraries) but it will modify the ODBC System Information for the user.

Last updated on 2014-09-15 22:13:43 -0700

XScreenSaver-5.30

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-7.6 platform.

Package Information

- Download (HTTP): **http://www.jwz.org/xscreensaver/xscreensaver-5.30.tar.gz**
- Download MD5 sum: b71e3a78db1ae14291cc9ff4c5e10911
- Download size: 9.1 MB
- Estimated disk space required: 230 MB
- Estimated build time: 0.9 SBU

XScreenSaver Dependencies

Required

libglade-2.6.4 and Xorg Applications

Recommended

GLU-9.0.0

Installation of XScreenSaver

Install XScreenSaver 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-setuid-hacks`: This switch allows some demos to be installed setuid *root* which is needed in order to ping other hosts.

`--libexecdir=/usr/lib`: This option will put the individual screensaver programs into `/usr/lib/xscreensaver` instead of `/usr/libexec/xscreensaver` in accordance with the old version of the FHS used before LFS-7.5.

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

Installed Programs: xscreensaver, xscreensaver-command, xscreensaver-demo, xscreensaver-getimage, xscreensaver-getimage-file, xscreensaver-getimage-video, xscreensaver-gl-helper and xscreensaver-text

Installed Libraries: None

Installed Directories: /usr/libexec/xscreensaver and /usr/share/xscreensaver

Short Descriptions

`xscreensaver`	is a screen saver and locker daemon.
`xscreensaver-command`	controls a running `xscreensaver` process by sending it client messages.
`xscreensaver-demo`	is a graphical front-end for setting the parameters used by the background `xscreensaver` daemon.
`xscreensaver-getimage`	is a helper program for the `xscreensaver` modules that manipulate images.
`xscreensaver-getimage-file`	is a helper program for the `xscreensaver` modules that manipulate images.
`xscreensaver-getimage-video`	is a helper program for the `xscreensaver` modules that manipulate images.
`xscreensaver-gl-helper`	is a helper program for the `xscreensaver` OpenGL modules.
`xscreensaver-text`	prints some text to stdout, for use by screen savers.

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.

acpid-2.0.23

Introduction to acpid

The acpid (Advanced Configuration and Power Interface event daemon) is a completely flexible, totally extensible daemon for delivering ACPI events. It listens on netlink interface and when an event occurs, executes programs to handle the event. The programs it executes are configured through a set of configuration files, which can be dropped into place by packages or by the user.

This package is known to build and work properly using an LFS-7.6 platform.

Package Information

- Download (HTTP): **http://downloads.sourceforge.net/acpid2/acpid-2.0.23.tar.xz**
- Download MD5 sum: d7bcdcdefcd53b03730e50ba842554ea
- Download size: 156 KB
- Estimated disk space required: 2.6 MB
- Estimated build time: less than 0.1 SBU

User Notes: *http://wiki.linuxfromscratch.org/blfs/wiki/acpid*

Installation of acpid

Install acpid by running the following commands:

```
./configure --prefix=/usr --docdir=/usr/share/doc/acpid-2.0.23 &&
make
```

This package does not come with a test suite.

Now, as the *root* user:

```
make install                    &&
install -v -m755 -d /etc/acpi/events &&
cp -r samples /usr/share/doc/acpid-2.0.23
```

Configuring acpid

acpid is configured by user defined events. Place event files under `/etc/acpi/events` directory. If an event occurs, `acpid` recurses through the event files in order to see if the regex defined after "event" matches. If they do, action is executed.

The following brief example will suspend the system when the laptop lid is closed (it requires pm-utils-1.4.1):

```
cat > /etc/acpi/events/lid << "EOF"
event=button/lid
action=/etc/acpi/lid.sh
EOF

cat > /etc/acpi/lid.sh << "EOF"
#!/bin/sh
/bin/grep -q open /proc/acpi/button/lid/LID/state && exit 0
/usr/sbin/pm-suspend
EOF
chmod +x /etc/acpi/lid.sh
```

Unfortunately, not every computer labels ACPI events in the same way. To determine how your buttons are recognized, use the `acpi_listen` tool. Also, look in package documentation's samples directory for more examples.

Boot Script

To automatically start `acpid` when the system is rebooted, install the `/etc/rc.d/init.d/acpid` boot script from the blfs-bootscripts-20140919 package.

Contents

Installed Programs: acpid, acpi_listen, and kacpimon
Installed Libraries: None
Installed Directory: /usr/share/doc/acpid-2.0.23

Short Descriptions

`acpid`	is a program that listens for ACPI events and executes the rules that match the received event.
`acpi_listen`	is a simple tool which connects to `acpid` and listens for events.
`kacpimon`	is a monitor program that connects to three sources of ACPI events (events file, netlink and input layer) and then reports on what it sees while it is connected.

Last updated on 2014-09-20 21:51:52 -0700

at-3.1.15

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-7.6 platform.

Package Information

- Download (HTTP): **http://ftp.de.debian.org/debian/pool/main/a/at/at_3.1.15.orig.tar.gz**
- Download (FTP): **ftp://ftp.de.debian.org/debian/pool/main/a/at/at_3.1.15.orig.tar.gz**
- Download MD5 sum: f0f96db22e3a174b53ce4beeeb848839
- Download size: 124 KB
- Estimated disk space required: 1.5 MB
- Estimated build time: less than 0.1 SBU

at Dependencies

Required

An MTA

Optional

Linux-PAM-1.1.8

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/at

Installation of at

> **Note**
>
> This package does not support parallel build.

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
```

Fix `Makefile.in` so that the documentation directory is installed in the specified docdir:

```
sed -i '/docdir/s/=.*/= @docdir@/' Makefile.in
```

Install at with the following commands:

```
                --with-daemon_username=atd       \
                --with-daemon_groupname=atd      \
                SENDMAIL=/usr/sbin/sendmail &&
make -j1
```

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-20140919](#) package.

```
make install-atd
```

Contents

Installed Programs: at, atd, atq (symlink), atrm (symlink), atrun, and batch
Installed Libraries: None
Installed Directories:/var/spool/{atjobs,atspool} and /usr/share/doc/at-3.1.15

Short Descriptions

at	queues, examines or deletes jobs for later execution.
atd	is the daemon that runs jobs queued for later execution.
atq	lists the user's pending jobs, or all jobs, if superuser.
atrm	deletes jobs, identified by their job number.
atrun	runs jobs queued for later execution.
batch	is a script that executes commands when system load levels permit.

Last updated on 2014-09-22 00:10:59 -0700

---

autofs-5.1.0

Introduction to Autofs

Autofs controls the operation of the automount daemons. The automount daemons automatically mount filesystems when they are accessed and unmount them after a period of inactivity. This is done based on a set of pre-configured maps.

This package is known to build and work properly using an LFS-7.6 platform.

Package Information

- Download (HTTP): **http://www.kernel.org/pub/linux/daemons/autofs/v5/autofs-5.1.0.tar.xz**
- Download (FTP): **ftp://ftp.kernel.org/pub/linux/daemons/autofs/v5/autofs-5.1.0.tar.xz**
- Download MD5 sum: 4c34cacea07db3681b0da1befa229ec4
- Download size: 284 KB
- Estimated disk space required: 9.7 MB
- Estimated build time: 0.1 SBU

Autofs Dependencies

Optional

[libtirpc-0.2.5](#), [nfs-utils-1.3.0](#), [libxml2-2.9.1](#), [MIT Kerberos V5-1.12.2](#), [OpenLDAP-2.4.39](#) (client only), and [Cyrus SASL-2.1.26](#)

Kernel Configuration

Verify that automounter kernel support has been enabled:

```
File systems --->
   Kernel automounter version 4 support (also supports v3): Y or M
```

Optionally, enable the following options in the kernel configuration:

```
File systems  --->
  Network File Systems  --->
    NFS client support: Y or M
    CIFS support (advanced network filesystem, SMBFS successor): Y or M
```

Recompile and install the new kernel, if necessary.

Installation of Autofs

Install Autofs by running the following commands:

```
sed -i -e '/include.*config.h/ i #include <stdarg.h>' lib/defaults.c &&

./configure --prefix=/          \
             --without-openldap \
             --mandir=/usr/share/man &&
make
```

This package does not come with a test suite.

Now, as the `root` user:

```
make install
```

Command Explanations

`sed ... lib/defaults.c`: Fix a build problem with current headers.

`--with-libtirpc`: This switch enables libtirpc support if available.

`--without-openldap`: This switch disables openldap if found. If openldap is desired, omit this switch. Note that openldap support in autofs requires [MIT Kerberos V5-1.12.2](#).

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,

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-20140919 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.

Last updated on 2014-09-22 00:10:59 -0700

BlueZ-5.23

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-7.6 platform.

Package Information

- Download (HTTP): **http://www.kernel.org/pub/linux/bluetooth/bluez-5.23.tar.xz**
- Download (FTP): **ftp://ftp.kernel.org/pub/linux/bluetooth/bluez-5.23.tar.xz**
- Download MD5 sum: b6ebf545d496087f3bc2b4aa86f89eb4
- Download size: 1.4 MB
- Estimated disk space required: 72 MB (additional 1 MB for the API docs)
- Estimated build time: 0.6 SBU

Additional Downloads

- Optional patch (required to work properly with gnome-bluetooth and/or kde bluedevil):
  http://www.linuxfromscratch.org/patches/blfs/7.6/bluez-5.23-obexd_without_systemd-1.patch

BlueZ Dependencies

Required

D-Bus-1.8.8, GLib-2.40.0, and libical-1.0

User Notes: *http://wiki.linuxfromscratch.org/blfs/wiki/bluez*

Kernel Configuration

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

```
[*] Networking support --->                  [CONFIG_NET]
  <*> or <M> Bluetooth subsystem support ---> [CONFIG_BT]
    <*> or <M> RFCOMM protocol support       [CONFIG_BT_RFCOMM]
    [*] RFCOMM TTY support                   [CONFIG_BT_RFCOMM_TTY]
    <*> or <M> BNEP protocol support         [CONFIG_BT_BNEP]
    [*] Multicast filter support             [CONFIG_BT_BNEP_MC_FILTER]
    [*] Protocol filter support              [CONFIG_BT_BNEP_PROTO_FILTER]
    <*> or <M> HIDP protocol support         [CONFIG_BT_HIDP]

    Bluetooth device drivers --->
  <*> or <M> RF switch subsystem support
```

Select the appropriate drivers for your Bluetooth hardware.

Installation of BlueZ

If you are going to use BlueZ with gnome-bluetooth and/or kde bluedevil, apply the following patch:

```
patch -Np1 -i ../bluez-5.23-obexd_without_systemd-1.patch
```

Install BlueZ by running the following commands:

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

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

Now, as the *root* user:

```
make install &&
ln -svf ../libexec/bluetooth/bluetoothd /usr/sbin
```

Install the main configuration file as the *root* user:

```
install -v -dm755 /etc/bluetooth &&
install -v -m644 src/main.conf /etc/bluetooth/main.conf
```

If desired, install the API documentation as the *root* user:

```
install -v -dm755 /usr/share/doc/bluez-5.23 &&
install -v -m644 doc/*.txt /usr/share/doc/bluez-5.23
```

Command Explanations

--enable-library: This switch enables building of the BlueZ 4 compatibility library which is required by some applications.

--disable-systemd: This switch is needed because systemd is not part of LFS/BLFS. If you are using systemd, remove this switch.

`ln -svf ../libexec/bluetooth/bluetoothd /usr/sbin`: This command makes access to the bluetooth daemon more convenient.

Configuring BlueZ

Configuration Files

`/etc/bluetooth/main.conf` is installed automatically during the install. Additionally, there are three supplementary configuration files. /etc/sysconfig/bluetooth is installed as a part of the boot script below. In addition, you optionally can install the following, as the *root* user:

```
cat > /etc/bluetooth/rfcomm.conf << "EOF"
# rfcomm.conf
# Set up the RFCOMM configuration of the Bluetooth subsystem in the Linux kernel.
# Use one line per command
# See the rfcomm man page for options


# End of rfcomm.conf
EOF
```

```
cat > /etc/bluetooth/uart.conf << "EOF"
#uart.conf
# Attach serial devices via UART HCI to BlueZ stack
# Use one line per device
# See the hciattach man page for options

# End of uart.conf
EOF
```

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-20140919](#) package.

```
make install-bluetooth
```

Contents

Installed Programs: bccmd, bluemoon, bluetoothctl, bluetoothd, btmon, ciptool, hciattach, hciconfig, hcidump, hcitool, hid2hci, l2ping, l2test, mpris-proxy, obexd, rctest, rfcomm, and sdptool
Installed Library: libbluetooth.so
Installed Directories: /etc/bluetooth, /usr/include/bluetooth, /usr/libexec/bluetooth, and /usr/share/doc/bluez-5.23

Short Descriptions

`bccmd`	is used to issue BlueCore commands to Cambridge Silicon Radio devices.
`bluetoothd`	is the Bluetooth daemon.
`ciptool`	is used to set up, maintain, and inspect the CIP configuration of the Bluetooth subsystem in the Linux kernel.
`hciattach`	is used to attach a serial UART to the Bluetooth stack as HCI transport interface.
`hciconfig`	is used to configure Bluetooth devices.
`hcitool`	is used to configure Bluetooth connections and send some special command to Bluetooth devices.
`hid2hci`	is used to set up switch supported Bluetooth devices into the HCI mode and back.
`l2ping`	is used to send a L2CAP echo request to the Bluetooth MAC address given in dotted hex notation.
`rctest`	is used to test RFCOMM communications on the Bluetooth stack.
`rfcomm`	is used to set up, maintain, and inspect the RFCOMM configuration of the Bluetooth subsystem in the Linux kernel.
`sdptool`	is used to perform SDP queries on Bluetooth devices.
`libbluetooth.so`	contains the BlueZ 4 API functions.

Last updated on 2014-09-12 09:27:12 -0700

Colord-1.2.3

Introduction to Colord

Colord is a system activated daemon that maps devices to color profiles. It is used by GNOME Color Manager for

This package is known to build and work properly using an LFS-7.6 platform.

Package Information

- Download (HTTP): **http://www.freedesktop.org/software/colord/releases/colord-1.2.3.tar.xz**
- Download MD5 sum: f1d25333716d4705f6aeb7452aa25b86
- Download size: 1.1 MB
- Estimated disk space required: 38 MB (additional 4 MB to build and install the API documentation, and 4 MB for the tests)
- Estimated build time: 0.4 SBU (additional 0.1 SBU for the tests)

Colord Dependencies

Required

D-Bus-1.8.8, GLib-2.40.0, Little CMS-2.6, and SQLite-3.8.6

Required (for the tests)

Valgrind-3.10.0

Recommended

libgusb-0.1.6, gobject-introspection-1.40.0, Polkit-0.112, udev-extras (from eudev) (for GUdev), and Vala-0.24.0

Optional

gnome-desktop-3.12.2 and **colord-gtk** (to build the example tools), DocBook-utils-0.6.14, GTK-Doc-1.20, libxslt-1.1.28, SANE-1.0.24, Valgrind-3.10.0 (required for the tests), and **Bash Completion**,

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/colord

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        \
            --with-daemon-user=colord   \
            --enable-vala               \
            --enable-systemd-login=no   \
            --disable-bash-completion   \
            --disable-static            \
            --with-systemdsystemunitdir=no &&
make
```

Now, as the *root* user:

```
make install
```

To test the results, issue: `make -k check`. For unknown reasons, some tests may fail. Note that system-wide D-Bus daemon must be running or the tests will fail.

Command Explanations

--enable-libsystemd-login=no: This parameter fixes building without systemd, which is not part of LFS/BLFS. If you use systemd, replace "no" by "yes".

--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-0.24.0 installed.

--disable-systemd-login: This switch prevents `configure` to look for Systemd libraries.

--with-systemdsystemunitdir=no: Disable attempting to build with systemd libraries.

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

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

--disable-gusb: Use this switch if you don't have libgusb installed.

--disable-gudev: Use this switch if you don't have GUdev installed.

--disable-polkit: Use this switch if you don't have Polkit installed.

Contents

Installed Programs: cd-create-profile, cd-fix-profile, cd-iccdump, colord, colord-sane, colord-session, and colormgr
Installed Libraries: libcolord.so, libcolordprivate.so, and lndibcolorhug.so
Installed Directories:/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

`cd-create-profile`	is a Color Manager Profile Creation Tool.
`cd-fix-profile`	is a tool used to fix metadata in ICC profiles.
`colormgr`	is a text-mode program that allows you to interact with colord on the command line.
`libcolord.so`	contains the Colord API functions.

Last updated on 2014-09-17 21:56:07 -0700

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-7.6 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

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/cpio

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 \
            --enable-mt  \
            --with-rmt=/usr/libexec/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-20140525 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
```

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 incompatibility with glibc-2.16.0.

--bindir=/bin: This parameter installs **cpio** to /bin instead of /usr/bin as recommended by the FHS guidelines.

--enable-mt: This parameter forces the building and installation of the **mt** program.

--with-rmt=/usr/libexec/rmt: This parameter inhibits building the **rmt** program as it is already installed by the Tar package in LFS.

Contents

Installed Programs: cpio and mt
Installed Libraries: None
Installed Directories: /usr/share/doc/cpio-2.11

Short Descriptions

cpio	copies files to and from archives.
mt	controls magnetic tape drive operations.

Last updated on 2014-09-09 14:11:38 -0700

D-Bus-1.8.8

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-7.6 platform.

Package Information

- Download (HTTP): **http://dbus.freedesktop.org/releases/dbus/dbus-1.8.8.tar.gz**
- Download MD5 sum: b9f4a18ee3faa1e07c04aa1d83239c43
- Download size: 1.8 MB
- Estimated disk space required: 37 MB (additional 62 MB for tests)
- Estimated build time: 0.4 SBU (additional 1.6 SBU for tests)

D-Bus Dependencies

Recommended

Xorg Libraries (for **dbus-launch** program)

Optional

For the tests: dbus-glib-0.102, D-Bus Python-1.2.0, and PyGObject-2.28.6; for the API documentation: Doxygen-1.8.8; for man pages and XML/HTML documentation: xmlto-0.0.26

Installation of D-Bus

If they do not already exist, 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         \
            --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-1.8.8
```

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 dbus-glib-0.102 has been installed. They must be run as an unprivileged user from a local session. Tests fail through ssh. If you want to run only the unit tests, replace, below, _--enable-tests_ by _--enable-embedded-tests_, otherwise, D-Bus Python-1.2.0 has to be installed, before. 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 tests, issue the following commands:

```
make distclean                          &&
./configure --enable-tests --enable-asserts &&
make                                    &&
make check
```

If `run-test.sh` fails, it can be disabled with the following sed, before running the commands for the tests:

```
sed -i -e 's:run-test.sh:$(NULL):g' test/name-test/Makefile.in
```

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 all tests. Configure will end with a NOTE warning about increased size of libraries and decreased security.

--enable-embedded-tests: Build extra parts of the code to support only unit tests. Configure will end with a NOTE warning about increased size of libraries and decreased security.

--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.

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-20140919](#) 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

Installed Programs: dbus-cleanup-sockets, dbus-daemon, dbus-launch, dbus-monitor, dbus-run-session, dbus-send and dbus-uuidgen
Installed Library: libdbus-1.so
Installed Directories: /etc/dbus-1, /usr/include/dbus-1.0, /usr/lib/dbus-1.0, /usr/share/dbus-1, /usr/share/doc/dbus-1.8.8, /var/lib/dbus and /var/run/dbus

Short Descriptions

dbus-cleanup-sockets   is used to clean up leftover sockets in a directory.

daemon	
dbus-launch	is used to start `dbus-daemon` from a shell script. It would normally be called from a user's login scripts.
dbus-monitor	is used to monitor messages going through a D-Bus message bus.
dbus-run-session	start a process as a new D-Bus session.
dbus-send	is used to send a message to a D-Bus message bus.
dbus-uuidgen	is used to generate a universally unique ID.
libdbus-1.so	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; `dbus-daemon` is an application that uses this library to implement a message bus daemon.

Last updated on 2014-09-17 19:44:41 -0700

Fcron-3.2.0

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-7.6 platform.

Package Information

- Download (HTTP): **http://fcron.free.fr/archives/fcron-3.2.0.src.tar.gz**
- Download MD5 sum: 4b031c2fba32a98fa814d1557158b0e9
- Download size: 584 KB
- Estimated disk space required: 5.1 MB
- Estimated build time: 0.1 SBU

Fcron Dependencies

Optional

An MTA, **text editor** (default is `vi` from the Vim-7.4 package), Linux-PAM-1.1.8, and DocBook-utils-0.6.14

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/fcron

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:

```
            --sysconfdir=/etc      \
            --localstatedir=/var   \
            --without-sendmail     \
            --with-boot-install=no \
            --with-systemdsystemunitdir=no &&
    make
```

This package does not come with a test suite.

Now, as the *root* user:

```
make install
```

DESTDIR install must be done as *root* user.

Command Explanations

--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 command>* to use a different mailer command.

--with-boot-install=no: This prevents installation of the bootscript included with the package.

--with-systemdsystemunitdir=no|yes|DIR: Use no, if you use sysvint; yes, if you use systemd, or specify the directory DIR for the systemd units.

--with-editor=</path/to/editor>: This switch allows you to set the default text editor.

--with-dsssl-dir=</path/to/dsssl-stylesheets>: May be used if you have [DocBook-utils-0.6.14](#) installed. Currently, the dsssl stylesheets are located at `/usr/share/sgml/docbook/dsssl-stylesheets-1.79`.

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-20140919](#) package.

```
make install-fcron
```

Contents

Installed Programs: fcron, fcrondyn, fcronsighup, and fcrontab
Installed Libraries: None
Installed Directories: /usr/share/doc/fcron-3.2.0 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.
`fcrontab`	is a program used to install, edit, list and remove the tables used by `fcron`.

Last updated on 2014-09-09 16:09:42 -0700

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-7.6 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

User Notes: *http://wiki.linuxfromscratch.org/blfs/wiki/GPM*

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 -sfv 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-20140919 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

```
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

Installed Programs: disable-paste, display-buttons, display-coords, get-versions, gpm, gpm-root, hltest, mev, and mouse-test

Installed Library: libgpm.{so.a}

Installed Directory: /usr/share/doc/gpm-1.20.7

Short Descriptions

disable-paste	is a security mechanism used to disable the paste buffer.
display-buttons	is a simple program that reports the mouse buttons being pressed and released.
display-coords	is a simple program that reports the mouse coordinates.
get-versions	is used to report the GPM library and server versions.
gpm	is a cut and paste utility and mouse server for virtual consoles.
gpm-root	is a default handler for gpm. It is used to draw menus on the root window.
hltest	is a simple sample application using the high-level library, meant to be read by programmers trying to use the high-level library.
mev	is a program to report mouse events.
mouse-test	is a tool for determining the mouse type and device it's attached to.
libgpm.{so.a}	contains the API functions to access the GPM daemon.

Last updated on 2014-09-09 12:00:35 -0700

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-7.6 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

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

User Notes: *http://wiki.linuxfromscratch.org/blfs/wiki/hdparm*

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 binprefix=/usr install
> ```

Contents

Installed Program: hdparm
Installed Libraries: None
Installed Directories: None

Short Descriptions

`hdparm`   provides a command-line interface to various hard disk ioctls supported by the stock Linux ATA/IDE device driver subsystem.

Last updated on 2014-09-20 21:51:52 -0700

Initd-tools-0.1.3

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-7.6 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

User Notes: *http://wiki.linuxfromscratch.org/blfs/wiki/initd_tools*

Installation of initd-tools

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

This package does not come with a test suite.

Now, as the *root* user:

```
make install
```

Contents

Installed Program: install_initd and remove_initd
Installed Libraries:
Installed Directories: /usr/lib/lsb

Short Descriptions

install_initd   installs a boot script and the necessary symbolic links using LSB methodology.

remove_initd   removes a boot script and the necessary symbolic links using LSB methodology.

Last updated on 2014-09-21 06:12:54 -0700

lm_sensors-3.3.5

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-7.6 platform.

Package Information

- Download (HTTP): **http://dl.lm-sensors.org/lm-sensors/releases/lm_sensors-3.3.5.tar.bz2**
- Download MD5 sum: da506dedceb41822e64865f6ba34828a
- Download size: 172 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/7.6/lm_sensors-3.3.5-upstream_fixes-1.patch**

lm_sensors Dependencies

Required

Which-2.20

Optional

RRDtool (required to build the sensord program)

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/lm_sensors

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:

```
Top level
  [*] 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)
    [*] 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:

```
patch -Np1 -i ../lm_sensors-3.3.5-upstream_fixes-1.patch &&
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-3.3.5 &&
cp -rv            README INSTALL doc/* \
                  /usr/share/doc/lm_sensors-3.3.5
```

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

Installed Programs: fancontrol, isadump, isaset, pwmconfig, sensors, sensors-conf-convert, sensors-detect, and optionally, sensord

Installed Library: libsensors.so

Installed Directories: /etc/sensors.d, /usr/include/sensors and /usr/share/doc/lm_sensors-3.3.5

Short Descriptions

`fancontrol`   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.

`isadump`   is a small helper program to examine registers visible through the ISA bus. It is intended to

	(I2C-like access) or a flat range (of up to 256 bytes).
isaset	is a small helper program to set registers visible through the ISA bus.
pwmconfig	tests the pulse width modulation (PWM) outputs of sensors and configures fancontrol.
sensors	prints the current readings of all sensor chips.
sensors-conf-convert	is a Perl script to convert lm-sensors version 2 configuration files to work with version 3.
sensors-detect	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.
libsensors.so	contains the lm_sensors API functions.

Last updated on 2014-09-09 14:11:38 -0700

Logrotate-3.8.7

Introduction to Logrotate

The logrotate package allows automatic rotation, compression, removal, and mailing of log files.

This package is known to build and work properly using an LFS-7.6 platform.

Package Information

- Download (HTTP): **http://fedorahosted.org/releases/l/o/logrotate/logrotate-3.8.7.tar.gz**
- Download MD5 sum: 99e08503ef24c3e2e3ff74cc5f3be213
- Download size: 64 KB
- Estimated disk space required: 1.3 MB
- Estimated build time: less than 0.1 SBU

Logrotate Dependencies

Required

popt-1.16

Recommended

Fcron-3.2.0 (runtime)

Optional

An MTA (runtime)

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/logrotate

Installation of Logrotate

Install logrotate by running the following command:

```
make
```

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

Now, as the *root* user:

```
make MANDIR=/usr/share/man install
```

Command Explanations

`MANDIR=/usr/share/man`: Ensure the man pages are installed in the correct location.

Configuring Logrotate

Logrotate needs a configuration file, which must be passed as an argument to the command when executed. Create the file as the *root* user:

```
# Begin of /etc/logrotate.conf

# Rotate log files weekly
weekly

# Don't mail logs to anybody
nomail

# If the log file is empty, it will not be rotated
notifempty

# Number of backups that will be kept
# This will keep the 2 newest backups only
rotate 2

# Create new empty files after rotating old ones
# This will create empty log files, with owner
# set to root, group set to sys, and permissions 644
create 0664 root sys

# Compress the backups with gzip
compress

# No packages own lastlog or wtmp -- rotate them here
/var/log/wtmp {
    monthly
    create 0664 root utmp
    rotate 1
}

/var/log/lastlog {
    monthly
    rotate 1
}

# Some packages drop log rotation info in this directory
# so we include any file in it.
include /etc/logrotate.d

# End of /etc/logrotate.conf
EOF

chmod -v 0644 /etc/logrotate.conf
```

Now create the `/etc/logrotate.d` directory as the *root* user:

```
mkdir -p /etc/logrotate.d
```

At this point additional log rotation commands can be entered, typically in the `/etc/logrotate.d` directory. For example:

```
cat > /etc/logrotate.d/sys.log << EOF
/var/log/sys.log {
    # If the log file is larger than 100kb, rotate it
    size    100k
    rotate 5
    weekly
    postrotate
        /bin/killall -HUP syslogd
    endscript
}
EOF

chmod -v 0644 /etc/logrotate.d/sys.log
```

You can designate multiple files in one entry:

```
cat > /etc/logrotate.d/example.log << EOF
file1
file2
file3 {
    ...
    postrotate
    ...
    endscript
}
EOF

chmod -v 0644 /etc/logrotate.d/example.log
```

You can use in the same line the list of files: file1 file2 file3. See the logrotate man page or **http://www.techrepublic.com/article/manage-linux-log-files-with-logrotate/** for more examples.

The command `logrotate /etc/logrotate.conf` can be run manually, however, the command should be run daily. Other useful commands are `logrotate -d /etc/logrotate.conf` for debugging purposes and `logrotate -f /etc/logrotate.conf` forcing the logrotate commands to be run immediately. Combining the previous options `-df`, you can debug the effect of the force command. When debugging, the command is only simulated, not really run, thus, eventual non-existing errors appear, when some intermediate files are expected, because they are not actually created.

To set up Fcron-3.2.0 to run `logrotate ...` at 3AM daily, root's crontab should be edited to add:

```
0 3 * * *   /usr/sbin/logrotate /etc/logrotate.conf
```

Contents

Installed Programs: logrotate
Installed Library: None
Installed Directories: None

Short Descriptions

logrotate   performs the log maintenance functions defined in the configuration files.

Last updated on 2014-09-16 16:24:33 -0700

MC-4.8.13

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-7.6 platform.

Package Information

- Download (HTTP): **http://ftp.midnight-commander.org/mc-4.8.13.tar.xz**
- Download (FTP): **ftp://ftp.osuosl.org/pub/midnightcommander/mc-4.8.13.tar.xz**
- Download MD5 sum: d967caa12765eb86e52a6a63ca202500
- Download size: 2.2 MB
- Estimated disk space required: 71 MB (119 MB, running the test suite)
- Estimated build time: 0.7 SBU (additional 0.1 SBU, running the test suite)

MC Dependencies

Required

GLib-2.40.0 and PCRE-8.35

Recommended

S-Lang-2.2.4

Optional

Doxygen-1.8.8, GPM-1.20.7, Samba-4.1.11, UnZip-6.0, X Window System, and Zip-3.0

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/MC

Installation of MC

Install MC by running the following commands:

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

Now, as the *root* user:

```
make install &&
cp -v doc/keybind-migration.txt /usr/share/mc
```

Command Explanations

--sysconfdir=/etc: This switch places the global configureation directory in */etc*.

--enable-charset: This switch adds support to `mcedit` for editing files in encodings different from the one implied by the current locale.

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

Installed Programs: mc and the symlinks mcdiff, mcedit and mcview
Installed Libraries: None
Installed Directories: /etc/mc, /usr/libexec/mc, and /usr/share/mc

Short Descriptions

cons.saver	is used internally by `mc` for saving and restoring the text behind the panels on Linux text console.
mc	is a visual shell.
mcedit	is an internal file editor.
mcdiff	is an internal visual diff tool.
mcview	is an internal file viewer.

Last updated on 2014-09-21 14:28:22 -0700

---

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-7.6 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: less than 0.1 SBU

Additional Downloads

OBEX Data Server Dependencies

Required

[BlueZ-5.23](#), [dbus-glib-0.102](#), [ImageMagick-6.8.9-7](#) or [gdk-pixbuf-2.30.8](#), [libusb-compat-0.1.5](#), and [OpenOBEX-1.7.1](#)

User Notes: *[http://wiki.linuxfromscratch.org/blfs/wiki/obex-data-server](#)*

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

Installed Program: obex-data-server
Installed Libraries: None
Installed Directory: /etc/obex-data-server

Short Descriptions

      `obex-data-server`   is a D-Bus service providing OBEX functionality.

Last updated on 2014-09-21 16:43:46 -0700

---

p7zip-9.20.1

Introduction to p7zip

p7zip is the Unix command-line port of 7-Zip, a file archiver that archives with high compression ratios. It handles 7z, ZIP, GZIP, BZIP2, XZ, TAR, APM, ARJ, CAB, CHM, CPIO, CramFS, DEB, DMG, FAT, HFS, ISO, LZH, LZMA, LZMA2, MBR, MSI, MSLZ, NSIS, NTFS, RAR RPM, SquashFS, UDF, VHD, WIM, XAR and Z formats.

This package is known to build and work properly using an LFS-7.6 platform.

Package Information

- Download (HTTP): **[http://downloads.sourceforge.net/p7zip/p7zip_9.20.1_src_all.tar.bz2](#)**
- Download MD5 sum: bd6caaea567dc0d995c990c5cc883c89
- Download size: 3.7 MB
- Estimated disk space required: 42 MB
- Estimated build time: 0.8 SBU

p7zip Dependencies

Optional

[wxWidgets](#)

User Notes: *[http://wiki.linuxfromscratch.org/blfs/wiki/p7zip](#)*

Installation of p7zip

Install p7zip by running the following commands:

```
sed -i -e 's/chmod 555/chmod 755/' -e 's/chmod 444/chmod 644/' install.sh &&
make all3
```

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

Now, as the *root* user:

```
make DEST_HOME=/usr \
     DEST_MAN=/usr/share/man \
     DEST_SHARE_DOC=/usr/share/doc/p7zip-9.20.1 install
```

Contents

Installed Programs: 7z, 7za, and 7zr
Installed Libraries: None
Installed Directory: /usr/lib/p7zip and /usr/share/doc/p7zip-9.20.1

Short Descriptions

`7z`   is a file archiver utility.

`7za` is a stand-alone executable handling less archive formats than `7z`.

`7zr` is a minimal version of `7za` that handles only 7z archives.

Last updated on 2014-09-21 14:28:22 -0700

Pax-070715

Introduction to Pax

pax is an archiving utility created by POSIX and defined by the POSIX.1-2001 standard. Rather than sort out the incompatible options that have crept up between tar and cpio, along with their implementations across various versions of UNIX, the IEEE designed a new archive utility. The name "pax" is an acronym for portable archive exchange. Furthermore, "pax" means "peace" in Latin, so its name implies that it shall create peace between the tar and cpio format supporters. The command invocation and command structure is somewhat a unification of both tar and cpio.

pax has been required to be present in LSB conformant systems since LSB version 3.0.

This package is known to build and work properly using an LFS-7.6 platform.

Package Information

- Download (HTTP): **http://downloads.sourceforge.net/heirloom/heirloom-070715.tar.bz2**
- Download MD5 sum: d846be4b268b1d55b6ffcef847f09979
- Download size: 977 KB
- Estimated disk space required: 9.2 MB
- Estimated build time: less than 0.1 SBU

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/pax

Installation of Pax

This package has somewhat unusual installation instructions, because pax is part of a larger set of utilities included in the same tarball. Issue the following commands:

```
sed -i build/mk.config                \
    -e '/LIBZ/s@ -Wl[^ ]*@@g'         \
    -e '/LIBBZ2/{s@^#@@;s@ -Wl[^ ]*@@g}' \
    -e '/BZLIB/s@0@1@'                &&
make makefiles                        &&
make -C libcommon                     &&
make -C libuxre                       &&
make -C cpio
```

Now, as the *root* user:

```
install -v -m755 cpio/pax_su3 /usr/bin/pax &&
install -v -m644 cpio/pax.1 /usr/share/man/man1
```

Command Explanations

`sed ...`: This changes the configuration file `build/mk.config` so that the system zlib and libbz2 are used and linked as

make makefiles: This command builds all the makefiles.

make -C lib...: First builds the necessary libraries.

make -C cpio: Then builds the archive utilities.

Contents

Installed Program: pax.

Short Descriptions

pax   copies files to and from archives in several formats.

Last updated on 2014-09-21 06:12:54 -0700

pciutils-3.2.1

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-7.6 platform.

Package Information

- Download (HTTP): **http://ftp.kernel.org/pub/software/utils/pciutils/pciutils-3.2.1.tar.xz**
- Download (FTP): **ftp://ftp.kernel.org/pub/software/utils/pciutils/pciutils-3.2.1.tar.xz**
- Download MD5 sum: fe7806d075994db0e28894e42668a02a
- Download size: 276 KB
- Estimated disk space required: 3.0 MB
- Estimated build time: 0.1 SBU

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/pciutils

Installation of PCI Utils

Install PCI Utils by running the following commands:

```
make PREFIX=/usr              \
     SHAREDIR=/usr/share/misc \
     SHARED=yes
```

This package does not come with a test suite.

Now, as the *root* user:

```
make PREFIX=/usr              \
     SHAREDIR=/usr/share/misc \
     SHARED=yes               \
     install install-lib      &&

chmod -v 755 /usr/lib/libpci.so
```

Command Explanations

SHARED=yes: This parameter enables building of shared library instead of static one.

ZLIB=no: This option 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-7.37.1, Lynx-2.8.8rel.2 or Wget-1.15 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

Contents

Installed Programs: lspci, setpci and update-pciids
Installed Library: libpci.so
Installed Directory: /usr/include/pci

Short Descriptions

`lspci`	is an utility for displaying information about all PCI buses in the system and all devices connected to them.
`setpci`	is an utility for querying and configuring PCI devices.
`update-pciids`	fetches the current version of the PCI ID list. Requires cURL-7.37.1, Lynx-2.8.8rel.2 or Wget-1.15.
`libpci.so`	is library that allows applications to access the PCI subsystem.

Last updated on 2014-09-09 14:11:38 -0700

---

pm-utils-1.4.1

Introduction to Power Management Utilities

The Power Management Utilities is a small collection of scripts to suspend and hibernate computer that can be used to run user supplied scripts on suspend and resume.

This package is known to build and work properly using an LFS-7.6 platform.

Package Information

- Download (HTTP): **http://pm-utils.freedesktop.org/releases/pm-utils-1.4.1.tar.gz**
- Download MD5 sum: 1742a556089c36c3a89eb1b957da5a60
- Download size: 204 KB
- Estimated disk space required: 1.6 MB
- Estimated build time: 0.1 SBU

Power Management Utilities Dependencies

Optional

xmlto-0.0.26 (to generate man pages)

Optional (runtime)

Hdparm-9.43, Wireless Tools-29, **ethtool** and **vbetool**

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/pm-utils

Installation of Power Management Utilities

Install Power Management Utilities by running the following commands:

```
./configure --prefix=/usr     \
            --sysconfdir=/etc \
            --docdir=/usr/share/doc/pm-utils-1.4.1 &&
make
```

This package does not come with a test suite.

Now, as the *root* user:

```
make install
```

If you don't have xmlto-0.0.26 installed, copy pregenerated man pages:

```
install -v -m644 man/*.1 /usr/share/man/man1 &&
install -v -m644 man/*.8 /usr/share/man/man8 &&
ln -sv pm-action.8 /usr/share/man/man8/pm-suspend.8 &&
ln -sv pm-action.8 /usr/share/man/man8/pm-hibernate.8 &&
```

Configuring Power Management Utilities

Suspend or resume functionality can be easily modified by installing files into the `/etc/pm/sleep.d` directory. These files, known as hooks, are run when the system is put into a sleep state or resumed. Default hooks are located in `/usr/lib/pm-utils/sleep.d`, and user hooks should be put in `/etc/pm/sleep.d`. See the pm-action(8) man page for more information.

In order to use hibernation with GRUB and a swap partition, you need to add kernel parameter `resume=swap_partition` (i.e. `resume=/dev/sda1`) to the kernel line in the `/boot/grub/grub.cfg` configuration file.

Contents

Installed Programs: on_ac_power, pm-hibernate, pm-is-supported, pm-powersave, pm-suspend and pm-suspend-hybrid

Installed Libraries: None

Installed Directories: /etc/pm, /usr/lib/pm-utils and /usr/share/doc/pm-utils-1.4.1

Short Descriptions

`on_ac_power`	is a script that determines whether the system is running on AC power (rather than a battery).
`pm-hibernate`	is a symlink to pm-action script that puts the computer into hibernate mode (the system is fully powered off and system state is saved to disk).
`pm-is-supported`	is a script that checks whether power management features such as suspend and hibernate are supported.
`pm-powersave`	is a script that puts the computer into powersaving (low power) mode.
`pm-suspend`	is a symlink to pm-action script that puts the computer into suspend mode (most devices are shut down and system state is saved in RAM).
`pm-suspend-hybrid`	is a symlink to pm-action script that puts the computer into hybrid-suspend mode (the system does everything it needs to hibernate, but suspends instead of shutting down).

Last updated on 2013-07-10 14:18:46 +0200

Raptor-2.0.14

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-7.6 platform.

Package Information

- Download (HTTP): **http://download.librdf.org/source/raptor2-2.0.14.tar.gz**
- Download MD5 sum: d3e0b43866197a5367b781b25510f728
- Download size: 1.8 MB
- Estimated disk space required: 27 MB (additional 2 MB for the tests)
- Estimated build time: 0.2 SBU (additional 0.5 SBU for the tests)

Raptor Dependencies

Required

cURL-7.37.1 and libxslt-1.1.28

Optional

GTK-Doc-1.20, ICU-53.1 and **libyajl**

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/raptor

Installation of Raptor

Install Raptor by running the following commands:

```
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-53.1 and wish to build Raptor with its support.

Contents

Installed Programs: rapper
Installed Libraries: libraptor2.so
Installed Directories: /usr/include/raptor2 and /usr/share/gtk-doc/html/raptor2

Short Descriptions

`rapper`	is a RDF parsing and serializing utility.
`libraptor2.so`	contains the Raptor API functions.

Last updated on 2014-09-20 21:51:52 -0700

Rasqal-0.9.32

Introduction to Rasqal

Rasqal 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-7.6 platform.

Package Information

- Download (HTTP): **http://download.librdf.org/source/rasqal-0.9.32.tar.gz**
- Download MD5 sum: dc7c6107de00c47f85f6ab7db164a136
- Download size: 1.5 MB
- Estimated disk space required: 22 MB (additional 4 MB for the tests)
- Estimated build time: 0.2 SBU

Rasqal Dependencies

Required

Raptor-2.0.14

Optional

PCRE-8.35 and libgcrypt-1.6.2

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/rasqal

Installation of Rasqal

Install Rasqal by running the following commands:

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

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

Now, as the _root_ user:

Command Explanations

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

Contents

Installed Programs: rasqal-config and roqet
Installed Library: librasqal.so
Installed Directories:/usr/include/rasqal and /usr/share/gtk-doc/html/rasqal

Short Descriptions

`rasqal-config`	is a utility for retrieving the installation options of Rasqal .
`roqet`	is an RDF query utility.

Last updated on 2014-09-20 21:51:52 -0700

Redland-1.0.17

Introduction to Redland

Redland is a set of free software C libraries that provide support for the Resource Description Framework (RDF).

This package is known to build and work properly using an LFS-7.6 platform.

Package Information

- Download (HTTP): **http://download.librdf.org/source/redland-1.0.17.tar.gz**
- Download MD5 sum: e5be03eda13ef68aabab6e42aa67715e
- Download size: 1.6 MB
- Estimated disk space required: 18 MB
- Estimated build time: 0.2 SBU

Redland Dependencies

Required

Rasqal-0.9.32

Optional

Berkeley DB-6.1.19, libiodbc-3.52.9, SQLite-3.8.6, MariaDB-10.0.13 or **MySQL**, PostgreSQL-9.3.5, **virtuoso**, and **3store**

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/redland

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

Installed Libraries: librdf.so and /usr/lib/redland/librdf_storage_*.so

Installed Directories: /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.

Last updated on 2014-09-22 11:20:08 -0700

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sg3_utils-1.39

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-7.6 platform.

Package Information

- Download (HTTP): **http://sg.danny.cz/sg/p/sg3_utils-1.39.tar.xz**
- Download MD5 sum: 01d9a5421d778d2707f90461836c3d11
- Download size: 700 KB
- Estimated disk space required: 23 MB
- Estimated build time: 0.3 SBU

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/sg3_utils

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

Installed Programs: scsi_logging_level, scsi_mandat, scsi_readcap, scsi_ready, scsi_satl, scsi_start, scsi_stop, scsi_temperature, 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

Installed Library: libsgutils2.so

Installed Directories: None

Short Descriptions

`sg_compare_and_write`	sends the SCSI COMPARE AND WRITE command to device.
`sg_copy_results`	sends the SCSI RECEIVE COPY RESULTS command (XCOPY related).

SCSI command set.

sg_decode_sense	takes SCSI sense data in binary or as a sequence of ASCII hexadecimal bytes and decodes it.
sg_emc_trespass	changes ownership of a LUN from another Service-Processor to this one.
sg_format	format or resize a SCSI disk (perhaps change its block size).
sg_get_config	sends a SCSI GET CONFIGURATION command (MMC-4 +).
sg_get_lba_status	sends the SCSI GET LBA STATUS command.
sg_ident	sends a SCSI REPORT or SET IDENTIFYING INFORMATION command.
sginfo	access mode page information for a SCSI (or ATAPI) device.
sg_inq	sends a SCSI INQUIRY or ATA IDENTIFY (PACKET) DEVICE command and outputs the response.
sg_logs	access log pages with SCSI LOG SENSE command.
sg_luns	sends the SCSI REPORT LUNS command.
sg_map	displays mapping between linux sg and other SCSI devices.
sg_map26	maps a special file to a SCSI generic (sg) device (or vice versa).
sgm_dd	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.
sg_modes	reads mode pages with SCSI MODE SENSE command.
sg_opcodes	reports information on supported SCSI commands or task management functions.
sgp_dd	copies data to and from files and devices. Specialized for devices that understand the SCSI command set.
sg_persist	sends a SCSI PERSISTENT RESERVE (IN or OUT) command to manipulate registrations and reservations.
sg_prevent	sends a SCSI PREVENT ALLOW MEDIUM REMOVAL command.
sg_raw	sends an arbitrary SCSI command to a device.
sg_rbuf	reads data using SCSI READ BUFFER command.
sg_rdac	Display or Modify RDAC Redundant Controller Page.
sg_read	read blocks of data continually from same offset.
sg_read_block_limits	sends a SCSI READ BLOCK LIMITS command.
sg_read_buffer	sends a SCSI READ BUFFER command.
sg_readcap	sends a SCSI READ CAPACITY command.
sg_read_long	sends a SCSI READ LONG command.
sg_reassign	sends a SCSI REASSIGN BLOCKS command.
sg_referrals	sends the SCSI REPORT REFERRALS command.
sg_requests	sends one or more SCSI REQUEST SENSE commands.
sg_reset	sends SCSI device, target, bus or host reset; or checks reset state.
sg_rmsn	sends a SCSI READ MEDIA SERIAL NUMBER command.
sg_rtpg	sends a SCSI REPORT TARGET PORT GROUPS command.
sg_safte	fetch status from a SCSI Accessed Fault-Tolerant Enclosure (SAF-TE) device.
sg_sanitize	sends a SCSI SANITIZE command.
sg_sat_identify	sends a ATA IDENTIFY (PACKET) DEVICE command via a SCSI to ATA Translation (SAT) layer.
sg_sat_phy_event	sends an ATA READ LOG EXT command via a SAT pass through to fetch log page 11h which contains SATA phy event counters.
sg_sat_set_features	sends a ATA SET FEATURES command via a SCSI to ATA Translation (SAT) layer.
sg_scan	does a scan of sg devices (or given SCSI/ATAPI/ATA devices) and prints the results.
sg_senddiag	performs a SCSI SEND DIAGNOSTIC command.
sg_ses	sends controls and fetch status from a SCSI Enclosure Services (SES) device.
sg_start	sends SCSI START STOP UNIT command to start, stop, load or eject medium.
sg_stpg	sends a SCSI SET TARGET PORT GROUPS command.
sg_sync	sends the scsi command synchronize cache.
sg_test_rwbuf	tests the SCSI host adapter by issuing write and read operations on a device's buffer and calculating checksums.
sg_turs	sends one or more SCSI TEST UNIT READY commands.
sg_unmap	sends a SCSI UNMAP command.
sg_verify	invoke SCSI VERIFY command(s) on a block device.

`sg_write_buffer`	sends a SCSI WRITE BUFFER command.
`sg_write_long`	sends the SCSI WRITE LONG command.
`sg_write_same`	sends the SCSI WRITE SAME command.
`sg_wr_mode`	writes mode page.
`sg_xcopy`	copies data to and from files and devices using SCSI EXTENDED COPY (XCOPY).
`libsgutils2.so`	contains the sg3_utils API functions.

Last updated on 2014-09-17 11:48:47 -0700

Strigi-0.7.8

Introduction to Strigi

Strigi is a program for fast indexing and searching of personal data. It can gather and index information from files in the filesystem even if they are hidden in emails or archives.

This package is known to build and work properly using an LFS-7.6 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-3.0.1

Recommended

D-Bus-1.8.8 and Qt-4.8.6

Optional

FFmpeg-2.3.3, Exiv2-0.24, libxml2-2.9.1, **CLucene version 0.9x** , and **log4cxx**

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/strigi

Installation of Strigi

Install strigi by running the following commands:

```
sed -i "s/BufferedStream :/STREAMS_EXPORT &/" libstreams/include/strigi/bufferedstream.h &&

mkdir build &&
cd    build &&

cmake -DCMAKE_INSTALL_PREFIX=/usr \
      -DCMAKE_INSTALL_LIBDIR=lib  \
      -DCMAKE_BUILD_TYPE=Release  \
      -DENABLE_CLUCENE=OFF        \
      -DENABLE_CLUCENE_NG=OFF     \
      .. &&
make
```

To test the results, issue `make test`.

Now, as the *root* user:

```
make install
```

Command Explanations

-DCMAKE_INSTALL_LIBDIR=lib: This switch is used so the package doesn't write over the lib64 symlink on 64 bit systems.

-DCMAKE_BUILD_TYPE=Release: This switch is used to apply higher level of the compiler optimizations.

-DENABLE_DBUS=OFF: Use this `cmake` variable if you don't have D-Bus installed.

-DENABLE_QT4=OFF: Use this `cmake` variable if you don't have Qt4 installed or if you compiled Qt4 without D-Bus support.

-DENABLE_CLUCENE*=OFF: These statements disable the package from trying to use [CLucene-2.3.3.4](link) (current stable version).

Contents

Installed Programs: deepfind, deepgrep, rdfindexer, strigiclient, strigicmd, strigidaemon, and xmlindexer
Installed Libraries: libsearchclient.so, libstreamanalyzer.so, libstreams.so, libstrigihtmlgui.so, libstrigiqtdbusclient.so, and several in /usr/lib/strigi
Installed Directories: /usr/include/strigi, /usr/lib/strigi, and /usr/share/strigi

Short Descriptions

deepfind	is a utility for searching for filenames in compressed archives like tar, cpio, and zip
deepgrep	is a utility for searching compressed archives like tar, cpio, and zip
rdfindexer	manages and performs indexing of the RDF data for entities present on your site
strigiclient	is a Qt4 client (GUI) for the Strigi Desktop Search software
strigicmd	is a program for creating and querying indices
strigidaemon	is a daemon program for maintaining indices
xmlindexer	indexes XML documents

Last updated on 2014-09-17 11:48:47 -0700

Sysstat-11.1.1

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-7.6 platform.

Package Information

- Download (HTTP): **http://perso.wanadoo.fr/sebastien.godard/sysstat-11.1.1.tar.xz**
- Download MD5 sum: 24241596a7f0f5819a43386f2ccca0cc
- Download size: 292 KB
- Estimated disk space required: 6.5 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-3.2.0](link).

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/sysstat

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.

```
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.

> **Note**
>
> 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

Config Files

`/etc/sysconfig/sysstat` and `/etc/sysconfig/sysstat.ioconf`

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-20140919](#) package using the following command as the `root` user:

```
make install-sysstat
```

Contents

Installed Programs: cifsiostat, iostat, mpstat, nfsiostat-sysstat, pidstat, sadf, and sar
Installed Libraries: None
Installed Directories: /usr/lib/sa, /usr/share/doc/sysstat-11.1.1 and, /var/log/sa

Short Descriptions

`cifsiostat`	displays statistics about read and write operations on CIFS filesystems.
`iostat`	reports CPU statistics and input/output statistics for devices and partitions.
`mpstat`	writes activities for each available processor.
`nfsiostat-`	displays statistics about read and write operations on NFS filesystems.

`pidstat`	is used for monitoring individual tasks currently being managed by the Linux kernel.
`sadf`	is used for displaying the contents of data files created by the `sar` command. But unlike `sar`, `sadf` can write its data in many different formats.
`sar`	is used for displaying the contents of elected cumulative activity counters in the operating system.

Last updated on 2014-09-21 14:28:22 -0700

Udev Extras (from eudev)

Introduction to Udev Extras

Eudev was indeed installed in LFS and there is no reason to reinstall it unless the user is going to install a package such as UPower that needs libgudev. These instructions enable building libgudev and also optionally create gir data for Eudev.

Unlike other packages in BLFS, there is no set version of Eudev in this page's title and no set version specified for download. Version updates to Eudev makes it possible that the user's system may have an Eudev version different from the one in the current LFS book. Therefore, users should use the version of Eudev their computer currently uses. With few exceptions, the BLFS team has no experience updating (or reverting to an older version) the Eudev package "on the fly".

This package is known to build and work properly using an LFS-7.6 platform.

Package Information

> **Caution**
>
> If you are using a version of BLFS different from your currently installed base LFS system, you should use the Eudev source from your LFS build. Newer versions of Eudev may occasionally be incompatible with former ones, either because they require some new options to be enabled in the kernel or because they change the way rules are parsed. For in-system updates to Eudev, you may want to consult **the Gentoo page** about upgrading Udev.

- Download (HTTP): **http://dev.gentoo.org/~blueness/eudev**

Udev Extras Dependencies

Required

GLib-2.40.0

Optional Dependencies

gobject-introspection-1.40.0 (for gir-data, needed for Gnome), docbook-xsl-1.78.1 and libxslt-1.1.28 (to build man pages, which are not shipped with the package), and GTK-Doc-1.20 (to rebuild the documentation)

Optional Runtime Dependencies

pciutils-3.2.1 and usbutils-007

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/udev-extras

Installation of Udev Extras

First, re-build eudev:

```
sed -r -i 's|/usr(/bin/test)|\1|'          test/udev-test.pl  &&

./configure --prefix=/usr           \
            --bindir=/sbin          \
            --sbindir=/sbin         \
            --libdir=/usr/lib       \
            --sysconfdir=/etc       \
            --libexecdir=/lib       \
            --with-rootprefix=      \
            --with-rootlibdir=/lib  \
            --enable-split-usr      \
            --enable-libkmod        \
            --enable-rule_generator \
```

```
          --disable-introspection \
          --disable-gtk-doc-html  \
          --with-firmware-path=/lib/firmware &&

   make
```

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

Now re-install as the *root* user:

```
   make install
```

Command Explanations

--disable-introspection: This prevents the gir-data instructions from running. Remove this option if the optional gobject-introspection-1.40.0 package is installed.

--disable-gtk-doc-html: This prevents the building of the html data. Remove this option if the optional GTK-Doc-1.20 package is installed.

Contents

Installed Programs: None

Installed Library: libgudev-1.0.so

Installed Directories:/usr/include/gudev-1.0/gudev, /usr/lib/girepository-1.0, /usr/share/gir-1.0, and /usr/share/gtk-doc/html/gudev (optional)

Short Descriptions

`libgudev-1.0.so`   is a GObject-based wrapper library for libudev.

Last updated on 2014-09-09 12:00:35 -0700

UDisks-1.0.5

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-7.6 platform.

Package Information

- Download (HTTP): **http://hal.freedesktop.org/releases/udisks-1.0.5.tar.gz**
- Download MD5 sum: 70d48dcfe523a74cd7c7fbbc2847fcdd
- Download size: 720 KB
- Estimated disk space required: 12 MB
- Estimated build time: 0.1 SBU

udisks Dependencies

Required

dbus-glib-0.102, libatasmart-0.19, LVM2-2.02.111, parted-3.2, Polkit-0.112, sg3_utils-1.39, and udev-extras (from eudev) (for gudev)

Optional

GTK-Doc-1.20, libxslt-1.1.28 and Sudo-1.8.10p3 (to run the test)

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/udisks

Installation of UDisks

Install UDisks by running the following commands:

```
   ./configure --prefix=/usr      \
          --sysconfdir=/etc   \
```

```
make
```

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

Now, as the *root* user:

```
make profiledir=/etc/bash_completion.d 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/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.

Last updated on 2014-09-17 11:48:47 -0700

UDisks-2.1.3

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-7.6 platform.

Package Information

- Download (HTTP): **http://udisks.freedesktop.org/releases/udisks-2.1.3.tar.bz2**
- Download MD5 sum: f2c793f839058371d1e93a654199438d
- Download size: 892 KB
- Estimated disk space required: 40 MB (additional 1 MB for the tests and 46 MB for docs creation)
- Estimated build time: 0.3 SBU (additional 0.1 SBU for docs creation)

UDisks Dependencies

Required

libatasmart-0.19, libxslt-1.1.28, Polkit-0.112, and udev-extras (from eudev) (for GUdev)

Optional (Required if building GNOME)

gobject-introspection-1.40.0

Optional

GTK-Doc-1.20

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/udisks2

Installation of UDisks

Install UDisks by running the following commands:

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

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: udisksctl, udisksd and umount.udisks2
Installed Library: libudisks2.so
Installed Directories: /etc/udisks2, /usr/include/udisks2, /usr/lib/udisks2, /usr/share/gtk-doc/html/udisks2 and /var/lib/udisks2

Short Descriptions

udisksctl	is a command-line program used to interact with the udisksd daemon.
udisksd	is the UDisks daemon itself.
libudisks2.so	contains the UDisks API functions.

Last updated on 2014-09-17 04:20:33 -0700

UnRar-5.1.7

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-7.6 platform.

Package Information

- Download (HTTP): **http://www.rarlab.com/rar/unrarsrc-5.1.7.tar.gz**
- Download MD5 sum: af571529a358c972872b91792ffc0a80
- Download size: 211 KB
- Estimated disk space required: 2.4 MB
- Estimated build time: 0.1 SBU

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/unrar

Installation of UnRar

Install UnRar by running the following commands:

```
make -f makefile
```

This package does not come with a test suite.

Now, as the *root* user:

```
install -v -m755 unrar /usr/bin
```

Contents

Installed Program: unrar
Installed Libraries: None
Installed Directories: 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-7.6 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

User Notes: *http://wiki.linuxfromscratch.org/blfs/wiki/unzip*

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)
```

```
      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 MANDIR=/usr/share/man/man1 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

Installed Programs: funzip, unzip, unzipfsx, zipgrep, and zipinfo
Installed Libraries: None
Installed Directories: None

Short Descriptions

funzip	allows the output of `unzip` commands to be redirected.
unzip	lists, tests or extracts files from a ZIP archive.
unzipfsx	is a self-extracting stub that can be prepended to a ZIP archive. Files in this format allow the recipient to decompress the archive without installing UnZip .
zipgrep	searches files in a ZIP archive for lines matching a pattern.
zipinfo	produces technical information about the files in a ZIP archive, including file access permissions, encryption status, type of compression, etc.

Last updated on 2014-09-09 12:00:35 -0700

UPower-0.9.23

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-7.6 platform.

Package Information

- Download (HTTP): **http://upower.freedesktop.org/releases/upower-0.9.23.tar.xz**
- Download MD5 sum: 39cfd97bfaf7d30908f20cf937a57634
- Download size: 416 KB
- Estimated disk space required: 10 MB
- Estimated build time: 0.2 SBU

UPower Dependencies

Required

dbus-glib-0.102, libusb-1.0.19, Polkit-0.112, and udev-extras (from eudev) (for GUdev)

Recommended (runtime)

pm-utils-1.4.1

[gobject-introspection-1.40.0](#)

Optional

[GTK-Doc-1.20](#) and [Python-3.4.1](#) (used only in the testsuite).

User Notes: ***http://wiki.linuxfromscratch.org/blfs/wiki/upower***

Installation of UPower

Install UPower by running the following commands:

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

To test the results, issue: `make check`. Some checks may not pass due to missing files. Test suite should be run from a local GUI session started with dbus-launch.

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**) 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

Installed Programs: upower and upowerd
Installed Libraries: libupower-glib.so
Installed Directories: /etc/UPower, /usr/include/libupower-glib, and /var/lib/upower

Short Descriptions

upower	is the UPower command line tool.
upowerd	is the UPower Daemon. It provides the org.freedesktop.UPower service on the system message bus.
libupower-glib.so	contains the UPower API functions.

Last updated on 2014-09-20 21:51:52 -0700

usbutils-007

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-7.6 platform.

Package Information

- Download (HTTP): **http://ftp.kernel.org/pub/linux/utils/usb/usbutils/usbutils-007.tar.xz**

- Download MD5 sum: c9df5107ae9d26b10a1736a261250139
- Download size: 416 KB
- Estimated disk space required: 4.8 MB
- Estimated build time: less than 0.1 SBU

USB Utils Dependencies

Required

[libusb-1.0.19](#)

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/usbutils

Installation of USB Utils

Install USB Utils by running the following commands:

```
./configure --prefix=/usr  \
            --disable-zlib \
            --datadir=/usr/share/misc &&
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-2.8.8rel.2](#) or [Wget-1.15](#) 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

Installed Programs: lsusb, update-usbids, usb-devices, and usbhid-dump
Installed Libraries: None
Installed Directories: None

Short Descriptions

lsusb	is an utility for displaying information about all USB buses in the system and all devices connected to them.
update-usbids	downloads the current version of the USB ID list. Requires [Lynx-2.8.8rel.2](#) or [Wget-1.15](#).
usb-devices	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.
usbhid-dump	is used to dump report descriptors and streams from HID (human interface device) interfaces of USB devices.

Last updated on 2014-09-14 12:09:32 -0700

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

The first option is to install the actual GNU which package.

This package is known to build and work properly using an LFS-7.6 platform.

Introduction to Which

Package Information

- Download (HTTP): **http://ftp.gnu.org/gnu/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

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/which

Installation of Which

Install which by running the following commands:

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

This package does not come with a test suite.

Now, as the *root* user:

```
make install
```

Contents

Installed Program: which
Installed Libraries: None
Installed Directories: None

Short Descriptions

which   shows the full path of (shell) commands installed in your PATH.

The 'which' Script

The second option (for those who don't want to install the package) is to create a simple script (execute as the *root* user):

```
cat > /usr/bin/which << "EOF"
#!/bin/bash
type -pa "$@" | head -n 1 ; exit ${PIPESTATUS[0]}
EOF
chmod -v 755 /usr/bin/which
chown -v root:root /usr/bin/which
```

This should work OK and is probably the easiest solution for most cases, but is not the most comprehensive implementation.

Last updated on 2014-09-08 23:39:08 -0700

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-7.6 platform.

Package Information

- Download (HTTP): **http://downloads.sourceforge.net/infozip/zip30.tar.gz**

- Download MD5 sum: 7b74551e63f8ee6aab6fbc86676c0d37
- Download size: 1.1 MB
- Estimated disk space required: 6.4 MB
- Estimated build time: 0.1 SBU

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/zip

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 MANDIR=/usr/share/man/man1 -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

Installed Programs: zip, zipcloak, zipnote, and zipsplit
Installed Libraries: None
Installed Directories: None

Short Descriptions

`zip`	compresses files into a `ZIP` archive.
`zipcloak`	is a utility to encrypt and decrypt a `ZIP` archive.
`zipnote`	reads or writes comments stored in a `ZIP` file.
`zipsplit`	is a utility to split `ZIP` files into smaller files.

Last updated on 2014-09-09 12:00:35 -0700

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.

Bazaar-2.5.1

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-7.6 platform.

Package Information

- Download (HTTP): **https://launchpad.net/bzr/2.5/2.5.1/+download/bzr-2.5.1.tar.gz**
- Download MD5 sum: ac5079858364a046071000d5cdccb67b
- Download size: 10 MB
- Estimated disk space required: 69 MB
- Estimated build time: 0.2 SBU

Bazaar Dependencies

Required

Certificate Authority Certificates, **paramiko** with OpenSSH-6.6p1 or **PyCrypto** (to access branches over SSH), and **BzrTools** (for rsync support and other extra functionality)

User Notes: *http://wiki.linuxfromscratch.org/blfs/wiki/bazaar*

Installation of Bazaar

Install Bazaar by running the following commands:

```
sed -i -e 's|man/man1|share/&|' setup.py &&
python setup.py build
```

This package does not come with a test suite.

Now, as the *root* user:

```
python setup.py install
```

Contents

Installed Program: bzr
Installed Libraries: None
Installed Directory: /usr/lib/python2.7/site-packages/bzrlib

Short Descriptions

bzr   is a command-line client program used to access bcr repositories.

Last updated on 2014-09-12 22:13:42 -0700

Check-0.9.14

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-7.6 platform.

Package Information

- Download (HTTP): **http://downloads.sourceforge.net/check/check-0.9.14.tar.gz**
- Download MD5 sum: 38263d115d784c17aa3b959ce94be8b8
- Download size: 744 KB
- Estimated disk space required: 7.8 MB (additional 0.4 MB for the tests)
- Estimated build time: 0.1 SBU (additional 2.1 SBU for the tests)

User Notes: *http://wiki.linuxfromscratch.org/blfs/wiki/check*

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-0.9.14 install
```

Command Explanations

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

Contents

Installed Program: checkmk
Installed Library: libcheck.so
Installed Directory: /usr/share/doc/check-0.9.14

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.

Last updated on 2014-09-12 12:02:55 -0700

Clisp-2.49

Introduction to Clisp

GNU Clisp is a Common Lisp implementation which includes an interpreter, compiler, debugger, and many extensions.

This package is known to build and work properly using an LFS-7.6 platform.

Package Information

- Download (HTTP): **http://ftp.gnu.org/pub/gnu/clisp/latest/clisp-2.49.tar.bz2**
- Download (FTP): **ftp://ftp.gnu.org/pub/gnu/clisp/latest/clisp-2.49.tar.bz2**
- Download MD5 sum: 1962b99d5e530390ec3829236d168649
- Download size: 7.8 MB
- Estimated disk space required: 163 MB
- Estimated build time: 0.9 SBU

Recommended

libsigsegv-2.10

Optional

libffcall

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/clisp

Installation of Clisp

> **Note**
>
> This package does not support parallel build.

Install Clisp by running the following commands:

```
mkdir build &&
cd    build &&

../configure --srcdir=../                    \
            --prefix=/usr                    \
            --docdir=/usr/share/doc/clisp-2.49 \
            --with-libsigsegv-prefix=/usr &&

ulimit -s 16384 &&
make -j1
```

For reasons which are not understood, the testsuite for this package fails.

Now, as the *root* user:

```
make install
```

`uimit -s 16384`: this increases the maximum stack size, as recommended by the `configure`.

Contents

Installed Programs: clisp, clisp-link
Installed Libraries: various static libraries in `/usr/lib/clisp-$clisp-version;/base/`
Installed Directories:`/usr/lib/clisp-2.49 /usr/share/doc/clisp-2.49 /usr/share/emacs/site-lisp;`

Short Descriptions

clisp   is an ANSI Common Lisp compiler, interpreter, and debugger

clisp-link   is used to link an external module to clisp

Last updated on 2014-09-18 12:44:10 -0700

CMake-3.0.1

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-7.6 platform.

Package Information

- Download (HTTP): **http://www.cmake.org/files/v3.0/cmake-3.0.1.tar.gz**
- Download MD5 sum: e2e05d84cb44a42f1371d9995631dcf5
- Download size: 5.3 MB
- Estimated disk space required: 237 MB (additional 195 MB for tests)
- Estimated build time: 1.8 SBU (additional 4.4 SBU for tests)

CMake Dependencies

Recommended

cURL-7.37.1 and libarchive-3.1.2

Optional

Qt-4.8.6 or Qt-5.3.1 (for the Qt-based GUI), Subversion-1.8.10 (for testing), and **Sphinx** (for building documents)

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/cmake

Installation of CMake

If Qt4 and Qt5 are installed in `/opt`, use `source setqt4` or `source setqt5` to choose which one will be used to build the Qt-based GUI.

Install CMake by running the following commands:

```
./bootstrap --prefix=/usr        \
            --system-libs        \
            --mandir=/share/man \
            --docdir=/share/doc/cmake-3.0.1   &&
make
```

To test the results, issue: `bin/ctest`. If you want to investigate a problem with a given "problem1-test", use `bin/ctest -R "problem1-test"` and, to omit it, use `bin/ctest -E "problem1-test"`. These options can be used together: `bin/ctest -R "problem1-test" -E "problem2-test"`. Option -N can be used to display all available tests, and you can run `bin/ctest` for a sub-set of tests by using separated by spaces names or numbers as options. Option --help can be used to show all options.

Now, as the *root* user:

```
make install
```

--system-libs: This switch forces the build system to link against Zlib, Bzip2, cURL, Expat and libarchive installed on the system.

--qt-gui: This switch enables building of the Qt-based GUI for CMake.

Contents

Installed Programs: ccmake, cmake, cmake-gui (optional), cpack and ctest
Installed Libraries: None
Installed Directories: /usr/share/cmake-3.0 and /usr/share/doc/cmake-3.0.1

Short Descriptions

ccmake	is a curses based interactive frontend to `cmake`.
cmake	is the makefile generator.
cmake-gui	(optional) is the Qt -based frontent to `cmake`.
cpack	is the CMake packaging program.
ctest	is a testing utility for cmake-generated build trees.

Last updated on 2014-09-10 09:45:01 -0700

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-7.6 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/7.6/cvs-1.11.23-zlib-1.patch**

CVS Dependencies

Optional

Tcsh-6.18.01, OpenSSH-6.6p1, **krb4**, MIT Kerberos V5-1.12.2 (for the GSSAPI libraries), ghostscript-9.14, 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-7.4
- Emacs-24.3
- nano-2.3.6
- Re-alpine-2.03 (for Pico)

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/cvs

Installation of CVS

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 some conflicts with newer libraries and programs:

```
sed -i -e 's/getline /get_line /' lib/getline.{c,h} &&
sed -i -e 's/^@sp$/& 1/'          doc/cvs.texinfo &&
touch doc/*.pdf
```

Install CVS by running the following commands:

```
./configure --prefix=/usr --docdir=/usr/share/doc/cvs-1.11.23 &&
make
```

If you 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 &&
make -C doc install-pdf &&
install -v -m644 FAQ README /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-6.6p1

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

```
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` flags specifies an initial descriptive entry for the new module. The `cvstest` parameter is the name used for the module in all subsequent `cvs` commands. The `vendortag` and `releasetag` parameters are used to further identify each CVS module and are mandatory whether used or not.

`(grep anonymous /etc/passwd || useradd anonymous -s /bin/false -u 98)`: Check for an existing *anonymous* user and create one if not found.

`echo anonymous: > /srv/cvsroot/CVSROOT/passwd`: Add the *anonymous* user to the CVS passwd file, which is unused for anything else in this configuration.

`echo anonymous > /srv/cvsroot/CVSROOT/readers`: Add the *anonymous* user to the CVS readers file, a list of users who have read only access to the repository.

Contents

Installed Programs: None
Installed Libraries: None
Installed Directories: /srv/cvsroot

Last updated on 2013-02-11 10:51:17 -0800

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-7.6 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

Installed Program: runtest
Installed Libraries: None
Installed Directory: /usr/share/dejagnu

Short Descriptions

`runtest`   is the DejaGnu test driver program. It is used to control what tests to run, and variations on how to run them.

Last updated on 2014-09-14 12:09:32 -0700

Doxygen-1.8.8

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-7.6 platform.

Package Information

- Download (HTTP): **http://ftp.stack.nl/pub/doxygen/doxygen-1.8.8.src.tar.gz**
- Download (FTP): **ftp://ftp.stack.nl/pub/doxygen/doxygen-1.8.8.src.tar.gz**
- Download MD5 sum: 0cbe6912fcac302a984bfcfb9231fec9
- Download size: 4.8 MB
- Estimated disk space required: 111 MB
- Estimated build time: 1.3 SBU

Doxygen Dependencies

Optional

Graphviz-2.38.0, ghostscript-9.14, Python-2.7.8, Qt-4.8.6 (for doxywizard) and texlive-20140525

User Notes: *http://wiki.linuxfromscratch.org/blfs/wiki/doxygen*

Installation of Doxygen

Install Doxygen by running the following commands:

```
                    --docdir /usr/share/doc/doxygen-1.8.8 &&
    make
```

This package does not come with a test suite.

Now, as the *root* user:

```
make MAN1DIR=share/man/man1 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 Qt4 is installed and you wish to build the GUI front-end. If both Qt4 and Qt5 are installed, use `source setqt4`. If Qt4 is installed in `/opt`, issue `export QTDIR=$QT4DIR`.

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-2.7.8 installed. If you require formulas to create PDF documentation, then you must have texlive-20140525 installed. If you require formulas to convert PostScript files to bitmaps, then you must have ghostscript-9.14 installed.

Contents

Installed Programs: doxygen and optionally, doxywizard
Installed Libraries: None
Installed Directory: /usr/share/doc/doxygen-1.8.8

Short Descriptions

doxygen	is a command-line based utility used to generate template configuration files and then generate documentation from these templates. Use `doxygen --help` for an explanation of the command-line parameters.
doxywizard	is a GUI front-end for configuring and running `doxygen`.

Last updated on 2014-09-17 21:56:07 -0700

---

elfutils-0.160

Introduction to elfutils

The elfutils package contains set of utilities and libraries for handling ELF (Executable and Linkable Format) files.

This package is known to build and work properly using an LFS-7.6 platform.

Package Information

- Download (HTTP): **https://fedorahosted.org/releases/e/l/elfutils/0.160/elfutils-0.160.tar.bz2**
- Download MD5 sum: 7527f22dff8b1ac8c122cfc4d3d3bb1e
- Download size: 5.2 MB
- Estimated disk space required: 72 MB (additional 3 MB for the tests)
- Estimated build time: 0.7 SBU (additional 0.2 SBU for the tests)

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/elfutils

Installation of elfutils

Install elfutils by running the following commands:

```
./configure --prefix=/usr --program-prefix="eu-" &&
make
```

```
sed -i '/srcdir/ iexit 77\n'            \
        tests/run-backtrace-native.sh \
        tests/run-backtrace-native-core.sh
```

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

Now, as the *root* user:

```
make install
```

Command Explanations

--program-prefix="eu-": This switch renames installed programs to avoid conflict with Binutils programs installed in LFS.

Contents

Installed Programs: eu-addr2line, eu-ar, eu-elfcmp, eu-elflint, eu-findtextrel, eu-ld, eu-make-debug-archive, eu-nm, eu-objdump, eu-ranlib, eu-readelf, eu-size, eu-stack, eu-strings, eu-strip, and eu-unstrip

Installed Libraries: libasm.{a,so}, libdw.{a,so}, libebl.a, libelf.{a,so}, and some for different architectures under /usr/lib/elfutils

Installed Directories: /usr/include/elfutils and /usr/lib/elfutils

Last updated on 2014-09-10 06:19:10 -0700

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 prmanent 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-7.6 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-8.6.2

Optional

Tk-8.6.2

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/expect

Installation of Expect

Install Expect by running the following commands:

```
./configure --prefix=/usr            \
            --with-tcl=/usr/lib      \
            --enable-shared          \
            --mandir=/usr/share/man \
            --with-tclinclude=/usr/include &&
make
```

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

```
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.

`ln -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

Installed Programs: autoexpect, autopasswd, cryptdir, decryptdir, dislocate, expect, ftp-rfc, kibitz, lpunlock, mkpasswd, passmass, rftp, rlogin-cwd, timed-read, timed-run, unbuffer, weather, and optionally (if Expect was linked against Tk), multixterm, tknewsbiff, tkpasswd, xkibitz, and xpstat

Installed Library: libexpect5.45.so

Installed Directory: /usr/lib/expect5.45

Short Descriptions

autoexpect	generates an Expect script from watching a session.
autopasswd	is a wrapper to make `passwd`(1) be non-interactive.
cryptdir	encrypts all files in a directory.
decryptdir	decrypts all files in a directory.
dislocate	allows processes to be disconnected and reconnected to a terminal.
expect	is a program that " talks " to other interactive programs according to a script.
ftp-rfc	retrieves an RFC (or the index) from UUNET.
kibitz	allows two (or more) people to interact with one shell (or any arbitrary program).
lpunlock	unhangs a printer which claims it is " waiting for lock ".
mkpasswd	generates passwords and can apply them automatically to users.
passmass	changes a password on multiple machines.
rftp	is much like `ftp` except it uses `~g` and `~p` instead of `mget` and `mput`.
rlogin-cwd	is `rlogin` except it uses the local current directory as the current working directory on the remote machine.
timed-read	reads a complete line from stdin and aborts after a given number of seconds.
timed-run	runs a program for a given amount of time.
unbuffer	disables the output buffering that occurs when program output is redirected.
weather	retrieves a weather report (courtesy University of Michigan) for a given city or geographical area.
multixterm	creates multiple `xterm`s that can be driven together or separately.
tknewsbiff	pops up a window when there is unread news in your favorite newsgroups and removes the window after you've read the news.
tkpasswd	is a script to change passwords using `expect` and Tk .
xkibitz	allows users in separate `xterm`s to share one shell (or any program that runs in an `xterm`).
xpstat	is a script that acts as a front-end for `xpilot`.
libexpect5.45.so	contains functions that allow Expect to be used as a Tcl extension or to be used directly from C or C++ (without Tcl).

GCC-4.9.1

Introduction to GCC

The GCC package contains the GNU Compiler Collection. This page describes the installation of compilers for the following languages: C, C++, Fortran, Objective C, Objective C++, and Go. Two additional languages , Ada and Java are available in the collection. They have specific requirements, so they are described in separate pages (GCC-Ada-4.9.1 and GCC-Java-4.9.1). Since C and C++ are installed in LFS, this page is either for upgrading C and C++, or for installing additional compilers.

This package is known to build and work properly using an LFS-7.6 platform.

> ### Caution
>
> If you are upgrading GCC from any other version prior to 4.9.1, 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-4.9.1/gcc-4.9.1.tar.bz2**
- Download (FTP): **ftp://ftp.gnu.org/gnu/gcc/gcc-4.9.1/gcc-4.9.1.tar.bz2**
- Download MD5 sum: fddf71348546af523353bd43d34919c1
- Download size: 86 MB
- Estimated disk space required: 5.1 GB
- Estimated build time: 145 SBU

Additional Downloads

- Required patch: **http://www.linuxfromscratch.org/patches/blfs/7.6/gcc-4.9.1-upstream_fixes-1.patch**

GCC Dependencies

Recommended

DejaGnu-1.5.1, for tests

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/gcc

Installation of GCC

> ### Important
>
> Even if you specify only languages other than C and C++ to the `./configure` command below, the installation process will overwrite your existing GCC C 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 (**../../../../lfs/view/7.6/chapter06/gcc.html**).

The instructions below are intentionally performing a "bootstrap" process. Bootstrapping is needed for robustness and is highly recommended when upgrading the compilers version. To disable bootstrap anyways, add `--disable-bootstrap` to the `./configure` options below.

As in LFS, fix a problem identified upstream:

```
sed -i 's/if \((code.*))\)/if (\1 \&\& \!DEBUG_INSN_P (insn))/' gcc/sched-deps.c
```

```
patch -Np1 -i ../gcc-4.9.1-upstream_fixes-1.patch    &&
mkdir ../gcc-build                                    &&
cd    ../gcc-build                                    &&

../gcc-4.9.1/configure                               \
    --prefix=/usr                                    \
    --libdir=/usr/lib                                \
    --enable-shared                                  \
    --enable-threads=posix                           \
    --enable-__cxa_atexit                            \
    --enable-clocale=gnu                             \
    --disable-multilib                               \
    --with-system-zlib                               \
    --enable-languages=c,c++,fortran,go,objc,obj-c++ &&
make
```

If you have installed additional packages such as Valgrind and GDB, the GCC part of the testsuite will run more tests than in LFS. Some of those will report FAIL and others XPASS (pass when expected to FAIL). To run the tests, issue:

```
ulimit -s 32768 &&
make -k check
```

The tests are very long, and the results may be hard to find in the logs, specially if you use parallel jobs with make. You can get a summary of the tests with:

```
../gcc-4.9.1/contrib/test_summary
```

Now, as the *root* user:

```
make install &&

mkdir -pv /usr/share/gdb/auto-load/usr/lib               &&
mv -v /usr/lib/*gdb.py /usr/share/gdb/auto-load/usr/lib &&

chown -v -R root:root \
    /usr/lib/gcc/*linux-gnu/4.9.1/include{,-fixed}
```

Some packages expect to find the C preprocessor in /lib or may refer to the C compiler under the name **cc**. The following symbolic links are not needed if you have followed the LFS instructions, since they have been already created. If you do not have them on your system, issue as the *root* user:

```
ln -v -sf ../usr/bin/cpp /lib &&
ln -v -sf gcc /usr/bin/cc
```

Command Explanations

`patch ... gcc-4.9.1-upstream_fixes-1.patch`: This patch corrects bugs in the C++ compiler, which lead to segmentation faults in some cases.

`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.

--enable-clocale=gnu: This parameter is a failsafe for incomplete locale data.

--disable-multilib: This parameter ensures that files are created for the specific architecture of your computer.

--with-system-zlib: Uses the system zlib instead of the bundled one. zlib is used for compressing and uncompressing GCC's intermediate language in LTO (Link Time Optimization) object files.

--enable-languages=c,c++,fortran,go,objc,obj-c++: This command identifies which languages to build. You may modify this command to remove undesired languages.

`ulimit -s 32768`: This command prevents several tests from running out of stack space.

`make -k check`: This command runs the test suite without stopping if any errors are encountered.

`../gcc-4.9.1/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.

`mv -v /usr/lib/*gdb.py ...`: The installation stage puts some files used by gdb under the /usr/lib directory. This generates spurious error messages when performing `ldconfig`. This command moves the files to another location.

the installed `include` directory (and its content) will be incorrect. This command changes the ownership to the *root* user and group.

Contents

Some program and library names and descriptions are not listed here, but can be found at **../../../../lfs/view/7.6/chapter06/gcc.html#contents-gcc** as they were initially installed during the building of LFS.

Installed Programs: gccgo and gfortran, hard-linked to architecture specific names

Installed Libraries: libgfortran.{so,a}, libgo.{so,a}, libgobegin.a, libobjc.{so,a}, and numerous other run-time libraries and executables in `/usr/lib/gcc` and `/usr/libexec/gcc`

Installed Directories: /usr/lib/gcc/<arch-triplet>/4.9.1/include/objc and /usr/lib/go

Short Descriptions

gccgo   is a GCC-based compiler for the Go language.

gfortran   is a GCC-based compiler for the Fortran language.

Last updated on 2014-09-17 04:10:41 -0700

GCC-Ada-4.9.1

Introduction to the GCC Ada compiler

Ada is a modern programming language designed for large, long-lived applications — and embedded systems in particular — where reliability and efficiency are essential. It has a set of unique technical features that make it highly effective for use in large, complex and safety-critical projects.

The compiler and associated tools on this page are known as the GNAT technology, developed by the Adacore company, using the GCC backend. Since parts of the Ada compiler are written in Ada, there is a circular dependency on an Ada compiler. The instructions below first install a binary compiler.

This package is known to build and work properly using an LFS-7.6 platform.

> **Caution**
>
> Using the instructions on this page will have the effect that the C and C++ compiler and libraries will be reinstalled, overwriting the ones on your system. This may lead to some issues. Please read the notes and caution on the GCC-4.9.1 page.

Package Information

- Download (HTTP): **http://ftp.gnu.org/gnu/gcc/gcc-4.9.1/gcc-4.9.1.tar.bz2**
- Download (FTP): **ftp://ftp.gnu.org/gnu/gcc/gcc-4.9.1/gcc-4.9.1.tar.bz2**
- Download MD5 sum: fddf71348546af523353bd43d34919c1
- Download size: 86 MB
- Estimated disk space required: 4.8 GB (0.7 GB added if GNAT install dir is not removed)
- Estimated build time: 133 SBU

Additional Downloads

> **Note**
>
> You will need to install GNAT temporarily to satisfy the circular dependency. You may point your browser to the **AdaCore download page**, choose your platform and 2014, then select the file to download. Alternatively, direct links to the 64 bit and 32 bit linux versions are given below.

- GNAT 64 bit binary: **http://mirrors.cdn.adacore.com/art/7427735035ecc98968ebfcee17494161b0de28ef**
- GNAT 64 bit MD5 sum: c0863ed75109b5aa737becfd5a6ec038
- GNAT 64 bit size: 225 MB
- GNAT 32 bit binary: **http://mirrors.cdn.adacore.com/art/3fc05fc61cbc7ab4f291ed19ea4cb269fffd17bd**
- GNAT 32 bit MD5 sum: 69423c7ad8d9759377d4fff71a78992d

- Required patch: **http://www.linuxfromscratch.org/patches/blfs/7.6/gcc-4.9.1-upstream_fixes-1.patch**

GCC Ada Dependencies

Recommended

DejaGnu-1.5.1, for tests

User Notes: *http://wiki.linuxfromscratch.org/blfs/wiki/gcc-ada*

Installation of the GNAT binary

Before unpacking and changing into the GCC source directory, first unpack the GNAT tarball, and change to the GNAT directory. Then, install the GNAT binary by running the following command as the *root* user:

```
make ins-all prefix=/opt/gnat
```

The GNAT compiler can be invoked by executing the `gcc` binary installed in /opt/gnat/bin.

You may now remove the GNAT source directory if desired.

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=$PATH &&
export PATH=/opt/gnat/bin:$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 as the *root* user:

```
find /opt/gnat -name ld -exec mv -v {} {}.old \;
find /opt/gnat -name as -exec mv -v {} {}.old \;
```

Installation of GCC Ada

As in LFS, fix a problem identified upstream:

```
sed -i 's/if \((code.*))\)/if (\1 \&\& \!DEBUG_INSN_P (insn))/' gcc/sched-deps.c
```

Install GCC Ada by running the following commands:

```
patch -Np1 -i ../gcc-4.9.1-upstream_fixes-1.patch &&
mkdir ../gcc-build &&
cd    ../gcc-build &&

../gcc-4.9.1/configure          \
    --prefix=/usr               \
    --libdir=/usr/lib           \
    --enable-shared             \
    --enable-threads=posix      \
    --enable-__cxa_atexit       \
    --enable-clocale=gnu        \
    --disable-multilib          \
    --with-system-zlib          \
    --enable-languages=ada &&
make
```

If you have installed additional packages such as Valgrind and GDB, the GCC part of the testsuite will run more tests than in LFS. Some of those will report FAIL and others XPASS (pass when expected to FAIL). To run the tests, issue:

```
ulimit -s 32768 &&
make -k check
```

The tests are very long, and the results may be hard to find in the logs, specially if you use parallel jobs with make. You can get a summary of the tests with:

```
../gcc-4.9.1/contrib/test_summary
```

Now, as the *root* user:

```
make install &&
```

```
mkdir -pv /usr/share/gdb/auto-load/usr/lib            &&
mv -v /usr/lib/*gdb.py /usr/share/gdb/auto-load/usr/lib &&


chown -v -R root:root \
    /usr/lib/gcc/*linux-gnu/4.9.1/include{,-fixed} \
    /usr/lib/gcc/*linux-gnu/4.9.1/ada{lib,include}
```

You should now remove the GNAT installation and perform other cleanups:

```
rm -rf /opt/gnat &&
export PATH=$PATH_HOLD &&
unset PATH_HOLD
```

Command Explanations

patch ... gcc-4.9.1-upstream_fixes-1.patch: This patch corrects bugs in the C++ compiler, which lead to segmentation faults in some cases.

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.

--enable-clocale=gnu: This parameter is a failsafe for incomplete locale data.

--disable-multilib: This parameter ensures that files are created for the specific architecture of your computer.

--with-system-zlib: Uses the system zlib instead of the bundled one. zlib is used for compressing and uncompressing GCC's intermediate language in LTO (Link Time Optimization) object files.

--enable-languages=ada: Instructs the build system to build the Ada tools and compiler. It is unavoidable that the C and C++ compilers be built too.

ulimit -s 32768: This command prevents several tests from running out of stack space.

make -k check: This command runs the test suite without stopping if any errors are encountered.

../gcc-4.9.1/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.

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.

Contents

Installed Programs: gnat, gnatbind, gnatchop, gnatclean, gnatfind, gnatkr, gnatlink, gnatls, gnatmake, gnatname, gnatprep, gnatxref, and a run-time executable, gnat1, in /usr/libexec/<arch-triplet>/4.9.1

Installed Libraries: libgnat.{so,a}, libgnarl.{so,a} in /usr/lib/gcc/<arch-triplet>/4.9.1/adalib

Installed Directories: /usr/lib/gcc/<arch-triplet>/4.9.1/ada{include,lib}

Only the Ada specific files are listed here. Others can be found at
../../../../lfs/view/7.6/chapter06/gcc.html#contents-gcc as they were initially installed during the building of LFS.

Short Descriptions

gnat	is a wrapper that accepts a number of commands and calls the corresponding tool from the list below.
gnatbind	is used to bind compiled objects.
gnatchop	is useful for renaming files to meet the standard Ada default file naming conventions.
gnatclean	is used to remove files associated with a GNAT project.
gnatfind	is intended for locating definition and/or references to specified entities in a GNAT project.
gnatkr	is used to determine the crunched name for a given file, when crunched to a specified maximum length.
gnatlink	is used to link programs and build an executable file.
gnatls	is the compiled unit browser.
gnatmake	is the Ada compiler, which performs compilaton, binding and linking.
gnatname	will list the files associated with a GNAT project.

| gnatxref | is similar to `gnatfind` , but generates a full report of all cross-references. |

GCC-Java-4.9.1

Introduction to GCC-Java

See the introduction to the Java language and system at Java-1.7.0.65. The GNU Compiler Collection (GCC) contains a Java compiler to native code. Together with the ecj Java compiler from Eclipse (to bytecode), it provides a way to build an acceptable JVM from source. However, since the release of OpenJDK, the development of GCC-Java has almost stopped, and the built JVM is an old version. One reason to build this system is that it can be used to bootstrap OpenJDK-1.7.0.65/IcedTea-2.5.2, without the need for downloading a Java binary.

This package is known to build and work properly using an LFS-7.6 platform.

Caution

Using the instructions on this page will have the effect that the C and C++ compiler and libraries will be reinstalled, overwriting the ones on your system. This may lead to some issues. Please read the note and caution on the GCC-4.9.1 page.

Package Information

- Download (HTTP): **http://ftp.gnu.org/gnu/gcc/gcc-4.9.1/gcc-4.9.1.tar.bz2**
- Download (FTP): **ftp://ftp.gnu.org/gnu/gcc/gcc-4.9.1/gcc-4.9.1.tar.bz2**
- Download MD5 sum: fddf71348546af523353bd43d34919c1
- Download size: 86 MB
- Estimated disk space required: 2.7 GB
- Estimated build time: 94 SBU

Additional Downloads

- Eclipse Java compiler: **ftp://sourceware.org/pub/java/ecj-latest.jar**
- ANTLR binary, for building `gjdoc` (optional): **http://www.antlr.org/download/antlr-4.2.2-complete.jar**
- Required patch: **http://www.linuxfromscratch.org/patches/blfs/7.6/gcc-4.9.1-upstream_fixes-1.patch**

GCC Dependencies

Required

Zip-3.0, UnZip-6.0, and Which-2.20

Recommended

DejaGnu-1.5.1, for tests

Optional

GTK+-2.24.24 and **Libart** for building the AWT peer

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/gcc-java

Installation of GCC Java

The instructions below assume that the C and C++ compilers have the same version as the one you are installing, so that a "bootstrap" is not necessary. If you are upgrading the GCC version, then remove the `--disable-bootstrap` from the `./configure` options below.

As in LFS, fix a problem identified upstream:

```
sed -i 's/if \((code.*)\)\)/if (\1 \&\& \!DEBUG_INSN_P (insn))/' gcc/sched-deps.c
```

Install GCC Java by running the following commands:

```
sed -i 's/\(install.*:\) install-.*recursive/\1/' libffi/Makefile.in          &&
```

```
patch -Np1 -i ../gcc-4.9.1-upstream_fixes-1.patch &&

cp ../ecj-latest.jar ./ecj.jar &&

mkdir ../gcc-build &&
cd    ../gcc-build &&

../gcc-4.9.1/configure            \
    --prefix=/usr                 \
    --libdir=/usr/lib             \
    --enable-shared               \
    --enable-threads=posix        \
    --enable-__cxa_atexit         \
    --enable-clocale=gnu          \
    --disable-multilib            \
    --with-system-zlib            \
    --disable-bootstrap           \
    --enable-java-home            \
    --with-jvm-root-dir=/opt/gcj \
    --with-antlr-jar=$(pwd)/../antlr-4.2.2-complete.jar \
    --enable-languages=java &&
make
```

If you have installed additional packages such as Valgrind and GDB, the GCC part of the testsuite will run more tests than in LFS. Some of those will report FAIL and others XPASS (pass when expected to FAIL). To run the tests, issue:

```
ulimit -s 32768 &&
make -k check
```

The tests are very long, and the results may be hard to find in the logs, specially if you use job control with make. You can get a summary of the tests with:

```
../gcc-4.9.1/contrib/test_summary
```

Now, as the *root* user:

```
make install &&

mkdir -pv /usr/share/gdb/auto-load/usr/lib               &&
mv -v /usr/lib/*gdb.py /usr/share/gdb/auto-load/usr/lib &&

chown -v -R root:root \
    /usr/lib/gcc/*linux-gnu/4.9.1/include{,-fixed} &&

gcj -o ecj ../ecj-latest.jar \
    --main=org.eclipse.jdt.internal.compiler.batch.Main &&
mv ecj /usr/bin &&
ln -sfv ../../../usr/bin/ecj /opt/gcj/bin/javac
```

Command Explanations

The two **sed** commands prevent the installation of the libffi library bundled with GCC, since it is outdated compared to libffi-3.1.

patch ... gcc-4.9.1-upstream_fixes-1.patch: This patch corrects bugs in the C++ compiler, which lead to segmentation faults in some cases.

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.

--enable-clocale=gnu: This parameter is a failsafe for incomplete locale data.

--disable-multilib: This parameter ensures that files are created for the specific architecture of your computer.

--with-system-zlib: Uses the system zlib instead of the bundled one.

--disable-bootstrap: Prevents the C and C++ compilers to recompile themselves. You should use this switch only if the installed C and C++ compilers are the same version as the ones you install.

--enable-java-home: Creates a directory layout similar to that of a JVM.

--with-jvm-root-dir=/opt/gcj: Installs the JVM in the specified location.

--with-antlr-jar=...: Specifies the location of ANTLR, which is needed to build **gjdoc**. Remove if you have not

--enable-languages=java: This command identifies which language to build. Note it is unavoidable that the C and C++ compilers be built too.

`--enable-java-awt=gtk`: Allows to build the Java AWT GTK+2 peer. Needed to have a fully functional JVM.

`ulimit -s 32768`: This command prevents several tests from running out of stack space.

`make -k check`: This command runs the test suite without stopping if any errors are encountered.

`../gcc-4.9.1/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.

`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` directory (and its content) will be incorrect. This commands changes the ownership to the *root* user and group.

`gcj -o ecj ...`: compiles the eclipse compiler to native code, which is much faster than bytecode. This compiler is then used as a `javac` replacement in the JVM.

Configuring GCC-Java

Configuration Information

The configuration is the same as for [OpenJDK-1.7.0.65/IcedTea-2.5.2](#), replacing `/opt/jdk` with `/opt/gcj`.

Contents

Installed Programs: aot-compile, ecj, gappletviewer, gc-analyze, gcj, gcj-dbtool, gcjh, gij, gjar, gjarsigner, gjavah, gjdoc, gkeytool, gnative2ascii, gorbd, grmic, grmid, grmiregistry, gserialver, gtnameserv, jcf-dump, jv-convert, rebuild-gcj-db. Symbolic links to these files are located in `/opt/gcj/bin`

Installed Libraries: libgcj_bc.so, libgcj.so, libgcj-tools.so libgij.so, and numerous other run-time libraries and executables in `/usr/lib/gcc` and `/usr/libexec/gcc`

Installed Directories: /usr/include/c++/4.9.1/{gcj,gnu,java,javax,org,sun}, /usr/lib/gcj-4.9.1-15, /usr/lib/security, /opt/gcj/{bin,jre} and /usr/share/java

Some program and library names and descriptions are not listed here, but can be found at [../../../../lfs/view/7.6/chapter06/gcc.html#contents-gcc](#) as they were initially installed during the building of LFS.

Short Descriptions

`aot-compile`	searches a directory for Java bytecode and uses `gcj` to compile it to native code.
`ecj`	is the eclipse compiler.
`gappletviewer`	loads and run a Java applet.
`gc-analyze`	analyzes garbage collector (GC) memory dumps from Java code.
`gcj`	is an ahead-of-time compiler for the Java language.
`gcj-dbtool`	is a tool for creating and manipulating class file mapping databases.
`gcjh`	generates header files from Java class files.
`gij`	is the GNU interpreter for Java bytecode.
`gjar`	is an (partial) implementation of the `jar` utility that comes with Sun's JDK.
`gjarsigner`	is a Java ARchive (JAR) file signing and verification tool.
`gjavah`	generates header files from Java class files.
`gjdoc`	is a documentation tool similar to `javadoc`.
`gkeytool`	manages private keys and public certificates in a Java environment.
`gnative2ascii`	is an encoding converter for Java .
`gorbd`	is an object request broker daemon.
`grmic`	generates stubs for Remote Method Invocation.
`grmid`	RMI activation system daemon.
`grmiregistry`	starts a remote object registry on the current host.
`gserialver`	prints the serialVersionUID of the specified class.
`gtnameserv`	starts a naming service.
`jcf-dump`	prints information about Java class files.
`jv-convert`	converts files from one encoding to another.

GC-7.4.2

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-7.6 platform.

Package Information

- Download (HTTP): **http://www.hboehm.info/gc/gc_source/gc-7.4.2.tar.gz**
- Download MD5 sum: 12c05fd2811d989341d8c6d81f66af87
- Download size: 1.1 MB
- Estimated disk space required: 9.7 MB (additional 2.3 MB for the tests)
- Estimated build time: 0.2 SBU (additional 0.2 SBU for the tests)

Required

libatomic_ops-7.4.2

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/gc

Installation of GC

Install GC by running the following commands:

```
sed -i 's#pkgdata#doc#' doc/doc.am &&
autoreconf -fi  &&
./configure --prefix=/usr       \
            --enable-cplusplus \
            --disable-static   \
            --docdir=/usr/share/doc/gc-7.4.2 &&
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#pkgdata#doc#' doc/doc.am` and `--docdir=/usr/share/doc/gc-7.4.2`: 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-7.4.2

Short Descriptions

	malloc function.
libgccpp.so	contains a C++ interface to the conservative garbage collector.

Last updated on 2014-09-13 17:48:40 -0700

GDB-7.8

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-7.6 platform.

Package Information

- Download (HTTP): **http://ftp.gnu.org/gnu/gdb/gdb-7.8.tar.xz**
- Download (FTP): **ftp://ftp.gnu.org/gnu/gdb/gdb-7.8.tar.xz**
- Download MD5 sum: bd958fe9019d7c7896f29f6724a764ed
- Download size: 17 MB
- Estimated disk space required: 326 MB (405 MB with checks)
- Estimated build time: 2.2 SBU (56 SBU with checks)

GDB Dependencies

Optional

DejaGnu-1.5.1 (for tests), Guile-2.0.11 and Python-2.7.8

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/gdb

Installation of GDB

Install GDB by running the following commands:

```
./configure --prefix=/usr --with-system-readline &&
make
```

To test the results, issue: `make -k check`. There are many problems with the test suite. Depends on installed compilers, there are differences if run locally or remotely, a large number of timeouts (there is a variable that can be set to increase time for timeout, but changing it, apparently the total number of tests is not conserved), there are failures associated with system readline 6.x, between others. Unexpected failures are of the order of 2.5%.

Now, as the *root* user:

```
make -C gdb install
```

Contents

Installed Programs: gcore, gdb and gdbserver
Installed Library: libinproctrace.so
Installed Directories: /usr/include/gdb and /usr/share/gdb

Short Descriptions

gcore	generates a core dump of a running program.
gdb	is the GNU Debugger.
gdbserver	is a remote server for the GNU debugger (it allows programs to be debugged from a different machine).
libinproctrace.so	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.

Last updated on 2014-09-13 22:25:33 -0700

Git-2.1.0

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-1.8.10, CVS-1.11.23, Perforce, and Team Foundation Server.

This package is known to build and work properly using an LFS-7.6 platform.

Package Information

- Download (HTTP): **https://www.kernel.org/pub/software/scm/git/git-2.1.0.tar.xz**
- Download (FTP): **ftp://ftp.kernel.org/pub/software/scm/git/git-2.1.0.tar.xz**
- Download MD5 sum: 47b1f55d9a16be112f7ae2c778a9b30c
- Download size: 3.4 MB
- Estimated disk space required: 208 MB (additional 14 MB for downloaded docs and man pages, or 27 MB building docs and man pages)
- Estimated build time: 0.7 SBU (additional 9.6 SBU for tests or 2.8 SBU for docs and man build)

Additional Downloads

- **https://www.kernel.org/pub/software/scm/git/git-manpages-2.1.0.tar.xz** (if you prefer the original, not needed if you've installed asciidoc and xmlto and prefer to build them).
- **https://www.kernel.org/pub/software/scm/git/git-htmldocs-2.1.0.tar.xz** and other docs (if you prefer the original, not needed if you've installed asciidoc and prefer to build them).

Git Dependencies

Recommended

cURL-7.37.1 (needed to use Git over http, https, ftp or ftps), OpenSSL-1.0.1i, and Python-2.7.8

Optional

PCRE-8.35, Subversion-1.8.10 with Perl bindings (for `git svn`), and Tk-8.6.2 (gitk, a simple Git repository viewer, uses Tk at runtime)

Optional (to create the man pages and html docs)

xmlto-0.0.26 and **AsciiDoc**

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/git

Installation of Git

Install Git by running the following commands:

```
./configure --prefix=/usr          \
            --with-gitconfig=/etc/gitconfig &&
make
```

You can build the man pages and/or html docs, or use downloaded ones. If you choose to build them, use next two following instructions.

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-0.0.26 you can create the man pages:

```
make man
```

The test suite can be run in parallel mode. Many tests cannot find GnuPG2, if the compatibility symlinks, recommended in GnuPG-2.0.26, are not installed. To run the test suite, issue: `make test`.

Now, as the *root* user:

```
make install
```

Install the man pages as *root* user:

```
make install-man
```

Install the html docs as *root* user:

```
make htmldir=/usr/share/doc/git-2.1.0 install-html
```

If you downloaded the man pages and/or html docs

If you downloaded the man pages untar them as the *root* user:

```
tar -xf ../git-manpages-2.1.0.tar.xz \
    -C /usr/share/man --no-same-owner --no-overwrite-dir
```

If you downloaded the html docs untar them as the *root* user:

```
tar -xf  ../git-htmldocs-2.1.0.tar.xz \
    -C   /usr/share/doc/git-2.1.0 --no-same-owner --no-overwrite-dir &&

find /usr/share/doc/git-2.1.0 -type d -exec chmod 755 {} \;      &&
find /usr/share/doc/git-2.1.0 -type f -exec chmod 644 {} \;
```

Reorganize man pages and/or html docs (both methods)

For both methods, reorganize the files, as *root* user:

```
mkdir -p /usr/share/doc/git-2.1.0/man-pages/{html,text}        &&

mv      /usr/share/doc/git-2.1.0/{git*.txt,man-pages/text}     &&
mv      /usr/share/doc/git-2.1.0/{git*.,index.,man-pages/}html &&
mkdir   /usr/share/doc/git-2.1.0/technical/{html,text}         &&
mv      /usr/share/doc/git-2.1.0/technical/{*.txt,text}        &&
mv      /usr/share/doc/git-2.1.0/technical/{*.,}html           &&
mkdir   /usr/share/doc/git-2.1.0/howto/{html,text}             &&
mv      /usr/share/doc/git-2.1.0/howto/{*.txt,text}            &&
mv      /usr/share/doc/git-2.1.0/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-2.1.0.tar.gz -C /usr/share/man --no-same-owner`: This untars `git-manpages-2.1.0.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-2.1.0 ...`: 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.

`find ... chmod ...`: These commands correct the permissions in the shipped documentation tar file.

Configuring Git

Config Files

`~/.gitconfig` and `/etc/gitconfig`

Contents

Installed Programs: git, git-receive-pack and git-upload-archive (hardlinked to each other), git-shell, git-cvsserver, git-upload-pack, and gitk

Installed Libraries: None

Installed Directories: /usr/libexec/git-core, /usr/share/doc/git-2.1.0, /usr/share/git-core, /usr/share/git-gui, /usr/share/gitk, /usr/share/gitweb, /usr/lib/perl5/site_perl/<5.x.y>/Git and /usr/lib/perl5/site_perl/<5.x.y>/<arch-linux>/auto/Git

git	is the stupid content tracker.
git-cvsserver	is a CVS server emulator for Git .
gitk	is a graphical Git repository browser (needs Tk-8.6.2).
git-receive-pack	is invoked by `git send-pack` and updates the repository with the information fed from the remote end.
git-shell	is a login shell for SSH accounts to provide restricted Git access.
git-upload-archive	is invoked by `git archive --remote` and sends a generated archive to the other end over the git protocol.
git-upload-pack	is invoked by `git fetch-pack`, it discovers what objects the other side is missing, and sends them after packing.

Last updated on 2014-09-09 14:11:38 -0700

Guile-2.0.11

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-7.6 platform.

Package Information

- Download (HTTP): **http://ftp.gnu.org/pub/gnu/guile/guile-2.0.11.tar.xz**
- Download (FTP): **ftp://ftp.gnu.org/pub/gnu/guile/guile-2.0.11.tar.xz**
- Download MD5 sum: 03f1bce1a4983076d955003472306a13
- Download size: 4.5 MB
- Estimated disk space required: 109 MB (additional 4 MB for the tests)
- Estimated build time: 8.0 SBU (additional 0.7 SBU for the tests)

Guile Dependencies

Required

GC-7.4.2, libffi-3.1 and libunistring-0.9.4

Optional

Emacs-24.3 and GDB-7.8

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/guile

Installation of Guile

Install Guile by running the following commands:

```
./configure --prefix=/usr    \
            --disable-static \
            --docdir=/usr/share/doc/guile-2.0.11 &&
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
```

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

Now, as the *root* user:

```
make install      &&
make install-html &&

mv /usr/share/doc/guile-2.0.11/{guile.html,ref} &&
mv /usr/share/doc/guile-2.0.11/r5rs{.html,}     &&

find examples -name "Makefile*" -delete &&
```

```
for DIRNAME in r5rs ref; do
  install -v -m644  doc/${DIRNAME}/*.txt \
                    /usr/share/doc/guile-2.0.11/${DIRNAME}
done &&
unset DIRNAME
```

Command Explanations

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

Contents

Installed Programs: guild, guile, guile-config, guile-snarf and guile-tools
Installed Libraries: libguile-2.0.so and libguilereadline-v-18.so
Installed Directories: /usr/include/guile, /usr/lib/guile, /usr/share/doc/guile-2.0.11 and /usr/share/guile

Short Descriptions

guile	is a stand-alone Scheme interpreter for Guile .
guile-config	is a Guile script which provides the information necessary to link your programs against the Guile library, in much the same way PkgConfig does.
guile-snarf	is a script to parse declarations in your C code for Scheme visible C functions.
guild	is a wrapper program installed along with `guile`, which knows where a particular module is installed and calls it, passing its arguments to the program.
guile-tools	is a symlink to `guild`.

Last updated on 2014-09-13 22:25:33 -0700

Librep-0.92.3

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-7.6 platform.

Package Information

- Download (HTTP): **http://download.tuxfamily.org/librep/librep-0.92.3.tar.xz**
- Download MD5 sum: c82744fb45022e8a06e488e4a7513558
- Download size: 600 KB
- Estimated disk space required: 16 MB
- Estimated build time: 0.5 SBU

Librep Dependencies

Optional

libffi-3.1

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/librep

Installation of Librep

Install librep 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:

Command Explanations

- `-libexecdir=/usr/lib`: This option installs the package's private programs to `/usr/lib/rep` instead of `/usr/libexec/rep` in accordance with the old version of the FHS used before LFS-7.5.

Contents

Installed Programs: rep, rep-config, rep-remote, rep-xgettext, and repdoc
Installed Libraries: librep.so and numerous modules installed in the /usr/lib/rep hierarchy
Installed Directories: /usr/lib/rep, /usr/share/emacs/site-lisp, and /usr/share/rep

Short Descriptions

`rep`	is the Lisp interpreter.
`librep.so`	contains the functions necessary for the Lisp interpreter.

Last updated on 2014-09-20 21:51:52 -0700

LLVM-3.5.0

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-7.6 platform.

Package Information

- Download (HTTP): **http://llvm.org/releases/3.5.0/llvm-3.5.0.src.tar.xz**
- Download MD5 sum: d6987305a1a0e58e128c1374cd3b8fef
- Download size: 12 MB
- Estimated disk space required: 618 MB (1.3 GB with Clang) and 78 MB for the tests
- Estimated build time: 20 SBU (38 SBU with Clang) and 0.3 for tests

Optional Downloads

Clang

- Download: **http://llvm.org/releases/3.5.0/cfe-3.5.0.src.tar.xz**
- Download MD5 sum: 27718dd13c7df83e15f997116bbb4aef
- Download size: 7.9 MB

Compiler RT

- Download: **http://llvm.org/releases/3.5.0/compiler-rt-3.5.0.src.tar.xz**
- Download MD5 sum: 02624d2a9144278c3808c00dbbab56c8
- Download size: 1.1 MB

LLVM Dependencies

Recommended

libffi-3.1 and Python-2.7.8

Optional

CMake-3.0.1, Doxygen-1.8.8, Graphviz-2.38.0, libxml2-2.9.1, texlive-20140525, Valgrind-3.10.0, Zip-3.0, **OCaml**, and **Sphinx**

Installation of LLVM

If you have downloaded the optional packages, install them into the source tree by running the following commands:

```
tar -xf ../cfe-3.5.0.src.tar.xz -C tools &&
tar -xf ../compiler-rt-3.5.0.src.tar.xz -C projects &&

mv tools/cfe-3.5.0.src tools/clang &&
mv projects/compiler-rt-3.5.0.src projects/compiler-rt
```

Install LLVM by running the following commands:

```
sed -e "s:/docs/llvm:/share/doc/llvm-3.5.0:" \
    -i Makefile.config.in &&

CC=gcc CXX=g++                      \
./configure --prefix=/usr          \
            --sysconfdir=/etc       \
            --enable-libffi         \
            --enable-optimized      \
            --enable-shared         \
            --disable-assertions    &&
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 &&

for file in /usr/lib/lib{clang,LLVM,LTO}*.a
do
  test -f $file && chmod -v 644 $file
done
```

If you had [Python-2.7.8](#) installed and you have built Clang, install the Clang Analyzer by running the following command as the *root* user:

```
install -v -dm755 /usr/lib/clang-analyzer &&
for prog in scan-build scan-view
do
  cp -rfv tools/clang/tools/$prog /usr/lib/clang-analyzer/
  ln -sfv ../lib/clang-analyzer/$prog/$prog /usr/bin/
done &&
ln -sfv /usr/bin/clang /usr/lib/clang-analyzer/scan-build/ &&
mv -v /usr/lib/clang-analyzer/scan-build/scan-build.1 /usr/share/man/man1/
```

If you have built manual pages, install them by running the following command as the *root* user:

```
install -v -m644 docs/_build/man/* /usr/share/man/man1/
```

Command Explanations

`sed -e ... Makefile.config.in`: This sed fixes location of the installed documentation.

`--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.

`--disable-assertions`: Disable some compile checks, not necessary on a production system.

Contents

Installed Programs: bugpoint, c-index-test, clang, clang++ (symlink), count, FileCheck, clang-check, clang-format, clang-tblgen, llc, lli, lli-child-target, 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-

llvm-symbolizer, llvm-tblgen, macho-dump, not, opt, scan-build (symlink), and scan-view (symlink)

Installed Libraries: BugpointPasses.so, libclang.so, libLLVM-3.5.0.so, libLTO.so, LLVMHello.so and numerous static libraries in /usr/lib

Installed Directories: /usr/include/{clang,clang-c,llvm,llvm-c}, /usr/lib/{clang,clang-analyzer}, /usr/share/doc/llvm-3.5.0, and /usr/share/llvm

Short Descriptions

`bugpoint`	is the automatic test case reduction tool.
`clang`	is the Clang C, C++, and Objective-C compiler.
`llc`	is the LLVM static compiler.
`lli`	is used to directly execute programs from LLVM bitcode.
`llvm-ar`	is the LLVM archiver.
`llvm-as`	is the LLVM assembler.
`llvm-bcanalyzer`	is the LLVM bitcode analyzer.
`llvm-config`	Prints LLVM compilation options.
`llvm-cov`	is used to emit coverage information.
`llvm-diff`	is the LLVM structural '`diff`'.
`llvm-dis`	is the LLVM disassembler.
`llvm-extract`	is used to extract a function from an LLVM module.
`llvm-link`	is the LLVM linker.
`llvm-nm`	is used to list LLVM bitcode and object file's symbol table.
`llvm-ranlib`	is used to generate index for LLVM archive.
`llvm-stress`	is used to generate random `.ll` files.
`llvm-tblgen`	is the LLVM Target Description To C++ Code Generator.
`opt`	is the LLVM optimizer.
`scan-build`	is a Perl script that invokes the Clang static analyzer.
`libLLVM-3.5.0.so`	contains the LLVM API functions.

Last updated on 2014-09-14 14:54:13 -0700

Lua-5.2.3

Introduction to 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. 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.

This package is known to build and work properly using an LFS-7.6 platform.

Package Information

- Download (HTTP): **http://www.lua.org/ftp/lua-5.2.3.tar.gz**
- Download MD5 sum: dc7f94ec6ff15c985d2d6ad0f1b35654
- Download size: 248 KB
- Estimated disk space required: 3.5 MB
- Estimated build time: Less than 0.1 SBU

Additional Downloads

- Required patch: **http://www.linuxfromscratch.org/patches/blfs/7.6/lua-5.2.3-shared_library-1.patch**

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/lua

Installation of Lua

Install Lua by running the following commands:

```
patch -Np1 -i ../lua-5.2.3-shared_library-1.patch &&
sed -i '/#define LUA_ROOT/s:/usr/local/:/usr/:' src/luaconf.h &&
```

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

Now, as the *root* user:

```
make INSTALL_TOP=/usr TO_LIB="liblua.so liblua.so.5.2 liblua.so.5.2.3" \
    INSTALL_DATA="cp -d" INSTALL_MAN=/usr/share/man/man1 install &&
mkdir -pv /usr/share/doc/lua-5.2.3 &&
cp -v doc/*.{html,css,gif,png} /usr/share/doc/lua-5.2.3
```

Some packages check for the pkg-config file for Lua. As the *root* user:

```
cat > /usr/lib/pkgconfig/lua.pc << "EOF"
V=5.2
R=5.2.3

prefix=/usr
INSTALL_BIN=${prefix}/bin
INSTALL_INC=${prefix}/include
INSTALL_LIB=${prefix}/lib
INSTALL_MAN=${prefix}/man/man1
INSTALL_LMOD=${prefix}/share/lua/${V}
INSTALL_CMOD=${prefix}/lib/lua/${V}
exec_prefix=${prefix}
libdir=${exec_prefix}/lib
includedir=${prefix}/include

Name: Lua
Description: An Extensible Extension Language
Version: ${R}
Requires:
Libs: -L${libdir} -llua -lm
Cflags: -I${includedir}
EOF
```

Command Explanations

`sed -i ... src/luaconf.h`: This command changes Lua search path to match the install paths.

Contents

Installed Programs: lua and luac
Installed Library: liblua.so
Installed Directories: /usr/lib/lua, /usr/share/lua and /usr/share/doc/lua-5.2.3

Short Descriptions

`lua`	is the standalone Lua interpreter.
`luac`	is the Lua compiler.
`liblua.so`	contains the Lua API functions.

Last updated on 2014-09-17 11:48:47 -0700

Mercurial-3.1.1

Introduction to Mercurial

Mercurial is a distributed source control management tool similar to Git and Bazaar. Mercurial is written in Python and is used by projects such as Mozilla and Vim.

This package is known to build and work properly using an LFS-7.6 platform.

Package Information

- Download (HTTP): **http://mercurial.selenic.com/release/mercurial-3.1.1.tar.gz**
- Download MD5 sum: 5a530bb472b3cb306b757c8f5df91358
- Download size: 3.8 MB
- Estimated disk space required: 31 MB (additional 250 MB for the tests and 2 MB for docs generation)
- Estimated build time: 0.1 SBU (additional 8.8 SBU for tests)

Required

[Python-2.7.8](#)

Optional

[Bazaar-2.5.1](#), [CVS-1.11.23](#), [git-2.1.0](#), [GnuPG-2.0.26](#) (`gpg2` with Python bindings), [Subversion-1.8.10](#) (with Python bindings), **[Docutils](#)** (required to build the documentation), **[pyflakes](#)**, **[pygments](#)**, and **[pyOpenSSL](#)**

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/mercurial

Installation of Mercurial

Build Mercurial by issuing the following command:

```
make build
```

To build the documentation (requires Docutils), issue:

```
make doc
```

Running the test suite is optional. Failure of test-patchbomb is expected with Python-2.7.x (x > 7). To test the results in the subdiretory `tests/tmp`, skipping the failing test, issue:

```
cat > tests/blacklists/test-failed << "EOF"
# Failure with Python-2.7.8
  test-patchbomb.t
EOF
rm -rf tests/tmp &&
TESTFLAGS="--tmpdir tmp --blacklist blacklists/test-failed" \
make check
```

Tests may be run in parallel, just add "-j$(getconf _NPROCESSORS_ONLN)" to TESTFLAGS.

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
```

After installed, two very quick and simple tests should run correctly. First one needs some configuration:

```
cat >> ~/.hgrc << "EOF"
[ui]
username = <user_name> <your@mail>
EOF
```

where you must replace <user_name> and <your@mail> (mail is optional and can be omitted). With the user identity defined, run `hg debuginstall` and several lines will be displayed, the last one reading "no problems detected". Another quick and simple test is just `hg`, which should output basic commands that can be used with `hg`.

Configuring Mercurial

Config Files

`/etc/mercurial/hgrc`

If you have installed the [Certificate Authority Certificates](#) and you want Mercurial to use them, as the *root* user:

```
install -v -d -m755 /etc/mercurial &&
cat > /etc/mercurial/hgrc << "EOF"
[web]
cacerts = /etc/ssl/ca-bundle.crt
EOF
```

Contents

Installed Programs: hg

Installed Directories: /etc/mercurial, /usr/lib/python2.7/site-packages/hgext and /usr/lib/python2.7/site-packages/mercurial

Short Descriptions

hg   is the program file for mercurial.

Last updated on 2014-09-21 01:03:52 -0700

NASM-2.11.05

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-7.6 platform.

Package Information

- Download (HTTP): **http://www.nasm.us/pub/nasm/releasebuilds/2.11.05/nasm-2.11.05.tar.xz**
- Download MD5 sum: 3544d7068206b583915394693c0e933c
- Download size: 727 KB
- Estimated disk space required: 25 MB
- Estimated build time: 0.2 SBU

Additional Downloads

- Optional documentation: **http://www.nasm.us/pub/nasm/releasebuilds/2.11.05/nasm-2.11.05-xdoc.tar.xz**

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/nasm

Installation of NASM

If you downloaded the optional documentation, put it into the source tree:

```
tar -xf ../nasm-2.11.05-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-2.11.05/html  &&
cp -v doc/html/*.html    /usr/share/doc/nasm-2.11.05/html  &&
cp -v doc/*.{txt,ps,pdf} /usr/share/doc/nasm-2.11.05       &&
cp -v doc/info/*         /usr/share/info                   &&
install-info /usr/share/info/nasm.info /usr/share/info/dir
```

Contents

Installed Programs: nasm and ndisasm
Installed Libraries: None
Installed Directory: /usr/share/doc/nasm-2.11.05

Short Descriptions

nasm   is a portable 80x86 assembler.

ndisasm   is an 80x86 binary file disassembler.

NPAPI-SDK-0.27.2

Introduction to NPAPI-SDK

NPAPI-SDK is a bundle of Netscape Plugin Application Programming Interface headers by Mozilla. This package provides a clear way to install those headers and depend on them.

This package is known to build and work properly using an LFS-7.6 platform.

Package Information

- Download (HTTP): **https://bitbucket.org/mgorny/npapi-sdk/downloads/npapi-sdk-0.27.2.tar.bz2**
- Download MD5 sum: e81db61e206cd615cf56c4a9f301e636
- Download size: 65 KB
- Estimated disk space required: 520 KB
- Estimated build time: 0.1 SBU

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/NPAPI-SDK

Installation of NPAPI-SDK

Install NPAPI-SDK 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

Installed Programs: None
Installed Libraries: None
Installed Directory: /usr/include/npapi-sdk

Last updated on 2014-09-21 01:03:52 -0700

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-1.37

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.

This package is known to build and work properly using an LFS-7.6 platform.

- **Archive::Zip-1.37**
  http://cpan.metacpan.org/authors/id/P/PH/PHRED/Archive-Zip-1.37.tar.gz
  MD5 sum: e804985def2c1f0ed640ab4ca6aa85a1

autovivification-0.12

The autovivification module allows you to lexically disable autovivification. This module uses the standard build and installation instructions.

This package is known to build and work properly using an LFS-7.6 platform.

- **autovivification-0.12**
  http://www.cpan.org/authors/id/V/VP/VPIT/autovivification-0.12.tar.gz
  MD5 sum: 871ce0e9b93ef616da7cfa91dbd2772e

The Business::ISBN module is for work with International Standard Book Numbers. This module and its dependency use the standard build and installation instructions.

This package is known to build and work properly using an LFS-7.6 platform.

- **Business::ISBN-2.07**
  http://www.cpan.org/authors/id/B/BD/BDFOY/Business-ISBN-2.07.tar.gz
  MD5 sum: c0049fb576b9fc3b2603bf7e9b3e91af
  - **Business::ISBN::Data**
    (http://search.cpan.org/~bdfoy/Business-ISBN-Data/)

Business::ISMN-1.11

The Business::ISMN module is for work with International Standard Music Numbers. This module uses the standard build and installation instructions.

This package is known to build and work properly using an LFS-7.6 platform.

- **Business::ISMN-1.11**
  http://www.cpan.org/authors/id/B/BD/BDFOY/Business-ISMN-1.11.tar.gz
  MD5 sum: b8228688f2cfa0c629c8d0cbf88421ff
  - **Tie::Cycle**
    (http://search.cpan.org/~bdfoy/Tie-Cycle/)

Business::ISSN-0.91

The Business::ISSN module is for work with International Standard Serial Numbers. This module uses the standard build and installation instructions.

This package is known to build and work properly using an LFS-7.6 platform.

- **Business::ISSN-0.91**
  http://www.cpan.org/authors/id/B/BD/BDFOY/Business-ISSN-0.91.tar.gz
  MD5 sum: d1f609422d3a0ad5e301ae694d142fe4

Data::Compare-1.24

The Data::Compare module compares two perl data structures. This module and its dependencies use the standard build and installation instructions.

This package is known to build and work properly using an LFS-7.6 platform.

- **Data::Compare-1.24**
  http://www.cpan.org/authors/id/D/DC/DCANTRELL/Data-Compare-1.24.tar.gz
  MD5 sum: 45d56aa548581d7e4406f665c417d31e
  - **File::Find::Rule**
    (http://search.cpan.org/~rclamp/File-Find-Rule/)
    - **Number::Compare**
      (http://search.cpan.org/dist/Number::Compare/)
    - **Text::Glob**
      (http://search.cpan.org/dist/Text::Glob/)

Date::Simple-3.03

Date::Simple provides a simple date object. This module uses the standard build and installation instructions.

This package is known to build and work properly using an LFS-7.6 platform.

- **Date::Simple-3.03**
  http://www.cpan.org/authors/id/I/IZ/IZUT/Date-Simple-3.03.tar.gz
  MD5 sum: 436049dc2c7dfd8423d8bcc807248b31

Encode::EUCJPASCII-0.03

Encode::EUCJPASCII provides an eucJP-open mapping. This module uses the standard build and installation instructions.

This package is known to build and work properly using an LFS-7.6 platform.

- **Encode-EUCJPASCII-0.03**
  http://www.cpan.org/authors/id/N/NE/NEZUMI/Encode-EUCJPASCII-0.03.tar.gz
  MD5 sum: 5daa65f55b7c2050bb0713d9e95f239d

Encode::HanExtra-0.23

The Encode::HanExtra module provides extra sets of Chinese Encodings. This module uses the standard build and installation instructions.

- **Encode::HanExtra-0.23**
  http://www.cpan.org/authors/id/A/AU/AUDREYT/Encode-HanExtra-0.91.tar.gz
  MD5 sum: e1d3bc32c1c8ee304235a06fbcd5d5a4

Encode::JIS2K-0.02

The Encode::JIS2K module provides JIS X 0212 (aka JIS 2000) Encodings. This module uses the standard build and installation instructions.

This package is known to build and work properly using an LFS-7.6 platform.

- **Encode::JIS2K-0.02**
  http://www.cpan.org/authors/id/D/DA/DANKOGAI/Encode-JIS2K-0.91.tar.gz
  MD5 sum: 00e73ee943fb2f882b00b7b61e4c9db1

File::Slurp-9999.19

The File::Slurp module provides Simple and Efficient Reading/Writing/Modifying of Complete Files. This module uses the standard build and installation instructions.

This package is known to build and work properly using an LFS-7.6 platform.

- **File::Slurp-9999.19**
  http://www.cpan.org/authors/id/U/UR/URI/File-Slurp-0.91.tar.gz
  MD5 sum: 7d584cd15c4f8b9547765eff8c4ef078

File::Which-1.09

File::Which provides a portable implementation of the 'which' utility. This module and its dependencies use the standard build and installation instructions.

This package is known to build and work properly using an LFS-7.6 platform.

- **File::Which-1.09**
  http://www.cpan.org/authors/id/A/AD/ADAMK/File-Which-1.09.tar.gz
  MD5 sum: b9429edaad7f45caafa4d458afcfd8af

  - **Test::Script**
    (http://search.cpan.org/dist/Test-Script/)

    - IPC::Run3-0.048
    - **Probe-Perl**
      (http://search.cpan.org/dist/Probe-Perl/

HTML::Parser-3.71

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.

This package is known to build and work properly using an LFS-7.6 platform.

- **HTML::Parser-3.71**
  http://www.cpan.org/authors/id/G/GA/GAAS/HTML-Parser-3.71.tar.gz
  MD5 sum: 9128a45893097dfa3bf03301b19c5efe
  - **HTML::Tagset**
    (http://search.cpan.org/~petdance/HTML-Tagset/)
  - libwww-perl-6.08 (circular; howevever, it can be installed after HTML::Parser as it is only a run-time requirement for the included HTML::HeadParser module)

IPC::Run3-0.048

The IPC::Run3 module is used to run a subprocess with input/ouput redirection. This module uses the standard build and installation instructions.

This package is known to build and work properly using an LFS-7.6 platform.

- **IPC-Run3-0.048**
  http://www.cpan.org/authors/id/R/RJ/RJBS/IPC-Run3-0.91.tar.gz
  MD5 sum: 5a8cec571c51a118b265cf6e24e55761

libwww-perl-6.08 (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-6.08**
  http://cpan.org/authors/id/M/MS/MSCHILLI/libwww-perl-6.08.tar.gz
  MD5 sum: 28e5005609af16c1fa297d12e0312f86
  - **Encode::Locale**
    (http://search.cpan.org/~gaas/Encode-Locale/)
  - **HTML::Form**
    (http://search.cpan.org/~gaas/HTML-Form/)

    - URI-1.64
    - HTML::Parser-3.71
    - **HTTP::Message**
      (http://search.cpan.org/~gaas/HTTP-Message/)

      - **HTTP::Date**
        (http://search.cpan.org/~gaas/HTTP-Date/)
      - **IO::HTML**
        (http://search.cpan.org/~cjm/IO-HTML/)
      - **LWP::MediaTypes**
        (http://search.cpan.org/~gaas/LWP-MediaTypes/")

  - **HTTP::Cookies**
    (http://search.cpan.org/~gaas/HTTP-Cookies/)
  - **HTTP::Negotiate**
    (http://search.cpan.org/~gaas/HTTP-Negotiate/)
  - **Net::HTTP**
    (http://search.cpan.org/~gaas/Net-HTTP/)
  - **WWW::RobotRules**
    (http://search.cpan.org/~gaas/WWW-RobotRules/)
  - **HTTP::Daemon**
    (http://search.cpan.org/~gaas/HTTP-Daemon/)
  - **File::Listing**
    (http://search.cpan.org/~gaas/File-Listing/)

After the LWP installation, if you want HTTPS protocol support, install the following (application and modules):

- OpenSSL-1.0.1i

- **LWP::Protocol::https**
  (http://search.cpan.org/~gaas/LWP-Protocol-https/)
  - **IO::Socket::SSL**
    (http://search.cpan.org/~behroozi/IO-Socket-SSL/)

    - **Net::SSLeay**
      (http://search.cpan.org/dist/Net-SSLeay/)

  - **Mozilla::CA**
    (http://search.cpan.org/~abh/Mozilla-CA/)

List::AllUtils-0.08

The List::Allutils module combines List::Util and List::MoreUtils in one bite-sized package. This module and its dependencies use the standard build and installation instructions.

This package will fail (tests, but not for any obvious reason, and at runtime) if the core module List::Util is older than 1.31, as happens with e.g. with perl-5.18.2 from LFS-7.5. To test the version, you can run the following command

```
strings /usr/lib/perl5/5.*/*/auto/List/Util/Util.so | grep v5 -A 1 | tail -n 1
```

and if necessary install **Scalar::List::Utils** (http://search.cpan.org/dist/Scalar-List-Utils/) to get a newer version of that module without updating all of perl.

This package is known to build and work properly using an LFS-7.6 platform.

- **List::AllUtils-0.08**
  http://www.cpan.org/authors/id/D/DR/DROLSKY/List-AllUtils-0.08.tar.gz
  MD5 sum: 0becef45aaf3556685ab798a132c014e
  - **Number::Compare**
    (http://search.cpan.org/dist/Number::Compare/)
  - **Text::Glob**
    (http://search.cpan.org/dist/Text::Glob/)

Log-Log4perl-1.44 (a.k.a. Log::Log4perl)

Log-Log4perl provides a Log4j implementation for perl. This module uses the standard build and installation

This package is known to build and work properly using an LFS-7.6 platform.

- **Log-Log4perl-1.44**
  http://www.cpan.org/authors/id/M/MS/MSCHILLI/Log-Log4perl-1.44.tar.gz
  MD5 sum: 4065a8b123badf07a3d6f57b48a0aa5c

Net::DNS-0.76

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.

This package is known to build and work properly using an LFS-7.6 platform.

- **Net::DNS-0.76**
  http://www.cpan.org/authors/id/N/NL/NLNETLABS/Net-DNS-0.76.tar.gz
  MD5 sum: 219dada09d01b7233f82fd1c32ddad39

  - **Digest::HMAC**
    (http://search.cpan.org/~gaas/Digest-HMAC/)
  - **IO::Socket::INET6**
    (http://search.cpan.org/~shlomif/IO-Socket-INET6-2.72/)
  - **IO::Socket::INET**
    (http://search.cpan.org/~gbarr/IO/lib/IO/Socket/INET.pm) (required for IPv6 support)

    - **Socket6**
      (http://search.cpan.org/~umemoto/Socket6/)

Readonly::XS-1.05

The Readonly::XS module is a companion module for Readonly.pm, to speed up read-only scalar variables. This module uses the standard build and installation instructions.

This package is known to build and work properly using an LFS-7.6 platform.

- **Readonly::XS-1.05**
  http://www.cpan.org/authors/id/R/RO/ROODE/Readonly-XS-1.05.tar.gz
  MD5 sum: df71f29abfcbd14c963f912d6d6ded6b
  - **Readonly**
    (http://search.cpan.org/dist/Readonly/)
    this uses the instructions for packages using Build.PL

Regexp::Common-2013031301

Regexp::Common provides commonly requested regular expressions. This module uses the standard build and installation instructions.

This package is known to build and work properly using an LFS-7.6 platform.

- **Regexp-Common-2013031301**
  http://www.cpan.org/authors/id/A/AB/ABIGAIL/Regexp-Common-2013031301.tar.gz
  MD5 sum: 2b9c335312dcfd9980ff7acbad0e5905

SGMLSpm-1.1

The SGMLSpm module is a Perl library used for parsing the output from James Clark's SGMLS and NSGMLS parsers. This modules uses the standard build and installation instructions.

This package is known to build and work properly using an LFS-7.6 platform.

Before beginning the build, issue the following command to prevent an error:

```
chmod -v 644 MYMETA.yml
```

After installed, as the *root* user:

```
ln -sv sgmlspl.pl /usr/bin/sgmlspl
```

- **SGMLSpm-1.1**
  http://anduin.linuxfromscratch.org/sources/BLFS/conglomeration/perl-modules/SGMLSpm-1.1.tar.gz
  MD5 sum: 746c74ae969992cedb1a2879b4168090

Text::BibTeX-0.69

Text::BibTeX provides an interface to read and parse BibTeX files. This module uses the instructions for packages using Build.PL, but except where noted, its dependencies are installed using the standard build and installation instructions.

- **Text::BibTeX-0.69**
  http://www.cpan.org/authors/id/A/AM/AMBS/Text/Text-BibTeX-0.69.tar.gz
  MD5 sum: 2b83fd66f252f4c11d1f49b4ea638ea3

  - **Config::AutoConf**
    (http://search.cpan.org/dist/Config-AutoConf/)
    - **Capture=Tiny**
      (http://search.cpan.org/dist/Capture-Tiny/
    - **ExtUtils-LibBuilder**
      (http://search.cpan.org/dist/LibBuilder/)
      this uses the instructions for packages using Build.PL

Unicode::Collate-1.07

Unicode::Collate provides a Unicode collation algorithm. This module uses the standard build and installation instructions.

This package is known to build and work properly using an LFS-7.6 platform.

- **Unicode-Collate-1.07**
  http://www.cpan.org/authors/id/S/SA/SADAHIRO/Unicode-Collate-1.07.tar.gz
  MD5 sum: 80b9d8452be51a638268fffd129d2480

Unicode::LineBreak-2014.06

Unicode::LineBreak provides a UAX #14 Unicode Line Breaking Algorithm. This module and its dependencies use the standard build and installation instructions.

This package is known to build and work properly using an LFS-7.6 platform.

- **Unicode::LineBreak-2014.06**
  http://www.cpan.org/authors/id/N/NE/NEZUMI/Unicode-LineBreak-2014.06.tar.gz
  MD5 sum: c908890e6a00f4203da5d4a5d6060586

  - **MIME::Charset**
    (http://search.cpan.org/dist/MIME-Charset/)

    - **Encode-JISX0213**
      (http://search.cpan.org/dist/Encode-JISX0213/

      - **Encode-ISO2022**
        (http://search.cpan.org/dist/Encode-ISO2022/>)

URI-1.64

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.

This package is known to build and work properly using an LFS-7.6 platform.

- **URI-1.64**
  http://www.cpan.org/authors/id/E/ET/ETHER/URI-1.64.tar.gz
  MD5 sum: 975b2282bc8f0fd72a6dae5cefc33824

XML::LibXML::Simple-0.94

The XML::LibXML::Simple module is a rewrite of XML::Simple to use the XML::LibXML parser for XML structures,instead of the plain Perl or SAX parsers. This module and all dependency modules use the standard build and installation instructions.

This package is known to build and work properly using an LFS-7.6 platform.

- **XML::LibXML::Simple-0.94**
  http://cpan.org/authors/id/M/MA/MARKOV/XML-LibXML-Simple-0.94.tar.gz
  MD5 sum: 5be6726d9972be9f55bd646a464988d6
  - XML::SAX
  - XML::LibXML
  - **File::Slurp::Tiny**
    (http://search.cpan.org/dist/File-Slurp-Tiny/)

XML::LibXSLT-1.92

The XML::LibXSLT module provides an interface to libxslt. This module uses the standard build and installation

This package is known to build and work properly using an LFS-7.6 platform.

- **XML::LibXSLT-1.92**
  http://www.cpan.org/authors/id/S/SH/SHLOMIF/XML-LibXSLT-1.92.tar.gz
  MD5 sum: e543d54493c8be6d4fb26595593818d1
  - libxslt-1.1.28

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.

This package is known to build and work properly using an LFS-7.6 platform.

- **XML::Simple-2.20**
  http://cpan.org/authors/id/G/GR/GRANTM/XML-Simple-2.20.tar.gz
  MD5 sum: 4d10964e123b76eca36678464daa63cd
  - **XML::SAX**
    (http://search.cpan.org/~grantm/XML-SAX/)
    (Note: this package does not support parallel build)

    - **XML::NamespaceSupport**
      (http://search.cpan.org/~perigrin/XML-NamespaceSupport/)
    - **XML::SAX::Base**
      (http://search.cpan.org/~grantm/XML-SAX-Base/)

  - **XML::SAX::Expat**
    (http://search.cpan.org/~bjoern/XML-SAX-Expat/)
    (Note: this package does not support parallel build)

  - **XML::LibXML**
    (http://search.cpan.org/~shlomif/XML-LibXML/)
    (recommended for faster parsing)
  - **Tie::IxHash**
    (http://search.cpan.org/~chorny/Tie-IxHash/)
    (optionally used in the test suite)

XML::Writer-0.625

XML::Writer provides a Perl extension for writing XML documents. This module uses the standard build and installation instructions.

This package is known to build and work properly using an LFS-7.6 platform.

- **XML::Writer-0.625**
  http://www.cpan.org/authors/id/J/JO/JOSEPHW/XML-Writer-0.625.tar.gz
  MD5 sum: b9c2420c243c6a36ce45a008740fcede

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
> ```

Installation of Perl Modules which use Build.PL

Install Perl modules which use Build.PL by running the following commands:

```
./Build &&
./Build test
```

Now, as the *root* user:

```
./Build install
```

(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.

Last updated on 2014-09-12 22:13:42 -0700

PHP-5.6.0

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-7.6 platform.

Package Information

- Download (HTTP): **http://us2.php.net/distributions/php-5.6.0.tar.bz2**
- Download (FTP): **ftp://ftp.isu.edu.tw/pub/Unix/Web/PHP/distributions/php-5.6.0.tar.bz2**
- Download MD5 sum: 1f889357528809a6675e2f23995832d7
- Download size: 13 MB
- Estimated disk space required: 442 MB (additional 1 MB to run the test suite and 102 MB for documentation)
- Estimated build time: 4 SBU (additional 1.9 SBU to run the test suite)

Additional Downloads

- Pre-built documentation (optional): **http://www.php.net/download-docs.php**

PHP Dependencies

Recommended

Apache-2.4.10 and libxml2-2.9.1

Optional System Utilities and Libraries

libxslt-1.1.28, PCRE-8.35, Aspell-0.60.6.1, enchant-1.6.0, Pth-2.0.7, an MTA (that provides a `sendmail` command) **OSSP mm**, **Net-SNMP**, **re2c**, **XMLRPC-EPI**, and **Dmalloc**

Optional Graphics Utilities and Libraries

libjpeg-turbo-1.3.1, LibTIFF-4.0.3, libpng-1.6.13, libexif-0.6.21, FreeType-2.5.3, X Window System, **ClibPDF**, **GD**, **t1lib**, and **FDF Toolkit**

cURL-7.37.1, HTML Tidy-cvs_20101110, **mnoGoSearch**, **Hyperwave**, **Roxen WebServer**, **Caudium**, and **WDDX**

Optional Data Management Utilities and Libraries

OpenLDAP-2.4.39, Berkeley DB-6.1.19, MariaDB-10.0.13 or **MySQL**, PostgreSQL-9.3.5, unixODBC-2.3.2, SQLite-3.8.6, **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-1.0.1i, Cyrus SASL-2.1.26, MIT Kerberos V5-1.12.2, **libmcrypt**, and **mhash**

User Notes: *http://wiki.linuxfromscratch.org/blfs/wiki/php*

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**.
>
> 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          \
            --localstatedir=/var       \
            --datadir=/usr/share/php   \
            --mandir=/usr/share/man    \
            --enable-fpm               \
            --with-fpm-user=apache     \
            --with-fpm-group=apache    \
            --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`. A few tests may fail, in which case you are asked whether you want to send the report to the PHP developpers. If you want to automate the test, you may prefix the command with `yes "n" |`.

Now, as the *root* user:

```
make install                               &&
install -v -m644 php.ini-production /etc/php.ini    &&
mv -v /etc/php-fpm.conf{.default,}              &&

install -v -m755 -d /usr/share/doc/php-5.6.0 &&
install -v -m644    CODING_STANDARDS EXTENSIONS INSTALL NEWS README* UPGRADING* php.gif \
                    /usr/share/doc/php-5.6.0 &&
ln -v -sfn          /usr/lib/php/doc/Archive_Tar/docs/Archive_Tar.txt \
                    /usr/share/doc/php-5.6.0 &&
ln -v -sfn          /usr/lib/php/doc/Structures_Graph/docs \
                    /usr/share/doc/php-5.6.0
```

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-5.6.0 &&
gunzip -v /usr/share/doc/php-5.6.0/php_manual_en.html.gz
```

For the "Many HTML files" tarball:

```
tar -xvf ../php_manual_en.tar.gz \
    -C /usr/share/doc/php-5.6.0 --no-same-owner
```

Command Explanations

--with-datadir=/usr/share/php: This works around a bug in the build machinery, which installs some data to a wrong location.

--enable-fpm: This parameter allows building the fastCGI Process Manager.

--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.

`--with-mysql`: This option includes MariaDB/MySQL support.

`--disable-libxml`: This option allows building PHP without libxml2 installed.

`--with-apxs2`: Instead of building the fastCGI process manager, it is possible to build an apache module. This has some performance penalty for heavy loaded servers, but may be easier to set up. This switch is incompatible with the *--enable-fpm* and *--with-fpm-...* switches.

Configuring PHP

Config Files

`/etc/php.ini`, `/etc/pear.conf` and `/etc/php-fpm.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"@' \
    /etc/php.ini
```

To enable fastCGI support in the Apache web server, two LoadModule directives must be added to the `httpd.conf` file. They are commented out, so just issue the following command as *root* user:

```
sed -i -e '/proxy_module/s/^#//'         \
```

Those modules accept various `ProxyPass` directives. One possibility is (as the *root* user):

```
echo \
'ProxyPassMatch ^/(.*\.php)$ fcgi://127.0.0.1:9000/srv/www/$1' >> \
/etc/httpd/httpd.conf
```

Additionally, it may 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-httpd-php-source .phps
```

You'll need to restart the Apache web server after making any modifications to the `httpd.conf` file.

Boot Script

To automatically start the `php-fpm` daemon when the system is rebooted, install the `/etc/rc.d/init.d/php` bootscript from the [blfs-bootscripts-20140919](#) package as the *root* user:

```
make install-php
```

Contents

Installed Programs: pear, peardev, pecl, phar (symlink), phar.phar, php, php-cgi, php-config, php-fpm, and phpize
Installed Libraries: dba.{so,a} and opcache.{so,a} in /usr/lib/php/extensions/no-debug-non-zts-20121212/
Installed Directories: /usr/include/php, /usr/lib/php, /usr/share/php and /usr/share/doc/php-5.6.0

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.

php-fpm   is the fastCGI process manager for PHP.

Last updated on 2014-09-21 01:03:52 -0700

Python-2.7.8

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-7.6 platform.

Package Information

- Download (HTTP): **http://www.python.org/ftp/python/2.7.8/Python-2.7.8.tar.xz**
- Download MD5 sum: d235bdfa75b8396942e360a70487ee00
- Download size: 11 MB
- Estimated disk space required: 222 MB (additional 18 MB for the tests)
- Estimated build time: 1.0 SBU (additional 4.8 SBU for tests)

Additional Downloads

- Required patch if you wish to run the test suite: **http://www.linuxfromscratch.org/patches/blfs/7.6/Python-2.7.8-skip_test_gdb-1.patch**

Optional HTML Documentation

- Download (HTTP): **http://docs.python.org/ftp/python/doc/2.7.8/python-2.7.8-docs-html.tar.bz2**
- Download MD5 sum: 2cf9ba96b2723a5268cd14432b15fdcf
- Download size: 4.4 MB

Python 2 Dependencies

libffi-3.1

Optional

BlueZ-5.23

Optional (For Additional Modules)

Berkeley DB-6.1.19, OpenSSL-1.0.1i, SQLite-3.8.6 and [Tk-8.6.2](Tk-8.6.2)

> **Note**
>
> If you are building Thunderbird-31.1.1 or Firefox-32.0.1 you must install openssl before you build Python 2.

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/Python

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
```

If you wish to run the test suite, disable a test that fails:

```
patch -Np1 -i ../Python-2.7.8-skip_test_gdb-1.patch
```

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

Now, as the *root* user:

```
make install &&
chmod -v 755 /usr/lib/libpython2.7.so.1.0
```

Since Python 2 is in maintenance mode, and Python 3 is recommended by upstream for development, you probably do not need to install the documentation. However, if you still want to install documentation for both Python versions, be sure to define the `PYTHONDOCS` variable for the version you want to use, each time you need to consult the documentation. 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-2.7.8 &&
tar --strip-components=1 -C /usr/share/doc/python-2.7.8 \
    --no-same-owner -xvf ../python-2.7.8-docs-html.tar.bz2      &&
find /usr/share/doc/python-2.7.8 -type d -exec chmod 0755 {} \; &&
find /usr/share/doc/python-2.7.8 -type f -exec chmod 0644 {} \;
```

Command Explanations

`--with-system-expat`: This switch enables linking against system version of Expat.

`--with-system-ffi`: This switch enables linking against system version of libffi. Remove if you have not installed libffi-3.1.

`--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:

Contents

Installed Programs: 2to3, pydoc, python (symlink), python-config (symlink), python2 (symlink), python2-config (symlink), python2.7, python2.7-config, smtpd.py, and idle

Installed Library: libpython2.7.so and several under /usr/lib/python2.7/{config,lib-dynload}

Installed Directories: /usr/include/python2.7, /usr/lib/python2.7, and /usr/share/doc/python-2.7.8

Short Descriptions

`2to3`	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.
`idle`	is a wrapper script that opens a Python aware GUI editor. For this script to run, you must have installed Tk before Python so that the Tkinter Python module is built.
`pydoc`	is the Python documentation tool.
`python`	is an interpreted, interactive, object-oriented programming language.
`python2.7`	is a version-specific name for the `python` program.
`smtpd.py`	is an SMTP proxy implemented in Python.

Last updated on 2014-09-09 12:00:35 -0700

Python-3.4.1

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-7.6 platform.

Package Information

- Download (HTTP): **http://www.python.org/ftp/python/3.4.1/Python-3.4.1.tar.xz**
- Download MD5 sum: 6cafc183b4106476dd73d5738d7f616a
- Download size: 14 MB
- Estimated disk space required: 266 MB (additional 38 MB for the docs and 37 MB for the tests)
- Estimated build time: 1.1 SBU (additional 0.1 SBU for the tests)

Additional Downloads

Optional HTML Documentation

- Download (HTTP): **http://docs.python.org/3/archives/python-3.4.1-docs-html.tar.bz2**
- Download MD5 sum: e5662b53413b0dd05d1ee1a075956370
- Download size: 5.2 MB

Python 3 Dependencies

Recommended

libffi-3.1

Optional

BlueZ-5.23, GDB-7.8 (required for some tests), and Valgrind-3.10.0

Optional (For Additional Modules)

Berkeley DB-6.1.19, OpenSSL-1.0.1i, SQLite-3.8.6 and Tk-8.6.2

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/Python3

Installation of Python 3

Install Python 3 by running the following commands:

```
./configure --prefix=/usr        \
            --enable-shared      \
            --with-system-expat \
            --with-system-ffi    \
            --without-ensurepip &&
make
```

The test suite must be run separately, using an X terminal (see below).

Now, as the *root* user:

```
make install &&
chmod -v 755 /usr/lib/libpython3.4m.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-3.4.1/html &&
tar --strip-components=1 \
    --no-same-owner \
    --no-same-permissions \
    -C /usr/share/doc/python-3.4.1/html \
    -xvf ../python-3.4.1-docs-html.tar.bz2
```

The test suite must be run separately from the build, either before or after the package is built and installed. Do not run `make install`, after running the test suite. To build and install the package, you need to start with a fresh or clean source tree. For the test, you also need a clean source code, so either start by removing the source code directory and starting over, by uncompressing the source tarball or by running `make clean`. Then configure again, adding "--with-pydebug" to the `configure` switches above, run `make`, then `make test`. Remember that some tests fail, if not run in an X terminal.

Command Explanations

`CXX="/usr/bin/g++" ./configure ...`: Avoid an annoying message during configuration.

`--with-system-expat`: This switch enables linking against system version of Expat.

`--with-system-ffi`: This switch enables linking against system version of libffi. Remove if you have not installed recommended dependency libffi-3.1.

`--with-dbmliborder=bdb:gdbm:ndbm`: Use this switch if you want to build Python DBM Module against Berkeley DB instead of GDBM.

`--without-ensurepip`: This switch disables building `pip` and `setuptools` packaging programs.

`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-3.4.1/html
```

Contents

Installed Programs: 2to3 (symlink), 2to3-3.4, pydoc3 (symlink), pydoc3.4, python3 (symlink); python3.4 and python3.4m (hardlinked); python3-config (symlink), python3.4-config (symlink), python3.4m-config, pyvenv (symlink), pyvenv3.4, idle3 (symlink), and idle3.4

Installed Libraries: libpython3.4m.so and libpython3.so; several under /usr/lib/python3.3/lib-dynload/

Installed Directories: /usr/include/python3.4m, /usr/lib/python3.4, and /usr/share/doc/python-3.4.1

Short Descriptions

`idle3`	is a wrapper script that opens a Python aware GUI editor. For this script to run, you must have installed Tk before Python so that the Tkinter Python module is built.
`pydoc3`	is the Python documentation tool.
`python3`	is an interpreted, interactive, object-oriented programming language.
`python3.4`	is a version-specific name for the `python` program.
`pyvenv`	creates virtual Python environments in one or more target directories.

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.

- D-Bus Python-1.2.0
- Py2cairo-1.10.0
- PyCairo-1.10.0
- PyGObject-2.28.6
- PyGObject-3.12.2
- PyGTK-2.24.0
- PyXDG-0.25

D-Bus Python

Introduction to D-Bus Python Module

D-Bus Python provides Python bindings to the D-Bus.

This package is known to build and work properly using an LFS-7.6 platform.

Package Information

- Download (HTTP): **http://dbus.freedesktop.org/releases/dbus-python/dbus-python-1.2.0.tar.gz**
- Download MD5 sum: b09cd2d1a057cc432ce944de3fc06bf7
- Download size: 592 KB
- Estimated disk space required: 11 MB
- Estimated build time: 0.3 SBU

D-Bus Python Dependencies

Required

dbus-glib-0.102 and Python-2.7.8 and/or Python-3.4.1

Optional (Required to build the API and HTML Documentation)

Epydoc and **Docutils**

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/dbus-python

Installation of D-Bus Python

> **Note**
>
> Both Python 2 and Python 3 modules can be built and installed without any conflicts.

To build D-Bus Python as the Python 2 module, run the following commands:

```
mkdir python2 &&
pushd python2 &&
PYTHON=/usr/bin/python      \
../configure --prefix=/usr --docdir=/usr/share/doc/dbus-python-1.2.0 &&
make &&
popd
```

To test the results, issue: `make -C python2 check`.

To build D-Bus Python as the Python 3 module, run the following commands:

```
pushd python3 &&
PYTHON=/usr/bin/python3     \
../configure --prefix=/usr --docdir=/usr/share/doc/dbus-python-1.2.0 &&
make &&
popd
```

To test the results, issue: `make -C python3 check`.

To install the Python 2 module, run the following command as the *root* user:

```
make -C python2 install
```

To install the Python 3 module, run the following command as the *root* user:

```
make -C python3 install
```

Contents

Installed Programs: None
Installed Libraries: None
Installed Directories:/usr/share/doc/dbus-python-1.2.0 and /usr/lib/python2.7/site-packages/dbus and/or
/usr/lib/python3.4/site-packages/dbus

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-7.6 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-2.7.8 and Cairo-1.12.16

Optional

pytest

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/py2cairo

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

Installed Library: _cairo.so
Installed Directory: /usr/include/pycairo and /usr/lib/python2.7/site-packages/cairo

PyCairo-1.10.0

Introduction to PyCairo Module

PyCairo provides Python 3 bindings to Cairo.

This package is known to build and work properly using an LFS-7.6 platform.

Package Information

- Download (HTTP): **http://cairographics.org/releases/pycairo-1.10.0.tar.bz2**
- Download MD5 sum: e6fd3f2f1e6a72e0db0868c4985669c5
- Download size: 244 KB
- Estimated disk space required: 3.0 MB
- Estimated build time: less than 0.1 SBU

Additional Downloads

- Required patch: **http://www.linuxfromscratch.org/patches/blfs/7.6/pycairo-1.10.0-waf_unpack-1.patch**
- Required patch: **http://www.linuxfromscratch.org/patches/blfs/7.6/pycairo-1.10.0-waf_python_3_4-1.patch**

PyCairo Dependencies

Required

Cairo-1.12.16 and Python-3.4.1

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/pycairo

Installation of PyCairo

Install PyCairo by running the following commands:

```
patch -Np1 -i ../pycairo-1.10.0-waf_unpack-1.patch      &&
wafdir=$(./waf unpack) &&
pushd $wafdir          &&
patch -Np1 -i ../../pycairo-1.10.0-waf_python_3_4-1.patch &&
popd                   &&
unset wafdir           &&
PYTHON=/usr/bin/python3 ./waf configure --prefix=/usr  &&
./waf build
```

This package does not come with a test suite.

Now, as the *root* user:

```
./waf install
```

Contents

Installed Programs: None
Installed Library: None
Installed Directory: /usr/include/pycairo and /usr/lib/python3.4/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-7.6 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 size: 732 KB
- Estimated disk space required: 24 MB
- Estimated build time: 0.2 SBU

Additional Downloads

- Required patch: **http://www.linuxfromscratch.org/patches/blfs/7.6/pygobject-2.28.6-fixes-1.patch**

PyGObject Dependencies

Required

GLib-2.40.0 and Py2cairo-1.10.0

Optional

gobject-introspection-1.40.0 and libxslt-1.1.28 (to Build Documentation)

User Notes: *http://wiki.linuxfromscratch.org/blfs/wiki/pygobject2*

Installation of PyGObject

Install PyGObject by running the following commands:

```
patch -Np1 -i ../pygobject-2.28.6-fixes-1.patch   &&
./configure --prefix=/usr --disable-introspection &&
make
```

This package does not have a working testsuite.

Now, as the *root* user:

```
make install
```

Command Explanations

`--disable-introspection`: Omit this switch if you have installed gobject-introspection-1.40.0. Note that it conflicts with PyGObject-3.12.2.

`--disable-docs`: This option disables the rebuilding of the html documentation if libxslt-1.1.28 is installed.

Contents

Installed Programs: pygobject-codegen-2.0
Installed Libraries: libpyglib-2.0-python.so, _gio.so, unix.so, _glib.so and _gobject.so.
Installed Directories: /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-3.12.2

Introduction to PyGObject3 Module

PyGObject3 provides Python bindings to the GObject class from GLib.

This package is known to build and work properly using an LFS-7.6 platform.

Package Information

- Download (HTTP): **http://ftp.gnome.org/pub/gnome/sources/pygobject/3.12/pygobject-3.12.2.tar.xz**
- Download (FTP): **ftp://ftp.gnome.org/pub/gnome/sources/pygobject/3.12/pygobject-3.12.2.tar.xz**
- Download MD5 sum: fd9b1e956ee2e2dae544e57b1858596b
- Download size: 688 KB
- Estimated disk space required: 21 MB (additional 3 MB for the tests)
- Estimated build time: 0.3 SBU (additional 0.2 SBU for the tests)

PyGObject3 Dependencies

[gobject-introspection-1.40.0](#) and [Py2cairo-1.10.0](#) (for Python 2 bindings) and/or [PyCairo-1.10.0](#) (for Python 3 bindings)

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/pygobject3

Installation of PyGObject3

> **Note**
>
> Both Python 2 and Python 3 modules can be built and installed without any conflicts.

If you wish to run the test suite, optionally use the following command so that one test is marked as "expected failure":

```
sed -i '/test_out_glist/ i\    @unittest.expectedFailure' \
    tests/test_atoms.py
```

To build PyGObject3 as the Python 2 module, run the following commands:

```
mkdir python2 &&
pushd python2 &&
../configure --prefix=/usr --with-python=/usr/bin/python &&
make &&
popd
```

To test the results, issue: `make -C python2 check`. An already active graphical session with bus address is necessary to run the tests.

To build PyGObject3 as the Python 3 module, run the following commands:

```
mkdir python3 &&
pushd python3 &&
../configure --prefix=/usr --with-python=/usr/bin/python3 &&
make &&
popd
```

To test the results, issue: `make -C python3 -k check`. An already active graphical session with bus address is necessary to run the tests. Some tests fail for unknown reasons.

To install the Python 2 module, run the following command as the *root* user:

```
make -C python2 install
```

To install the Python 3 module, run the following command as the *root* user:

```
make -C python3 install
```

Contents

Installed Programs: None
Installed Library:/usr/lib/python2.7/site-packages/gi/{_gi.so,_gi_cairo.so} and/or /usr/lib/python3.4/site-packages/gi/{_gi_cairo.cpython-34m.so,_gi.cpython-34m.so}
Installed Directories:/usr/include/pygobject-3.0 and /usr/lib/python2.7/site-packages/{gi,pygtkcompat} and/or /usr/lib/python3.4/site-packages/{gi,pygtkcompat}

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-7.6 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

PyGTK Dependencies

Required

[PyGObject-2.28.6](#)

Required (atk module)

[ATK-2.12.0](#)

Required (pango module)

[Pango-1.36.7](#)

Required (pangocairo module)

[Py2cairo-1.10.0](#) and [Pango-1.36.7](#)

Required (gtk and gtk.unixprint modules)

[Py2cairo-1.10.0](#) and [GTK+-2.24.24](#).

Required (gtk.glade module)

[Py2cairo-1.10.0](#) and [libglade-2.6.4](#).

Optional

[NumPy](#)

Optional (to Build Documentation)

[libxslt-1.1.28](#)

User Notes: ***http://wiki.linuxfromscratch.org/blfs/wiki/pygtk***

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

Installed Programs: pygtk-codegen-2.0 and pygtk-demo.
Installed Libraries: atk.so, _gtk.so, glade.so, gtkunixprint.so, pango.so and pangocairo.so.
Installed Directories: /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-demo` is a Python wrapper to run the PyGTK demo program.

PyXDG-0.25

Introduction to PyXDG Module

PyXDG is a Python library to access freedesktop.org standards.

This package is known to build and work properly using an LFS-7.6 platform.

Package Information

- Download (HTTP): **http://people.freedesktop.org/~takluyver/pyxdg-0.25.tar.gz**
- Download MD5 sum: bedcdb3a0ed85986d40044c87f23477c
- Download size: 48 KB
- Estimated disk space required: 800 KB
- Estimated build time: less than 0.1 SBU

PyXDG Dependencies

Required

Python-2.7.8 and/or Python-3.4.1

User Notes: *http://wiki.linuxfromscratch.org/blfs/wiki/pyxdg*

Installation of PyXDG

> **Note**
>
> Both Python 2 and Python 3 modules can be built and installed without any conflicts.

To install the Python 2 module, run the following command as the *root* user:

```
python setup.py install --optimize=1
```

To install the Python 3 module, run the following command as the *root* user:

```
python3 setup.py install --optimize=1
```

Contents

Installed Directory:/usr/lib/python2.7/site-packages/xdg and/or /usr/lib/python3.4/site-packages/xdg

Last updated on 2014-03-28 03:10:16 -0700

Ruby-2.1.2

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-7.6 platform.

Package Information

- Download (HTTP): **http://cache.ruby-lang.org/pub/ruby/2.1/ruby-2.1.2.tar.bz2**
- Download MD5 sum: ed9b8565bdeccb401d628ec8d54a0774
- Download size: 12 MB
- Estimated disk space required: 909 MB
- Estimated build time: 3.5 SBU (additional 0.3 SBU for tests)

Ruby Dependencies

Berkeley DB-6.1.19, Doxygen-1.8.8, Graphviz-2.38.0, **libyaml**, OpenSSL-1.0.1i, and Tk-8.6.2

User Notes: *http://wiki.linuxfromscratch.org/blfs/wiki/ruby*

Installation of Ruby

Install Ruby by running the following commands:

```
./configure --prefix=/usr   \
            --enable-shared \
            --docdir=/usr/share/doc/ruby-2.1.2 &&
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

Installed Programs: erb, gem, irb, rake, rdoc, ri, ruby, and testrb
Installed Libraries: libruby.so, libruby-static.a, and numerous modules located in the `/usr/lib/ruby` hierarchy.
Installed Directories: /usr/include/ruby-2.1.0, /usr/lib/ruby, /usr/share/doc/ruby-2.1.2 and /usr/share/ri

Short Descriptions

`ruby`	is an interpreted scripting language for quick and easy object-oriented programming.
`irb`	is the interactive interface for Ruby .
`erb`	is Tiny eRuby. It interprets a Ruby code embedded text file.
`ri`	displays documentation from a database on Ruby classes, modules, and methods.
`libruby.so`	contains the API functions required by Ruby .

Last updated on 2014-09-14 12:09:32 -0700

SCons-2.3.3

Introduction to SCons

SCons is a tool for building software (and other files) implemented in Python.

This package is known to build and work properly using an LFS-7.6 platform.

Package Information

- Download (HTTP): **http://downloads.sourceforge.net/scons/scons-2.3.3.tar.gz**
- Download MD5 sum: 5956570178fed902219ac72f1169e94a
- Download size: 608 KB
- Estimated disk space required: 12 MB
- Estimated build time: 0.1 SBU

SCons Dependencies

Required

Python-2.7.8

Optional

docbook-xsl-1.78.1, libxml2-2.9.1, and libxslt-1.1.28

User Notes: *http://wiki.linuxfromscratch.org/blfs/wiki/scons*

Installation of SCons

Install SCons by running the following commands as the *root* user:

```
python setup.py install --prefix=/usr  \
                        --standard-lib \
                        --optimize=1   \
                        --install-data=/usr/share
```

Contents

Installed Programs: scons, scons-2.3.3, sconsign, sconsign-2.3.3, scons-time, and scons-time-2.3.3
Installed Libraries: None
Installed Directory: /usr/lib/python2.7/site-packages/SCons

Short Descriptions

scons   is a software construction tool.

sconsign   prints SCons `.sconsign` file information.

scons-time   generates and displays SCons timing information.

Last updated on 2014-09-10 09:10:33 -0700

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-7.6 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-1.6.13, PCRE-8.35, and **Oniguruma**

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/slang

Installation of S-Lang

> **Note**
>
> This package does not support parallel build.

Install S-Lang by running the following commands:

```
./configure --prefix=/usr \
            --sysconfdir=/etc \
            --with-readline=gnu &&
make -j1
```

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:

```
        SLSH_DOC_DIR=/usr/share/doc/slang-2.2.4/slsh \
        install-all &&

chmod -v 755 /usr/lib/libslang.so.2.2.4 \
             /usr/lib/slang/v2/modules/*.so
```

Command Explanations

--with-readline=gnu: This parameter sets GNU Readline to be used by the parser interface instead of the S-Lang internal version.

`make install_doc_dir=/usr/share/doc/slang-2.2.4 SLSH_DOC_DIR=/usr/share/doc/slang-2.2.4/slsh 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.

Configuring S-Lang

Config Files

`~/.slshrc` and `/etc/slsh.rc`

Contents

Installed Program: slsh
Installed Libraries: libslang.{so,a} and numerous support modules
Installed Directories: /usr/lib/slang, /usr/share/doc/slang-2.2.4 and /usr/share/slsh

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.

Last updated on 2014-09-11 23:27:59 -0700

Subversion-1.8.10

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-7.6 platform.

Package Information

- Download (HTTP): **http://www.apache.org/dist/subversion/subversion-1.8.10.tar.bz2**
- Download MD5 sum: 3068256761b40863df96128834d6b71b
- Download size: 6.6 MB
- Estimated disk space required: 143 MB (284 MB with all bindings and API documentation built; additional 968 MB for tests)
- Estimated build time: 0.9 SBU (2.5 SBU with all bindings and API documentation built; additional 12.6 SBU for tests)

Subversion Dependencies

Required

Apr-Util-1.5.3 and SQLite-3.8.6

Recommended

OpenSSL-1.0.1i and Serf-1.3.7 (for handling http:// and https:// URLs)

Optional

Apache-2.4.10, Cyrus SASL-2.1.26, D-Bus-1.8.8, kdelibs-4.14.1 (for **KWallet** support), Python-2.7.8 (with sqlite support for the tests), Ruby-2.1.2, and SWIG-3.0.2 (for building Perl, Python and Ruby bindings)

One of [OpenJDK-1.7.0.65/IcedTea-2.5.2](#), **[Dante](#)** or **[Jikes](#)**, and [JUnit-4.11](#) (to test the Java bindings)

Installation of Subversion

Install Subversion by running the following commands:

```
./configure --prefix=/usr    \
            --disable-static \
            --with-apache-libexecdir &&
make
```

If you have [Doxygen-1.8.8](#) 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
```

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:

```
sed -i 's#Makefile.PL.in$#& libsvn_swig_perl#' Makefile.in
```

If you want to compile Perl, Python2, or Ruby bindings, issue any of the following command:

```
make swig-pl # for Perl
make swig-py \
    swig_pydir=/usr/lib/python2.7/site-packages/libsvn \
    swig_pydir_extra=/usr/lib/python2.7/site-packages/svn # for Python
make swig-rb # for Ruby
```

To test the results, issue: `make -k check`. One test (wc-queries-test) is known to fail with recent versions of SQLite.

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 of the SWIG bindings, you can use any of the following commands: `make check-swig-pl`, `make check-swig-py`, or `make check-swig-rb`.

Now, as the *root* user:

```
make -j1 install &&
install -v -m755 -d /usr/share/doc/subversion-1.8.10 &&
cp      -v -R      doc/* \
                   /usr/share/doc/subversion-1.8.10
```

If you built the Java bindings, issue the following command as the *root* user to install them:

```
 make install-javahl
```

If you built the Perl, Python2, or Ruby bindings, issue any of the following commands as the *root* user to install them:

```
make install-swig-pl
make install-swig-py \
     swig_pydir=/usr/lib/python2.7/site-packages/libsvn \
     swig_pydir_extra=/usr/lib/python2.7/site-packages/svn
make install-swig-rb
```

Command Explanations

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

`--with-apache-libexecdir`: If [Apache-2.4.10](#) is installed, the shared Apache modules are built. This switch allows to have those modules installed to Apache's configured module dir instead of `/usr/libexec`. It has no effect if Apache is not installed.

Configuring Subversion

Config Files

Configuration Information

`/etc/subversion/config` is the Subversion system-wide configuration file. This file is used to specify defaults for different **svn** commands.

`~/.subversion/config` is the user's personal configuration file. It is used to override the system-wide defaults set in `/etc/subversion/config`.

Contents

Installed Programs: svn, svnadmin, svndumpfilter, svnlook, svnmucc, svnrdump, svnserve, svnsync, and svnversion

Installed Libraries: libsvn_*-1.so and optionally, a Java library, the mod_dav_svn.so and and mod_authz_svn.so Apache HTTP DSO modules and various Perl, Python and Ruby modules.

Installed Directories: /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/python2.7/site-packages/libsvn (optional), /usr/lib/python2.7/site-packages/svn (optional), /usr/lib/ruby/site_ruby/<x.y>/i686-linux/svn (optional), /usr/lib/ruby/site_ruby/<x.y>/svn (optional), /usr/lib/svn-javahl (optional), and /usr/share/doc/subversion-1.8.10

Short Descriptions

svn	is a command-line client program used to access Subversion repositories.
svnadmin	is a tool for creating, tweaking or repairing a Subversion repository.
svndumpfilter	is a program for filtering Subversion repository dumpfile format streams.
svnlook	is a tool for inspecting a Subversion repository.
svnmucc	is a Multiple URL Command Client for Subversion .
svnrdump	is a tool for dumping or loading a remote Subversion repository.
svnserve	is a custom standalone server program, able to run as a daemon process or invoked by SSH.
svnsync	is a Subversion repository synchronisation tool.
svnversion	is used to report the version number and state of a working Subversion repository copy.
libsvn_*-1.so	are the support libraries used by the Subversion programs.
mod_authz_svn.so	is a plug-in module for the Apache HTTP server, used to authenticate users to a Subversion repository over the Internet or an intranet.
mod_dav_svn.so	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.

Last updated on 2014-09-10 06:19:10 -0700

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-1.8.10 and OpenSSH-6.6p1

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
```

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/svn &&
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 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.

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-20140919 package.

```
make install-svn
```

Last updated on 2013-12-15 12:59:51 -0800

SWIG-3.0.2

Introduction to SWIG

SWIG (Simplified Wrapper and Interface Generator) is a compiler that integrates C and C++ with languages including Perl, Python, Tcl, Ruby, PHP, Java, C#, D, Go, Lua, Octave, R, Scheme, Ocaml, Modula-3, Common Lisp, and Pike. SWIG can also export its parse tree into Lisp s-expressions and XML.

SWIG reads annotated C/C++ header files and creates wrapper code (glue code) in order to make the corresponding C/C++ libraries available to the listed languages, or to extend C/C++ programs with a scripting language.

This package is known to build and work properly using an LFS-7.6 platform.

Package Information

- Download (HTTP): **http://downloads.sourceforge.net/swig/swig-3.0.2.tar.gz**
- Download MD5 sum: 62f9b0d010cef36a13a010dc530d0d41
- Download size: 5.42 MB
- Estimated disk space required: 77 MB (up to 1.1 GB for tests)
- Estimated build time: 0.4 SBU (24 SBU for tests of Guile, Go, Java, Lua, Perl, PHP, Python, Ruby, and tcl)

SWIG Dependencies

Required

PCRE-8.35

[Boost-1.56.0](#) for tests, and any of the languages mentionned in the introduction, as run-time dependencies

Installation of SWIG

Install SWIG by running the following commands:

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

To test the results, issue: `make -k check`. According to SWIG's documentation, the failure of some tests should not be considered harmful.

Now, as the *root* user:

```
make install &&
install -v -m755 -d /usr/share/doc/swig-3.0.2 &&
cp -v -R Doc/* /usr/share/doc/swig-3.0.2
```

Command Explanations

`--without-<language>`: allows disabling the building of tests and examples for <language>, but all the languages capabilities of SWIG are always built.

Contents

Installed Programs: swig and ccache-swig
Installed Library: None
Installed Directories: /usr/share/swig/3.0.2 and /usr/share/doc/swig-3.0.2

Short Descriptions

swig	takes an interface file containing C/C++ declarations and SWIG special instructions, and generates the corresponding wrapper code needed to build extension modules.
ccache-swig	is a compiler cache, which speeds up re-compilation of C/C++/SWIG code.

Last updated on 2014-09-21 01:03:52 -0700

Tcl-8.6.2

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-7.6 platform.

Package Information

- Download (HTTP): **http://downloads.sourceforge.net/tcl/tcl8.6.2-src.tar.gz**
- Download MD5 sum: 8103eaf6d71acb716a64224492f09d5f
- Download size: 8.5 MB
- Estimated disk space required: 79 MB (includes documentation installation)
- Estimated build time: 0.9 SBU (adittional 1.5 SBU for the tests)

Additional Downloads

Optional Documentation

- Download (HTTP): **http://downloads.sourceforge.net/tcl/tcl8.6.2-html.tar.gz**
- Download MD5 sum: 75019542fa735eb0c26e385b1a41296c
- Download size: 1.2 MB

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 ../tcl8.6.2-html.tar.gz --strip-components=1
```

Install Tcl by running the following commands:

```
export SRCDIR=`pwd` &&

cd unix &&

./configure --prefix=/usr            \
            --without-tzdata         \
            --mandir=/usr/share/man \
            $([ $(uname -m) = x86_64 ] && echo --enable-64bit) &&
make &&

sed -e "s#$SRCDIR/unix#/usr/lib#" \
    -e "s#$SRCDIR#/usr/include#"  \
    -i tclConfig.sh              &&

sed -e "s#$SRCDIR/unix/pkgs/tdbc1.0.1#/usr/lib/tdbc1.0.0#" \
    -e "s#$SRCDIR/pkgs/tdbc1.0.1/generic#/usr/include#"     \
    -e "s#$SRCDIR/pkgs/tdbc1.0.1/library#/usr/lib/tcl8.6#" \
    -e "s#$SRCDIR/pkgs/tdbc1.0.1#/usr/include#"            \
    -i pkgs/tdbc1.0.1/tdbcConfig.sh                        &&

sed -e "s#$SRCDIR/unix/pkgs/itcl4.0.1#/usr/lib/itcl4.0.0#" \
    -e "s#$SRCDIR/pkgs/itcl4.0.1/generic#/usr/include#"     \
    -e "s#$SRCDIR/pkgs/itcl4.0.1#/usr/include#"            \
    -i pkgs/itcl4.0.1/itclConfig.sh                       &&

unset SRCDIR
```

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-8.6.2 &&
cp -v -r  ../html/* /usr/share/doc/tcl-8.6.2
```

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 ...`: The Tcl package expects that its source tree is preserved so that packages depending on it for their compilation can utilize it. These `sed` remove the references to the build directory and replace 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/itcl4.0.1, /usr/lib/sqlite3.8.6 /usr/lib/tcl8, /usr/lib/tcl8.6, /usr/lib/tdbc1.0.1, /usr/lib/tdbcmysql1.0.1, /usr/lib/tdbcodbc1.0.1, /usr/lib/tdbcpostgres1.0.1, /usr/lib/thread2.7.1,

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.

Last updated on 2014-09-15 12:23:10 -0700

Tk-8.6.2

Introduction to Tk

The Tk package contains a TCL GUI Toolkit.

This package is known to build and work properly using an LFS-7.6 platform.

Package Information

- Download (HTTP): **http://downloads.sourceforge.net/tcl/tk8.6.2-src.tar.gz**
- Download MD5 sum: a719038d2df12ffd41dda4a255da5e09
- Download size: 4.1 MB
- Estimated disk space required: 24 MB
- Estimated build time: 0.3 SBU

Tk Dependencies

Required

Tcl-8.6.2 and Xorg Libraries

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/tk

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. Failures will occur in the tests, depending on the screen resolution/capabilities, fonts installed and other X related parameters. 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, but even so, tests may 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`.

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: wish and wish8.6
Installed Libraries: libtk8.6.so and libtkstub8.6.a
Installed Directory: /usr/lib/tk8.6

Short Descriptions

`wish`	is a symlink to the `wish8.6` program.
`wish8.6`	is a simple shell containing the Tk toolkit that creates a main window and then processes Tcl commands.
`libtk8.6.so`	contains the API functions required by Tk .

Last updated on 2014-09-13 22:25:33 -0700

Vala-0.24.0

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-7.6 platform.

Package Information

- Download (HTTP): **http://ftp.gnome.org/pub/gnome/sources/vala/0.24/vala-0.24.0.tar.xz**
- Download (FTP): **ftp://ftp.gnome.org/pub/gnome/sources/vala/0.24/vala-0.24.0.tar.xz**
- Download MD5 sum: beddeff9c06d3c278988b237da0e7401
- Download size: 2.6 MB
- Estimated disk space required: 126 MB (additional 2 MB to run the test suite)
- Estimated build time: 0.8 SBU (additional 0.1 SBU to run the test suite)

Additional Downloads

- Required patch: **http://www.linuxfromscratch.org/patches/blfs/7.6/vala-0.24.0-upstream_fixes-2.patch**

Vala Dependencies

Required

GLib-2.40.0

Optional

D-Bus-1.8.8 (Required for the tests) and libxslt-1.1.28 (Required for generating the documentation)

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/vala

Installation of Vala

Install Vala by running the following commands:

```
patch -Np1 -i ../vala-0.24.0-upstream_fixes-2.patch &&
./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
```

Installed Programs:	vala, vala-0.24, valac, valac-0.24, vala-gen-introspect, vala-gen-introspect-0.24, vapicheck, vapicheck-0.24, vapigen and vapigen-0.24
Installed Library:	libvala-0.24.so
Installed Directories:	/usr/include/vala-0.24, /usr/lib/vala-0.24, /usr/share/devhelp/books/vala-0.24, /usr/share/vala and /usr/share/vala-0.24

Short Descriptions

`valac`	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-0.24.so`	contains the Vala API functions.

Last updated on 2014-09-12 12:02:55 -0700

Valgrind-3.10.0

Introduction to Valgrind

Valgrind is an instrumentation framework for building dynamic analysis tools. There are Valgrind tools that can automatically detect many memory management and threading bugs, and profile programs in detail. Valgrind can also be used to build new tools.

This package is known to build and work properly using an LFS-7.6 platform.

Package Information

- Download (HTTP): **http://valgrind.org/downloads/valgrind-3.10.0.tar.bz2**
- Download MD5 sum: 7c311a72a20388aceced1aa5573ce970
- Download size: 10.4 MB
- Estimated disk space required: 672 MB
- Estimated build time: 1.3 SBU and an additional 4.5 SBU for tests

Valgrind Dependencies

Optional

Boost-1.56.0, LLVM-3.5.0 (with Clang), GDB-7.8 (for tests), and **OpenMP**

Optional for regenerating the documentation

libxslt-1.1.28 and texlive-20140525

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/valgrind

Installation of Valgrind

Install Valgrind by running the following commands:

```
sed -i 's|/doc/valgrind||' docs/Makefile.in &&

./configure --prefix=/usr \
            --datadir=/usr/share/doc/valgrind-3.10.0 &&
make
```

To test the results, issue: `make regtest`.

If you wish to regenerate the documentation, run:

```
pushd docs         &&
make download-docs &&
popd
```

Now, as the `root` user:

```
make install
```

`sed s|/doc/valgrind|| ...` : This sed provides for installing the documentation in a versioned directory.

Contents

Installed Programs: callgrind_annotate, callgrind_control, cg_annotate, cg_diff, cg_merge, ms_print, valgrind, valgrind-di-server, valgrind-listener, and vgdb

Installed Library: vgpreload_core-amd64-linux.so, vgpreload_drd-amd64-linux.so, vgpreload_exp-dhat-amd64-linux.so, vgpreload_exp-sgcheck-amd64-linux.so, vgpreload_helgrind-amd64-linux.so, vgpreload_massif-amd64-linux.so, and vgpreload_memcheck-amd64-linux.so

Installed Directories: /usr/lib/valgrind, /usr/include/valgrind, and /usr/share/doc/valgrind-3.10.0

Short Descriptions

`valgrind`	is a program for debugging and profiling Linux executables.
`callgrind_annotate`	takes an output file produced by the Valgrind tool Callgrind and prints the information in an easy-to-read form.
`callgrind_control`	controls programs being run by the Valgrind tool Callgrind.
`cg_annotate`	is a post-processing tool for the Valgrind tool Cachegrind.
`cg_diff`	compares two Cachegrind output files.
`cg_merge`	merges multiple Cachegrind output files into one.
`ms_print`	takes an output file produced by the Valgrind tool Massif and prints the information in an easy-to-read form.
`valgrind-di-server`	is a server that reads debuginfo from objects stored on a different machine.
`valgrind-listener`	listens on a socket for Valgrind commentary.
`vgdb`	is an intermediary between Valgrind and GDB or a shell.

Last updated on 2014-09-13 22:25:33 -0700

yasm-1.3.0

Introduction to yasm

Yasm is a complete rewrite of the [NASM-2.11.05](#) 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-7.6 platform.

Package Information

- Download (HTTP): **http://www.tortall.net/projects/yasm/releases/yasm-1.3.0.tar.gz**
- Download MD5 sum: fc9e586751ff789b34b1f21d572d96af
- Download size: 1.5 MB
- Estimated disk space required: 27 MB (additional 12 MB for the tests)
- Estimated build time: 0.1 SBU (additional 0.1 SBU for the tests)

yasm Dependencies

Optional

[Python-2.7.8](#) or [Python-3.4.1](#), and **[Cython](#)**

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/yasm

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:

Command Explanations

`sed -i 's#) ytasm.*#)#' Makefile.in`: This sed prevents it compiling 2 programs (vsyasm and ytasm) that are only of use on Microsoft Windows.

Contents

Installed Program: yasm
Installed Library: libyasm.a
Installed Directory: /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.

Last updated on 2014-09-10 09:45:01 -0700

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.

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/OtherProgrammingTools

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 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,

rapid development.

- Project Home Page: http://caml.inria.fr/
- Download Location: http://caml.inria.fr/pub/distrib/

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

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 MacOS 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.

- 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://opendylan.org/download/index.html**

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 X Window System 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

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/$/usr/local/lib/felix/tarballs**

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 what ever 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 on 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/manual/html_node/Overview.html** 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 polymorphicly 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/**
- 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.

- 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://iolanguage.org**
- Download Location: **http://iobin.suspended-chord.info/**

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/humanities/research/research-projects/past-projects/joy-programming-language**

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/judo.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**

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://mathias.tripod.com/IavaHomepage.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://mercurylang.org/**
- Download Location: **http://mercurylang.org/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**
- Download Location: **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/About**
- Download Location: **http://nemerle.org/Downloads**

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

- 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**

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

- Project Home Page: **http://smarteiffel.loria.fr/**
- Download Location: **https://gforge.inria.fr/frs/?group_id=184**

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/**
- 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 ISOC99 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.

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)

BECL 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**
- Download Location: **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.

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/**
- Download Location: **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/**
- Download Location: **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://techbase.kde.org/Development/Languages**

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/**

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

Anujuta 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.html**

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/**

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://mozart.github.io/**
- Download Location: **https://github.com/mozart/mozart2#downloads**

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/**

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 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/**

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**

Last updated on 2013-12-14 15:44:45 -0800

Java

Last updated on 2013-07-16 13:07:29 -0700

Java-1.7.0.65

About Java

Java is different from most of the packages in LFS and BLFS. It is a programming language that works with files of byte codes to obtain instructions and executes then in a Java Virtual Machine (JVM). An introductory java program looks like:

```
public class HelloWorld
{
    public static void main(String[] args)
    {
        System.out.println("Hello, World");
    }
}
```

This program is saved as `HelloWorld.java`. The file name, *HelloWorld*, must match the class name. It is then converted into byte code with `javac HelloWorld.java`. The output file is `HelloWorld.class`. The program is executed with `java HelloWorld`. This creates a JVM and runs the code. The 'class' extension must not be specified.

Several class files can be combined into one file with the `jar` command. This is similar to the standard `tar` command. For instance, the command `jar cf myjar.jar *.class` will combine all class files in a directory into one jar file. These act as library files.

The JVM can search for and use classes in jar files automatically. It uses the `CLASSPATH` environment variable to search for jar files. This is a standard list of colon-separated directory names similar to the `PATH` environment variable.

Binary JDK Information

Creating a JVM from source requires a set of circular dependencies. The first thing that's needed is a set of programs called a Java Development Kit (JDK). This set of programs includes `java`, `javac`, `jar`, and several others. It also includes several base *jar* files.

To start, we set up a binary installation of the JDK created by the BLFS editors. It is installed in the `/opt` directory to allow for multiple installations, including a source based version.

Binary Package Information

- Binary download (x86): **http://anduin.linuxfromscratch.org/files/BLFS/OpenJDK-1.7.0.65/OpenJDK-1.7.0.65-i686-bin.tar.xz**
- Download MD5 sum: 0dffb64ec1f7bf53e0c51824e6b7ce3e
- Download size (binary): 165 MB
- Estimated disk space required: 503 MB

- Binary download (x86_64): **http://anduin.linuxfromscratch.org/files/BLFS/OpenJDK-1.7.0.65/OpenJDK-1.7.0.65-x86_64-bin.tar.xz**
- Download MD5 sum: 7da9576cdc154a819a7b6702b67d94b2
- Download size (binary): 142 MB
- Estimated disk space required: 399 MB

Java Binary Runtime Dependencies

alsa-lib-1.0.28, ATK-2.12.0, Cairo-1.12.16, Cups-1.7.5, gdk-pixbuf-2.30.8, giflib-5.1.0, GTK+-2.24.24, Little CMS-2.6, and Xorg Libraries

Installation of the Java BinaryJDK

Begin by extracting the appropriate binary tarball for your architecture and changing to the extracted directory. Install the binary OpenJDK with the following commands as the `root` user:

```
install -vdm755 /opt/OpenJDK-1.7.0.65-bin &&
mv -v * /opt/OpenJDK-1.7.0.65-bin         &&
chown -R root:root /opt/OpenJDK-1.7.0.65-bin
```

Configure the temporary OpenJDK installation by issuing the following commands (note that if you logout and login back before having definitely configured OpenJDK-1.7.0.65/IcedTea-2.5.2, you'll have to issue them again):

```
export CLASSPATH=.:/usr/share/java &&
export JAVA_HOME=/opt/OpenJDK-1.7.0.65-bin &&
export PATH="$PATH:/opt/OpenJDK-1.7.0.65-bin/bin"
```

You may also include those instructions into a file in the `/etc/profile.d` directory. Do not forget to logout and login back, or to source the profile file after modification.

The binary version is now installed. If you don't want to compile the sources, skip ahead to the Configuring OpenJDK section. Otherwise, continue to the apache-ant-1.9.4, JUnit-4.11, and OpenJDK-1.7.0.65/IcedTea-2.5.2 sections.

Last updated on 2014-09-18 22:41:15 -0700

apache-ant-1.9.4

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-7.6 platform.

Package Information

- Download (HTTP): **http://archive.apache.org/dist/ant/source/apache-ant-1.9.4-src.tar.bz2**
- Download MD5 sum: 7a7253ec047195d755c5318a4de8a3a4
- Download size: 3.6 MB
- Estimated disk space required: 108 MB
- Estimated build time: 0.3 SBU

Additional Downloads

- Required file: **http://anduin.linuxfromscratch.org/sources/other/junit-4.11.jar**
- Required file: **http://hamcrest.googlecode.com/files/hamcrest-1.3.tgz**

Apache Ant Dependencies

Required

A JDK ([Java Binary](#) or [OpenJDK-1.7.0.65/IcedTea-2.5.2](#)) and [GLib-2.40.0](#)

User Notes: ***http://wiki.linuxfromscratch.org/blfs/wiki/apache-ant***

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. Place any needed libraries in `lib/optional`.

Unpack and copy the junit and hamcrest jar files to the local directory tree.

```
tar -xvf ../hamcrest-1.3.tgz &&
cp -v ../junit-4.11.jar \
      hamcrest-1.3/hamcrest-core-1.3.jar lib/optional
```

If you wish to install the documentation, unpack it:

```
tar -xvf ../apache-ant-1.9.4-manual.tar.bz2
```

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-1.9.4 dist &&
ln -v -sfn ant-1.9.4 /opt/ant
```

> ### Note
>
> Make sure the JAVA_HOME environment variable is set for the `root` user.

Install the documentation as the `root` user:

```
install -m755 -d /opt/ant-1.9.4/docs &&
cp -Rv apache-ant-1.9.4/* /opt/ant-1.9.4/docs
```

Command Explanations

`cp -v ... lib/optional`: This command copies the JUnit and hamcrest jar files into the directory where Apache Ant will look for it.

`./build.sh -Ddist.dir=/opt/ant-1.9.4 dist`: This command does everything. It builds, tests, then installs the package into `/opt/ant-1.9.4`.

`ln -v -sfn ant-1.9.4 /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
```

Installed Programs: ant, antRun, antRun.pl, complete-ant-cmd.pl, runant.pl, and runant.py
Installed Libraries: ant*.jar
Installed Directories: /opt/ant-1.9.4

Short Descriptions

ant	is a Java based build tool used by many packages instead of the conventional `make` program.
antRun	is a support script used to start `ant` build scripts in a given directory.
antRun.pl	is a Perl script that provides similar functionality offered by the `antRun` script.
complete-ant-cmd.pl	is a Perl script that allows Bash to complete an `ant` command-line.
runant.pl	is a Perl wrapper script used to invoke `ant`.
runant.py	is a Python wrapper script used to invoke `ant`.
ant*.jar	files are the Apache Ant Java class libraries.

Last updated on 2014-09-18 22:41:15 -0700

JUnit-4.11

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-7.6 platform.

Package Information

- Download (HTTP): **https://launchpad.net/debian/+archive/primary/+files/junit4_4.11.orig.tar.gz**
- Download MD5 sum: b4d163832583dcec8bedb5427c795cc4
- Download size: 1.7 MB
- Estimated disk space required: 34 MB
- Estimated build time: 0.1 SBU

Additional Downloads

- Required file: **http://hamcrest.googlecode.com/files/hamcrest-1.3.tgz**

JUnit Dependencies

Required

apache-ant-1.9.4 and UnZip-6.0

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/junit

Installation of JUnit

Place the required hamcrest jar files where needed and build the package:

```
tar -xf ../hamcrest-1.3.tgz                            &&
cp -v hamcrest-1.3/hamcrest-core-1.3{,-sources}.jar lib/ &&
ant dist
```

Testing is automatically done as a part of the build step.

Install the files in the final location as the `root` user:

```
install -v -m755 -d /usr/share/{doc,java}/junit-4.11 &&
chown -R root:root .                                 &&

cp -v -R junit*/javadoc/*           /usr/share/doc/junit-4.11  &&
cp -v junit*/junit*.jar           /usr/share/java/junit-4.11 &&
cp -v hamcrest-1.3/hamcrest-core*.jar /usr/share/java/junit-4.11
```

```
export CLASSPATH=$CLASSPATH:/usr/share/java/junit-4.11
```

Contents

Installed Programs: None
Installed Libraies: hamcrest-core and junit jar files
Installed Directories:/usr/share/doc/junit-4.11 and /usr/share/java/junit-4.11

Short Descriptions

junit jar files   contains java classes to support the xUnit framework testing architecture.

Last updated on 2014-09-18 22:41:15 -0700

OpenJDK-1.7.0.65/IcedTea-2.5.2

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-7.6 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-1.5.1.

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-2.5.2.tar.xz**
  Download MD5 sum: 6c57b54ab8b7916425d567dbb478ad73
  Download Size: 1.9 MB

The following may be downladed separately or be done as a part of the make process. For convenience the BLFS editors have made the files available in an LFS website. The files are not distributed with versions, but extracted from the OpenJDK version control system at specified (tagged) points.

- Corba Source

Download Size: 1.0 MB

- Hotspot Source
  Download: **http://anduin.linuxfromscratch.org/files/BLFS/OpenJDK-1.7.0.65-2.5.2/hotspot.tar.bz2**
  Download MD5 sum: 026bb8ca9e764fe53b8a19f1ddad1479
  Download Size: 7.4 MB

- IcedTea Build Source
  Download: **http://anduin.linuxfromscratch.org/files/BLFS/OpenJDK-1.7.0.65-2.5.2/openjdk.tar.bz2**
  Download MD5 sum: f48d6f8b748f869a5624d2c44998d54c
  Download Size: 122 KB

- JAXP Source
  Download: **http://anduin.linuxfromscratch.org/files/BLFS/OpenJDK-1.7.0.65-2.5.2/jaxp.tar.bz2**
  Download MD5 sum: cbd3226b916fe9e6c7e9f1cd15e54d55
  Download Size: 2.6 MB

- JAXWS Source
  Download: **http://anduin.linuxfromscratch.org/files/BLFS/OpenJDK-1.7.0.65-2.5.2/jaxws.tar.bz2**
  Download MD5 sum: 84b921fc3e328eea770dc1a092e240dc
  Download Size: 1.9 MB

- Langtools Source
  Download: **http://anduin.linuxfromscratch.org/files/BLFS/OpenJDK-1.7.0.65-2.5.2/langtools.tar.bz2**
  Download MD5 sum: e104e60e44aba0a8bc60c48df1d859b9
  Download Size: 1.6 MB

- OpenJDK Source
  Download: **http://anduin.linuxfromscratch.org/files/BLFS/OpenJDK-1.7.0.65-2.5.2/jdk.tar.bz2**
  Download MD5 sum: b5a4703501bf4a6adeaa614e6d2345b3
  Download Size: 30.2 MB

- Estimated disk space required: 8-10 GB

- Estimated build time: 28-36 SBU (an additional 100 SBU for testsuite)

Additional Downloads

Required Patches

- **http://www.linuxfromscratch.org/patches/blfs/7.6/icedtea-2.5.2-add_cacerts-1.patch**

- **http://www.linuxfromscratch.org/patches/blfs/7.6/icedtea-2.5.2-fixed_paths-1.patch**

- **http://www.linuxfromscratch.org/patches/blfs/7.6/icedtea-2.5.2-fix_new_giflib-1.patch**

- **http://www.linuxfromscratch.org/patches/blfs/7.6/icedtea-2.5.2-fix_tests-1.patch**

Required JAR

- Rhino Java Script
  Download: **https://github.com/downloads/mozilla/rhino/rhino1_7R4.zip**
  Download MD5 sum: ad67a3dff135e3a70f0c3528a2d6edf2
  Download Size: 6.2 MB

Optional package (to obtain an icon for the `openjdk-7-policytool.desktop` file)

- **http://icedtea.classpath.org/download/source/icedtea-web-1.5.1.tar.gz**

OpenJDK Dependencies

Required Dependencies

An existing binary (Java-1.7.0.65 or an earlier built version of this package), alsa-lib-1.0.28, apache-ant-1.9.4, Certificate Authority Certificates, cpio-2.11, Cups-1.7.5, GTK+-2.24.24, giflib-5.1.0, UnZip-6.0, Wget-1.15, Which-2.20, Xorg Libraries, and Zip-3.0

Recommended

JUnit-4.11 and NSS-3.17

Optional

libxslt-1.1.28, lsb_release-1.4, Mercurial-3.1.1, MIT Kerberos V5-1.12.2, and Xorg-Server-1.16.0 (for the tests)

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/openjdk

Installation of OpenJDK

> **Note**
>
> The source build of OpenJDK requires apache-ant-1.9.4. 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_7R4.zip              &&
install -v -d -m755 /usr/share/java &&
install -v -m755 rhino1_7R4/*.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.bz2     . &&
cp -v ../hotspot.tar.bz2   . &&
cp -v ../jaxp.tar.bz2      . &&
cp -v ../jaxws.tar.bz2     . &&
cp -v ../jdk.tar.bz2       . &&
cp -v ../langtools.tar.bz2 . &&
cp -v ../openjdk.tar.bz2   .
```

Apply a patch to generate a valid cacerts file using the system CA certificates:

```
patch -Np1 -i ../icedtea-2.5.2-add_cacerts-1.patch
```

Apply a patch to replace fixed paths with ones appropriate for BLFS:

```
patch -Np1 -i ../icedtea-2.5.2-fixed_paths-1.patch
```

Apply a patch to adapt the code to the new giflib API:

```
patch -Np1 -i ../icedtea-2.5.2-fix_new_giflib-1.patch
```

Apply a patch to exclude known broken tests from the test suite:

```
patch -Np1 -i ../icedtea-2.5.2-fix_tests-1.patch
```

> **Note**
>
> Before proceeding, you should ensure that your environment is properly set for building OpenJDK. First, review the content of the ANT_HOME variable. Second, the PATH variable should contain the paths to the `java` and `ant` executables. Last, the CLASSPATH variable should be set as explained on the Java-1.7.0.65 and JUnit-4.11 pages.

Configure and build the package with the following commands (--with-pkgversion and --with-version-suffix values can be modified to fit user preferences):

```
unset JAVA_HOME                                       &&
./autogen.sh                                          &&
./configure --with-jdk-home=/opt/OpenJDK-1.7.0.65-bin \
            --with-version-suffix=BLFS                \
            --enable-nss                              \
            --disable-system-kerberos                 \
            --with-parallel-jobs                      &&
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

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.

```
export DISPLAY=:20     &&
Xvfb :20 -screen 0 1x1x24 -ac&
echo $!>  Xvfb.pid     &&
make -k jtregcheck     &&
kill -9 `cat Xvfb.pid` &&
unset DISPLAY          &&
rm -f Xvfb.pid
```

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-1.7.0.65 &&
chown -R root:root /opt/OpenJDK-1.7.0.65
```

If desired, you may install a .desktop file corresponding to an entry in a desktop menu for `policytool`. First, you need to obtain an icon from IcedTea-Web-1.5.1:

```
tar -xf ../icedtea-web-1.5.1.tar.gz  \
        icedtea-web-1.5.1/javaws.png \
        --strip-components=1
```

Now, as *root* user:

```
mkdir -pv /usr/share/applications &&

cat > /usr/share/applications/openjdk-7-policytool.desktop << "EOF" &&
[Desktop Entry]
Name=OpenJDK Java 7 Policy Tool
Name[pt_BR]=OpenJDK Java 7 - Ferramenta de Política
Comment=OpenJDK Java 7 Policy Tool
Comment[pt_BR]=OpenJDK Java 7 - Ferramenta de Política
Exec=/opt/jdk/bin/policytool
Terminal=false
Type=Application
Icon=javaws
Categories=Settings;
EOF

install -v -Dm0644 javaws.png /usr/share/pixmaps/javaws.png
```

The choice of pt_BR is just an example. You can add any translation by adding lines corresponding to your locale, e.g. for fr_FR, "Name[fr_FR]=" and "Comment[fr_FR]=" with the appropriate text as values.

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.

`--with-pkgversion`: This switch can be used to modify the version string in addition to "IcedTea".

`--with-version-suffix`: This switch appends the given text to the JDK version string.

`--enable-nss`: Enable inclusion of NSS security provider.

`--disable-system-kerberos`: Remove this switch, if MIT Kerberos V5-1.12.2 is installed.

`--with-parallel-jobs`: Allows to set the number of jobs for `make` equal to the number of processors plus one. Note that the default is 2 if this option is not specified. You have to explicitly set `--with-parallel-jobs=1` to disable parallel jobs. The SBU given above are with parallel jobs disabled.

`chmod -v 0644 ...sa-jdi.jar`: Fix permissions in a generated file so all users can access it.

Configuring OpenJDK

Configuration Information

default. For example if you decide to use the precompiled OpenJDK, do the following as the root user:

```
ln -v -nsf OpenJDK-1.7.0.65-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

# Set ANT_HOME directory
ANT_HOME=/opt/ant

# Adjust PATH
pathappend $JAVA_HOME/bin PATH
pathappend $ANT_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 ANT_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/profile.d/extrapaths.sh << "EOF" &&
# Begin Java addition
pathappend /opt/jdk/man        MANPATH
# End Java addition
EOF


cat >> /etc/man_db.conf << "EOF" &&
# Begin Java addition
MANDATORY_MANPATH      /opt/jdk/man
MANPATH_MAP            /opt/jdk/bin     /opt/jdk/man
MANDB_MAP              /opt/jdk/man     /var/cache/man/jdk
# End Java addition
EOF

mandb -c /opt/jdk/man
```

To test if the man pages are correctly installed, issue `source /etc/profile` and `man java` to display the respective man page.

Install or update the JRE Certificate Authority Certificates (cacerts) file

Use the following procedure to check if the cacerts file was successfully installed during the OpenJDK build. Also, if the Certificate Authority Certificates have been updated, the following instructions will generate a new JRE cacerts file. First, check if the cacerts have been successfully installed:

```
cd /opt/jdk
bin/keytool -list -keystore jre/lib/security/cacerts
```

At the prompt "Enter keystore password:", press the "Enter" key if there is no keystore password defined. If the

need to manually install them. First, generate the mkcacerts script as the root user.

```
cat > /opt/jdk/bin/mkcacerts << "EOF"
#!/bin/sh
# Simple script to extract x509 certificates and create a JRE cacerts file.

function get_args()
    {
        if test -z "${1}" ; then
            showhelp
            exit 1
        fi

        while test -n "${1}" ; do
            case "${1}" in
                -f | --cafile)
                    check_arg $1 $2
                    CAFILE="${2}"
                    shift 2
                    ;;
                -d | --cadir)
                    check_arg $1 $2
                    CADIR="${2}"
                    shift 2
                    ;;
                -o | --outfile)
                    check_arg $1 $2
                    OUTFILE="${2}"
                    shift 2
                    ;;
                -k | --keytool)
                    check_arg $1 $2
                    KEYTOOL="${2}"
                    shift 2
                    ;;
                -s | --openssl)
                    check_arg $1 $2
                    OPENSSL="${2}"
                    shift 2
                    ;;
                -h | --help)
                    showhelp
                    exit 0
                    ;;
                *)
                    showhelp
                    exit 1
                    ;;
            esac
        done
    }

function check_arg()
    {
        echo "${2}" | grep -v "^-" > /dev/null
        if [ -z "$?" -o ! -n "$2" ]; then
            echo "Error:  $1 requires a valid argument."
            exit 1
        fi
    }

# The date binary is not reliable on 32bit systems for dates after 2038
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";;
```

```
                Oct) m="10";;
                Nov) m="11";;
                Dec) m="12";;
        esac

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

function showhelp()
    {
        echo "`basename ${0}` creates a valid cacerts file for use with IcedTea."
        echo ""
        echo "         -f  --cafile     The path to a file containing PEM"
        echo "                          formated CA certificates. May not be"
        echo "                          used with -d/--cadir."
        echo ""
        echo "         -d  --cadir      The path to a directory of PEM formatted"
        echo "                          CA certificates. May not be used with"
        echo "                          -f/--cafile."
        echo ""
        echo "         -o  --outfile    The path to the output file."
        echo ""
        echo "         -k  --keytool    The path to the java keytool utility."
        echo ""
        echo "         -s  --openssl    The path to the openssl utility."
        echo ""
        echo "         -h  --help       Show this help message and exit."
        echo ""
        echo ""
    }

# Initialize empty variables so that the shell does not pollute the script
CAFILE=""
CADIR=""
OUTFILE=""
OPENSSL=""
KEYTOOL=""
certdate=""
date=""
today=$( date +%Y%m%d )

# Process command line arguments
get_args ${@}

# Handle common errors
if test "${CAFILE}x" == "x" -a "${CADIR}x" == "x" ; then
    echo "ERROR!  You must provide an x509 certificate store!"
    echo "\'$(basename ${0}) --help\' for more info."
    echo ""
    exit 1
fi

if test "${CAFILE}x" != "x" -a "${CADIR}x" != "x" ; then
    echo "ERROR!  You cannot provide two x509 certificate stores!"
    echo "\'$(basename ${0}) --help\' for more info."
    echo ""
    exit 1
fi

if test "${KEYTOOL}x" == "x" ; then
    echo "ERROR!  You must provide a valid keytool program!"
    echo "\'$(basename ${0}) --help\' for more info."
    echo ""
    exit 1
fi

if test "${OPENSSL}x" == "x" ; then
    echo "ERROR!  You must provide a valid path to openssl!"
    echo "\'$(basename ${0}) --help\' for more info."
    echo ""
    exit 1
fi

if test "${OUTFILE}x" == "x" ; then
    echo "ERROR!  You must provide a valid output file!"
    echo "\'$(basename ${0}) --help\' for more info."
    echo ""
    exit 1
fi
```

```
    # If using a CAFILE, split it into individual files in a temp directory
    if test "${CAFILE}x" != "x" ; then
        TEMPDIR=`mktemp -d`
        CADIR="${TEMPDIR}"

        # Get a list of staring lines for each cert
        CERTLIST=`grep -n "^-----BEGIN" "${CAFILE}" | cut -d ":" -f 1`

        # Get a list of ending lines for each cert
        ENDCERTLIST=`grep -n "^-----END" "${CAFILE}" | cut -d ":" -f 1`

        # Start a loop
        for certbegin in `echo "${CERTLIST}"` ; do
            for certend in `echo "${ENDCERTLIST}"` ; do
                if test "${certend}" -gt "${certbegin}"; then
                    break
                fi
            done
            sed -n "${certbegin},${certend}p" "${CAFILE}" > "${CADIR}/${certbegin}.pem"
            keyhash=`${OPENSSL} x509 -noout -in "${CADIR}/${certbegin}.pem" -hash`
            echo "Generated PEM file with hash:  ${keyhash}."
        done
    fi

    # Write the output file
    for cert in `find "${CADIR}" -type f -name "*.pem" -o -name "*.crt"`
    do

        # Make sure the certificate date is valid...
        date=$( ${OPENSSL} x509 -enddate -in "${cert}" -noout | sed 's/^notAfter=//' )
        mydate "${date}"
        if test "${certdate}" -lt "${today}" ; then
            echo "${cert} expired on ${certdate}! Skipping..."
            unset date certdate
            continue
        fi
        unset date certdate
        ls "${cert}"
        tempfile=`mktemp`
        certbegin=`grep -n "^-----BEGIN" "${cert}" | cut -d ":" -f 1`
        certend=`grep -n "^-----END" "${cert}" | cut -d ":" -f 1`
        sed -n "${certbegin},${certend}p" "${cert}" > "${tempfile}"
        echo yes | env LC_ALL=C "${KEYTOOL}" -import                 \
                                            -alias `basename "${cert}"` \
                                            -keystore "${OUTFILE}"       \
                                            -storepass 'changeit'        \
                                            -file "${tempfile}"
        rm "${tempfile}"
    done

    if test "${TEMPDIR}x" != "x" ; then
        rm -rf "${TEMPDIR}"
    fi
    exit 0
EOF

chmod -c 0755 /opt/jdk/bin/mkcacerts
```

If you need to generate a `cacerts` file, and there is already one in `/opt/jdk/jre/lib/security`, it is better to make a backup. Then, you can create a new one, as the *root* user:

```
/opt/jdk/bin/mkcacerts             \
      -d "/etc/ssl/certs/"         \
      -k "/opt/jdk/bin/keytool" \
      -s "/usr/bin/openssl"        \
      -o "/opt/jdk/jre/lib/security/cacerts"
```

Contents

java, jconsole, jdb, jhat, jinfo, jmap, jps, jrunscript, jsadebugd, jstack, jstat, jstatd, keytool, mkcacerts, native2ascii, orbd, pack200, policytool, rmic, rmid, rmiregistry, schemagen, serialver, servertool, tnameserv, unpack200, wsgen, wsimport, and xjc

Installed Libraries: /opt/OpenJDK-1.7.0.65/lib/*, and /opt/OpenJDK-1.7.0.65/jre/lib/*
Installed Directory: /opt/OpenJDK-1.7.0.65

Short Descriptions

`appletviewer`	allows you to run applets outside of a web browser.
`apt`	is an annotation processing tool.
`extcheck`	checks a specified jar file for title and version conflicts with any extensions installed in the OpenJDK software.
`idlj`	generates Java bindings from a given IDL file.
`jar`	combines multiple files into a single jar archive.
`jarsigner`	signs jar files and verifies the signatures and integrity of a signed jar file.
`java`	launches a Java application by starting a Java runtime environment, loading a specified class and invoking its main method.
`javac`	reads class and interface definitions, written in the Java programming language, and compiles them into bytecode class files.
`javadoc`	parses the declarations and documentation comments in a set of Java source files and produces a corresponding set of HTML pages describing the classes, interfaces,constructors, methods, and fields.
`javah`	generates C header and source files that are needed to implement native methods.
`javap`	disassembles a Java class file.
`java-rmi.cgi`	is the Java RMI client.
`jcmd`	is a utility to send diagnostic command requests to a running Java Virtual Machine.
`jconsole`	is a graphical console tool to monitor and manage both local and remote Java applications and virtual machines.
`jdb`	is a simple command-line debugger for Java classes.
`jhat`	parses a java heap dump file and allows viewing in a web browser.
`jinfo`	prints Java configuration information for a given Java process, core file, or a remote debug server.
`jmap`	prints shared object memory maps or heap memory details of a given process, core file, or a remote debug server.
`jps`	lists the instrumented JVMs on the target system.
`jrunscript`	is a command line script shell.
`jsadebugd`	attaches to a Java process or core file and acts as a debug server.
`jstack`	prints Java stack traces of Java threads for a given Java process, core file, or a remote debug server.
`jstat`	displays performance statistics for an instrumented JVM.
`jstatd`	is an RMI server application that monitors for the creation and termination of instrumented JVMs.
`keytool`	is a key and certificate management utility.
`mkcacerts`	is a simple script to extract x509 certificates and create a JRE cacerts file using `keytool`.
`native2ascii`	converts files that contain non-supported character encoding into files containing Latin-1 or Unicode-encoded characters.
`orbd`	is used to enable clients to transparently locate and invoke persistent objects on servers in the CORBA environment.
`pack200`	is a Java application that transforms a jar file into a compressed pack200 file using the Java gzip compressor.
`policytool`	creates and manages a policy file graphically.
`rmic`	generates stub and skeleton class files for remote objects from the names of compiled Java classes that contain remote object implementations.
`rmid`	starts the activation system daemon.
`rmiregistry`	creates and starts a remote object registry on the specified port on the current host.
`schemagen`	is a Java XML binding schema generator.
`serialver`	returns the serialVersionUID for one or more classes in a form suitable for copying into an evolving class.
`servertool`	provides an ease-of-use interface for application programmers to register, unregister, startup and shutdown a server.
`tnameserv`	starts the Java IDL name server.

wsgen	generates JAX-WS portable artifacts used in JAX-WS web services.
wsimport	generates JAX-WS portable artifacts.
xjc	is a Java XML binding compiler.

Last updated on 2014-09-21 01:03:52 -0700

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-6.4.3

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-7.6 platform.

Package Information

- Download (HTTP): **http://roy.marples.name/downloads/dhcpcd/dhcpcd-6.4.3.tar.bz2**
- Download MD5 sum: b22005c131e7108ecf598b6a4ac091eb
- Download size: 148 KB
- Estimated disk space required: 2.2 MB
- Estimated build time: less than 0.1 SBU

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/dhcpcd

Installation of dhcpcd

Install dhcpcd by running the following commands:

```
./configure --libexecdir=/lib/dhcpcd \
            --dbdir=/var/tmp           &&
make
```

This package does not come with a test suite.

Now, as the *root* user:

```
make install
```

Command Explanations

--libexecdir=/lib/dhcpcd: The default /libexec is not FHS-compliant. Since this directory may need to be available early in the boot, /usr/libexec cannot be used either.

--dbdir=/var/tmp: The default /var/lib is not FHS-compliant

--with-hook=...: You can optionally install more hooks, for example to install some configuration files such as ntp.conf. The set of hooks is in the dhcpcd-hooks directory in the build tree.

Config Files

`/etc/dhcpcd.conf`

General Configuration Information

To configure `dhcpcd`, you need to first install the network service script, `/lib/services/dhcpcd` included in the [blfs-bootscripts-20140919](#) 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.

Configuration Information: fixed ip

Although not usual, it is possible that you need to configure dhcpcd to use a fixed ip. Here, we give an example. As the *root* user create the `/etc/sysconfig/ifconfig.eth0` configuration file using the following commands. Adjust appropriately for additional interfaces and for the actual ip and router you need:

```
cat > /etc/sysconfig/ifconfig.eth0 << "EOF"
ONBOOT="yes"
IFACE="eth0"
SERVICE="dhcpcd"
DHCP_START="-b -q -S ip_address=192.168.0.10/24 -S routers=192.168.0.1"
DHCP_STOP="-k"
EOF
```

You can either use DNS servers in `/etc/resolv.conf` from another system, your preferred servers, or just the example `/etc/resolv.conf.head` file below as is:

```
cat > /etc/resolv.conf.head << "EOF"
# OpenDNS servers
nameserver 208.67.222.222
nameserver 208.67.220.220
EOF
```

Contents

Installed Program: dhcpcd
Installed Library: /lib/dhcpcd/dev/udev.so
Installed Directory: /lib/dhcpcd

Short Descriptions

dhcpcd is an implementation of the DHCP client specified in RFC2131.

DHCP-4.3.1

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-7.6 platform.

Package Information

- Download (FTP): **ftp://ftp.isc.org/isc/dhcp/4.3.1/dhcp-4.3.1.tar.gz**
- Download MD5 sum: b3a42ece3c7f2cd2e74a3e12ca881d20
- Download size: 8.6 MB
- Estimated disk space required: 109 MB
- Estimated build time: 0.4 SBU

Additional Downloads

- Required patch: **http://www.linuxfromscratch.org/patches/blfs/7.6/dhcp-4.3.1-client_script-1.patch**
- Optional patch: **http://www.linuxfromscratch.org/patches/blfs/7.6/dhcp-4.3.1-missing_ipv6-1.patch**

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/dhcp

Kernel Configuration

You must have Packet Socket support (Networking Support ⇒ Networking Options ⇒ Packet Socket) compiled into the kernel. If you do not have IPv6 support (Networking Support ⇒ Networking Options ⇒ 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-4.3.1-missing_ipv6-1.patch
```

> **Note**
>
> Be careful with the instructions below. The single and double quotes are important beecause the defined variables are used verbatim in the code.

Install ISC DHCP by running the following commands:

```
patch -Np1 -i ../dhcp-4.3.1-client_script-1.patch &&
CFLAGS="-D_PATH_DHCLIENT_SCRIPT='\"/sbin/dhclient-script\"'         \
        -D_PATH_DHCPD_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-cli6-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
```

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-20140919](#) 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"
```

```
        # 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 dhcpd.conf(5)

# Use this to enble / 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 dhcpd.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/dhcpd` init script included in the blfs-bootscripts-20140919 package:

```
make install-dhcpd
```

You will need to edit the `/etc/sysconfig/dhcpd` in order to set the interface on which **dhcpd** will serve the DHCP requests.

Contents

Installed Programs: dhclient, dhclient-script, dhcpd, dhcrelay and omshell
Installed Libraries: libdhcpctl.a, libdst.a and libomapi.a
Installed Directories:/etc/dhcp, /usr/include/dhcpctl, /usr/include/isc-dhcp, /usr/include/omapip, /var/lib/dhclient and /var/lib/dhcpd

Short Descriptions

`dhclient`	is the implementation of the DHCP client.
`dhclient-script`	is used by dhclient to (re)configure interfaces. It can make extra changes by invoking custom dhclient-{entry,exit}-hooks.
`dhcpd`	implements Dynamic Host Configuration Protocol (DHCP) and Internet Bootstrap Protocol (BOOTP) requests for network addresses.
`dhcrelay`	provides a means to accept DHCP and BOOTP requests on a subnet without a DHCP server and relay them to a DHCP server on another subnet.
`omshell`	provides an interactive way to connect to, query and possibly change the ISC DHCP Server's state via OMAPI, the Object Management API.

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-7.6 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/7.6/bridge-utils-1.5-linux_3.8_fix-1.patch**

bridge-utils Dependencies

Optional (to run tests)

Net-tools-CVS_20101030

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/bridge

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 [CONFIG_BRIDGE]
```

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-20140919 package.

```
make install-service-bridge
```

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

Installed Program: brctl
Installed Libraries: None
Installed Directories: None

Short Descriptions

brctl is a program used to set up, maintain, and inspect the ethernet bridge configuration in the linux kernel.

Last updated on 2014-09-20 19:22:09 -0700

cifs-utils-6.4

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-7.6 platform.

Package Information

- Download (HTTP): **http://ftp.samba.org/pub/linux-cifs/cifs-utils/cifs-utils-6.4.tar.bz2**
- Download (FTP): **ftp://ftp.samba.org/pub/linux-cifs/cifs-utils/cifs-utils-6.4.tar.bz2**
- Download MD5 sum: b7d75b67fd3987952896d27256c7293d
- Download size: 384 KB
- Estimated disk space required: 3.1 MB
- Estimated build time: less than 0.1 SBU

cifs-utils Dependencies

Optional

Kernel Configuration

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

```
File systems  --->
  Network File Systems  --->
    CIFS support (advanced network filesystem, SMBFS successor): Y or M [CONFIG_CIFS]
```

Installation of cifs-utils

Install cifs-utils by running the following commands:

```
./configure --prefix=/usr \
            --disable-pam \
            --disable-systemd &&
make
```

This package does not come with a test suite.

Now, as the *root* user:

```
make install
```

Command Explanations

--disable-pam: Do not build PAM support. Remove it and use `--with-pamdir` (see below), if Linux-PAM-1.1.8 is installed and you wish PAM support.

--disable-systemd: Disable systemd specific behavior for `mount.cifs`. Remove it for systems running with systemd.

`--with-pamdir=/lib/security`: Install the PAM module in `/lib/security`.

Contents

Installed Programs: getcifsacl, mount.cifs and setcifsacl; optional: cifs.idmap, cifs.upcall and cifscreds
Installed Library: /usr/lib/cifs-utils/idmapwb.so and optionally PAM module /lib/security/pam_cifscreds.so
Installed Directory: /usr/lib/cifs-utils

Short Descriptions

`cifs.idmap`	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.
`cifs.upcall`	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.
`cifscreds`	is a tool for managing credentials (username and password) for the purpose of establishing sessions in multiuser mounts.
`getcifsacl`	is a userspace helper to display an ACL in a security descriptor for Common Internet File System (CIFS).
`mount.cifs`	mounts a Linux CIFS filesystem. It is usually invoked indirectly by the mount(8) command when using the "-t cifs" option.
`setcifsacl`	is intended to alter an ACL of a security descriptor for a file system object.

Last updated on 2014-09-20 19:22:09 -0700

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-7.6 platform.

- 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

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/ncftp

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

Installed Programs: ncftp, ncftpbatch, ncftpbookmarks, ncftpget, ncftpls, ncftpput, and ncftpspooler

Short Descriptions

ncftp	is a browser program for File Transfer Protocol.
ncftpbatch	is an individual batch FTP job processor.
ncftpbookmarks	is the NcFTP Bookmark Editor (NCurses -based).
ncftpget	is an internet file transfer program for scripts used to retrieve files.
ncftpls	is an internet file transfer program for scripts used to list files.
ncftpput	is an internet file transfer program for scripts used to transfer files.
ncftpspooler	is a global batch FTP job processor daemon.

Last updated on 2014-09-20 19:22:09 -0700

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-7.6 platform.

Package Information

- Download (HTTP): **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**
- Download MD5 sum: 6be14ed473cacdd68edeaa9605adc469
- Download size: 222 KB
- Estimated disk space required: 7.0 MB
- Estimated build time: less than 0.1 SBU

Additional Downloads

- Required patch: **http://www.linuxfromscratch.org/patches/blfs/7.6/net-tools-CVS_20101030-remove_dups-1.patch**

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/net-tools

Installation of Net-tools

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'.

The patch below cleans up the installation so that it does not overwrite the ifconfig and hostname programs that were installed in LFS.

Install Net-tools by running the following commands:

```
patch -Np1 -i ../net-tools-CVS_20101030-remove_dups-1.patch &&

yes "" | make config &&
make
```

Now, as the *root* user:

```
make update
```

Command Explanations

`yes "" | make config`: Piping `yes` to `make config` skips the interactive configuration and accepts the defaults.

Contents

Installed Programs: arp, ipmaddr, iptunnel, mii-tool, nameif, netstat, plipconfig, rarp, route, and slattach
Installed Libraries: None
Installed Directories: None

Short Descriptions

arp	is used to manipulate the kernel's ARP cache, usually to add or delete an entry, or to dump the entire cache.
ipmaddr	adds, deletes and shows an interface's multicast addresses.
iptunnel	adds, changes, deletes and shows an interface's tunnels.
mii-tool	checks or sets the status of a network interface's Media Independent Interface (MII) unit.
nameif	names network interfaces based on MAC addresses.
netstat	is used to report network connections, routing tables, and interface statistics.
plipconfig	is used to fine tune the PLIP device parameters, to improve its performance.
rarp	is used to manipulate the kernel's RARP table.
route	is used to manipulate the IP routing table.
slattach	attaches a network interface to a serial line. This allows you to use normal terminal lines for point-to-point links to other computers.

Last updated on 2014-09-19 13:13:19 -0700

NFS-Utils-1.3.0

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-7.6 platform.

Package Information

- Download (HTTP): **http://downloads.sourceforge.net/nfs/nfs-utils-1.3.0.tar.bz2**
- Download MD5 sum: 3ac3726eda563946d1f44ac3e5b61d56
- Download size: 763 KB
- Estimated disk space required: 16 MB
- Estimated build time: 0.2 SBU

Additional Download

- Required patch: **http://www.linuxfromscratch.org/patches/blfs/7.6/nfs-utils-1.3.0-gcc_4_9-1.patch**

NFS Utilities Dependencies

Required

libtirpc-0.2.5

Optional

libevent-2.0.21, SQLite-3.8.6 and **libnfsidmap** (for NFSv4 support), MIT Kerberos V5-1.12.2 or **libgssapi**, and **librpcsecgss** (for GSS and RPC security support) and libcap-2.24 with PAM

Required (runtime)

Kernel Configuration

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

```
File systems  --->
  Network File Systems  --->
    NFS client support: Y or M
    NFS server support: Y or M
```

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:

```
patch -Np1 -i ../nfs-utils-1.3.0-gcc_4_9-1.patch &&
./configure --prefix=/usr          \
            --sysconfdir=/etc      \
            --without-tcp-wrappers \
            --disable-nfsv4        \
            --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.

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

Now, as the *root* user:

```
make install
```

Command Explanations

--without-tcp-wrappers: This option is needed because TCP Wrappers is not in BLFS.

--disable-nfsv4: Disables support for NFS version 4.

--disable-gss: Disables support for RPCSEC GSS (RPC Security).

Configuring NFS Utilities

Server Configuration

`/etc/exports` contains the exported directories on NFS servers. Refer to the `exports.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

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 0 0
<server-name>:/usr   /usr  nfs   ro,_netdev 0 0
```

The options which can be used are specified in `man 5 nfs`. If both the client and server are running recent versions of linux, most of the options will be negotiated. You can specify either `rw` or `ro`, `_netdev` if the filesystem is to be automatically mounted at boot, or `noauto` (and perhaps `user`) for other filesystems.

If the fileserver is not running a recent version of linux, you may need to specifiy other options.

If you are using systemd, you may need to enable autofs v4 in your kernel, and add the option `comment=systemd.automount`. Some machines need this, because systemd tries to mount the external fs's before the network is up, others do not need it. An alternative is for *root* to run `mount -a`.

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-20140919](#) package to start the client services at boot.

```
make install-nfs-client
```

To automatically mount `nfs` filesystems, clients will also need to install the `netfs` bootscript as described in [Configuring for Network Filesystems](#).

Contents

Installed Programs: exportfs, mountstats, mount.nfs, mount.nfs4 (link to mount.nfs), nfsiostat, nfsstat, osd_login, 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)

Installed Libraries: None

Installed Directories: /var/lib/nfs

Short Descriptions

`exportfs`	maintains a list of NFS exported file systems.
`mountstats`	displays NFS client per-mount statistics.
`mount.nfs`	Used to mount a network share using NFS
`mount.nfs4`	Used to mount a network share using NFSv4
`nfsiostat`	Report input/output statistics for network filesystems.

`rpc.mountd`	implements the NFS mount protocol on an NFS server.
`rpc.nfsd`	implements the user level part of the NFS service on the server.
`rpc.statd`	is used by the NFS file locking service. Run on both sides, client as well as server, when you want file locking enabled.
`rpcdebug`	sets or clears the kernel's NFS client and server debug flags.
`showmount`	displays mount information for an NFS server.
`sm-notify`	is used to send Network Status Monitor reboot messages.
`start-statd`	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.
`umount.nfs`	Used to unmount a network share using NFS
`umount.nfs4`	Used to unmount a network share using NFSv4

Last updated on 2014-09-09 14:11:38 -0700

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-20140919](#) package.

```
make install-netfs
```

Last updated on 2011-11-03 16:05:47 -0700

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-7.6 platform.

Package Information

- Download (HTTP): **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

Optional

[libcap-2.24 with PAM](#), [OpenSSL-1.0.1i](#), and **[libedit](#)**

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/ntp

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:

```
            --sysconfdir=/etc     \
            --enable-linuxcaps    \
            --with-binsubdir=sbin \
            --with-lineeditlibs=readline &&
    make
```

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

Now, as the *root* user:

```
make install &&
install -v -o ntp -g ntp -d /var/lib/ntp &&
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.

--enable-linuxcaps: ntpd is run as user ntp, so use Linux capabilities for non-root clock control.

--with-lineeditlibs=readline: This option enables Readline support for `ntpdc` and `ntpq` programs. If omitted, libedit will be used if installed, otherwise no readline capabilites will be compiled.

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/lib/ntp/ntp.drift
pidfile   /var/run/ntpd.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-20140919 package.

```
make install-ntpd
```

If you prefer to run `ntpd` periodically, add the following command to *root*'s crontab:

```
ntpd -q
```

Execute the following command if you would like to set the hardware clock to the current system time at shutdown and reboot:

The other way around is already set up by LFS.

Contents

Installed Programs: ntp-keygen, ntp-wait, ntpd, ntpdate, ntpdc, ntpq, ntptime, ntptrace, sntp and tickadj
Installed Libraries: None
Installed Directory: /usr/share/doc/ntp-4.2.6p5

Short Descriptions

ntp-keygen	generates cryptographic data files used by the NTPv4 authentication and identification schemes.
ntp-wait	is useful at boot time, to delay the boot sequence until `ntpd` has set the time.
ntpd	is a ntp daemon that runs in the background and keeps the date and time synchronized based on response from configured ntp servers. It also functions as a ntp server.
ntpdate	is a client program that sets the date and time based on the response from an ntp server. This command is deprecated.
ntpdc	is used to query the ntp daemon about its current state and to request changes in that state.
ntpq	is an utility program used to monitor `ntpd` operations and determine performance.
ntptime	reads and displays time-related kernel variables.
ntptrace	traces a chain of ntp servers back to the primary source.
sntp	is a Simple Network Time Protocol (SNTP) client.
tickadj	reads, and optionally modifies, several timekeeping-related variables in older kernels that do not have support for precision timekeeping.

Last updated on 2014-09-09 14:11:38 -0700

rpcbind-0.2.1

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-7.6 platform.

Package Information

- Download (HTTP): **http://downloads.sourceforge.net/rpcbind/rpcbind-0.2.1.tar.bz2**
- Download MD5 sum: 0a5f9c2142af814c55d957aaab3bcc68
- Download size: 109 KB
- Estimated disk space required: 1.9 MB
- Estimated build time: less than 0.1 SBU

rpcbind Dependencies

Required

libtirpc-0.2.5

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/rpcbind

Installation of rpcbind

In order to get rpcbind to work properly, first fix the package to use correct service name:

```
sed -i "/servname/s:rpcbind:sunrpc:" src/rpcbind.c &&
sed -i "/error = getaddrinfo/s:rpcbind:sunrpc:" src/rpcinfo.c
```

Install rpcbind by running the following commands:

```
./configure --prefix=/usr --bindir=/sbin --with-rpcuser=root &&
make
```

Now, as the *root* user:

```
make install
```

Command Explanations

--with-rpcuser=root: This works around an error in the configure script.

Configuring rpcbind

Boot Script

Install the `/etc/rc.d/init.d/rpcbind` init script included in the [blfs-bootscripts-20140919](#) package.

```
make install-rpcbind
```

Contents

Installed Program: rpcbind and rpcinfo
Installed Libraries: None
Installed Directories: 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.

Last updated on 2014-09-09 14:11:38 -0700

rsync-3.1.1

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-7.6 platform.

Package Information

- Download (HTTP): **http://samba.org/ftp/rsync/src/rsync-3.1.1.tar.gz**
- Download (FTP): **ftp://ftp.samba.org/pub/rsync/src/rsync-3.1.1.tar.gz**
- Download MD5 sum: 43bd6676f0b404326eee2d63be3cdcfe
- Download size: 869 KB
- Estimated disk space required: 9.0 MB
- Estimated build time: 0.3 SBU

rsync Dependencies

Recommended

[popt-1.16](#)

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/rsync

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:

```
make
```

If you have Doxygen-1.8.8 installed and wish to build HTML API documentation, issue `doxygen`.

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-3.1.1/api &&
install -v -m644 dox/html/*  /usr/share/doc/rsync-3.1.1/api
```

Command Explanations

--without-included-zlib: This switch enables compilation with system-installed zlib library.

Configuring rsync

Config Files

`/etc/rsyncd.conf`

Configuration Information

For client access to remote files, you may need to install the OpenSSH-6.6p1 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-20140919 package.

```
make install-rsyncd
```

Contents

Installed Program: rsync
Installed Libraries: None
Installed Directories: Optionally, /usr/share/doc/rsync-3.1.1

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

Samba-4.1.11

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 Domain Controller replacement, a file/print server acting as a member of a Windows Active Directory domain and a NetBIOS (rfc1001/1002) nameserver (which among other things provides LAN browsing support).

This package is known to build and work properly using an LFS-7.6 platform.

Package Information

- Download (HTTP): **http://ftp.samba.org/pub/samba/stable/samba-4.1.11.tar.gz**
- Download (FTP): **ftp://ftp.samba.org/pub/samba/stable/samba-4.1.11.tar.gz**
- Download MD5 sum: d7377e7247ad16f6b15363727b91b761
- Download size: 19 MB
- Estimated disk space required: 415 MB (additional 396 MB for the quicktest, reputedly up to 500 MB additional for all tests)
- Estimated build time: 6 SBU (additional 4.3 SBU for the quicktest, reputedly up to 110 SBU to run all tests)

Samba Dependencies

Required

Python-2.7.8

Recommended

libxslt-1.1.28 (for documentation)

Optional

Avahi-0.6.31, Cups-1.7.5, libcap-2.24 with PAM, Linux-PAM-1.1.8, MIT Kerberos V5-1.12.2, OpenLDAP-2.4.39, popt-1.16, Valgrind-3.10.0 (optionally used by the test suite), xfsprogs-3.2.1, **Gamin**, **ctdb**, **libunwind**, **OpenAFS**, and **tdb**

User Notes: *http://wiki.linuxfromscratch.org/blfs/wiki/samba4*

Installation of Samba

> **Note**
>
> If you wish to run the test suite after the binaries are built, you must add the `--enable-socket-wrapper` and `--enable-selftest` parameters 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:

```
./configure                           \
    --prefix=/usr                     \
    --sysconfdir=/etc                 \
    --localstatedir=/var              \
    --with-piddir=/run/samba          \
    --with-pammodulesdir=/lib/security \
    --without-systemd                 \
    --enable-fhs                      \
    --enable-nss-wrapper              &&

make
```

According to Samba developers, the limitation to 108 characters of the path length of a unix named pipe socket may be the cause of errors, so that over 1/3 of the tests might fail. For this reason, the switch `--with-selftest-prefix=/tmp/quick` (or another path with small number of characters) can be used with configure. Even so, the "*samba3.raw.eas*" test may fail, apparently for the same reason. If one quicktest fails, it can be disabled. For example,

```
sed -i "/samba3.blackbox.failure.failure/i \^samba3.raw.eas" selftest/knownfail
```

To test the results, as the *root* user, issue: `make quicktest`. There are other targets (test, subunit-test) available, but take a very long time (over 100 SBU).

Now, as the *root* user:

```
make install &&

mv -v /usr/lib/libnss_win{s,bind}.so*   /lib                    &&
ln -v -sf ../../lib/libnss_winbind.so.2 /usr/lib/libnss_winbind.so &&
ln -v -sf ../../lib/libnss_wins.so.2    /usr/lib/libnss_wins.so    &&

install -v -m644    examples/smb.conf.default /etc/samba &&

mkdir -pv /etc/openldap/schema                  &&

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/{get*,ol*} \
                    /etc/openldap/schema             &&

install -v -m755 -d /usr/share/doc/samba-4.1.11 &&

install -v -m644    lib/ntdb/doc/design.pdf \
                    /usr/share/doc/samba-4.1.11
```

Command Explanations

--enable-fhs: Assigns all other file paths in a manner compliant with the Filesystem Hierarchy Standard (FHS).

--enable-nss-wrapper: Builds the nss-wrapper library.

--without-systemd: Disable systemd integration, which is not part of LFS/BLFS. If you use systemd, replace by *--with-systemd*.

`--enable-socket-wrapper` and `--enable-selftest`: These options are required to run the test suite.

`--with-selftest-prefix=SELFTEST_PREFIX`: This option specify the test suite work directory (default=./st).

`mv -v /usr/lib/libnss_win{s,bind}.so* /lib`: The nss libraries are installed in /usr/lib by default. Move them to /lib.

`ln -v -sf ../../lib/libnss_winbind.so.2 /usr/lib/libnss_winbind.so` and `ln -v -sf ../../lib/libnss_wins.so.2 /usr/lib/libnss_wins.so`: These symlinks are required when applicates build against these libraries.

`install -v -m644 examples/LDAP/* /etc/openldap/schema`: These commands are used to 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

> **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.
For security reasons, you may wish to define *path = /home/alice/shared-files*, assuming your user name is *alice* and
you only want to share the files in that directory, instead of your entire home. Then, replace *homes* by *shared-files* and
change also the "comment" if used the configuration file below or the `/etc/samba/smb.conf.default` to create yours.

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

Advanced Requirements

More complex scenarios involving domain control or membership are possible. Such setups are advanced topics and cannot be adequately covered in BLFS. Many complete books have been written on these topics alone. Note that 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
  http://www.samba.org/samba/docs/using_samba/toc.html
- The Official Samba HOWTO and Reference Guide **http://www.samba.org/samba/docs/man/Samba-HOWTO-Collection/**
- Samba-3 by Example **http://www.samba.org/samba/docs/man/Samba-Guide/**

Boot Script

For your convenience, boot scripts have been provided for Samba. There are two included in the blfs-bootscripts-20140919 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
```

Contents

Installed Programs: cifsdd, dbwrap_tool, eventlogadm, gentest, ldbadd, ldbdel, ldbedit, ldbmodify, ldbrename, ldbsearch, locktest, masktest, ndrdump, net, nmbd, nmblookup, nmblookup4, ntdbbackup, ntdbdump, ntdbrestore, ntdbtool, ntlm_auth, oLschema2ldif, pdbedit, pidl, profiles, regdiff, regpatch, regshell, regtree, rpcclient, samba, samba_dnsupdate, samba_kcc, samba-regedit, samba_spnupdate, samba-tool, samba_upgradedns, sharesec, smbcacls, smbclient, smbclient4, smbcontrol, smbcquotas, smbd, smbget, smbpasswd, smbspool, smbstatus, smbtar, smbta-util, smbtorture, smbtree, tdbbackup, tdbdump, tdbrestore, tdbtool, testparm, wbinfo, and winbindd

Installed Libraries: libdcerpc-atsvc.so, libdcerpc-binding.so, libdcerpc-samr.so, libdcerpc-server.so, libdcerpc.so, libgensec.so, libndr-krb5pac.so, libndr-nbt.so, libndr.so, libndr-standard.so, libnetapi.so, libnss_winbind.so, libnss_wins.so, libpdb.so, libregistry.so, libsamba-credentials.so, libsamba-hostconfig.so, libsamba-policy.so, libsamba-util.so, libsamdb.so, libsmbclient-raw.so, libsmbclient.so, libsmbconf.so, libsmbldap.so, libsmbsharemodes.so, libtevent-util.so, libtorture.so, libwbclient.so, mit_samba.so, and winbind_krb5_locator.so; the pam_winbind.so and pam_smbpass.so PAM libraries; and assorted character set, filesystem and support modules under /usr/lib/{python2.7,samba}

Installed Directories: /etc/samba, /run/samba, /usr/include/samba-4.0, /usr/lib/perl5/vendor_perl/5.x.y/Parse/Pidl/{Samba{3,4},Wireshark}, /usr/lib/python2.7/site-packages/samba, /usr/lib/samba, /usr/share/doc/samba-4.1.11, /usr/share/samba, and /var/{cache,lib,lock,log,run}/samba

Short Descriptions

eventlogadm	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 `smb.conf`).
ldbadd	is a command-line utility for adding records to an LDB database.
ldbdel	is a command-line program for deleting LDB database records.
ldbedit	allows you to edit LDB databases using your preferred editor.
ldbmodify	allows you to modify records in an LDB database.
ldbrename	allows you to edit LDB databases using your preferred editor.

net	is a tool for administration of Samba and remote CIFS servers, similar to the `net` utility for DOS/Windows.
nmbd	is the Samba NetBIOS name server.
nmblookup	is used to query NetBIOS names and map them to IP addresses.
ntlm_auth	is a tool to allow external access to Winbind's NTLM authentication function.
pdbedit	is a tool used to manage the SAM database.
profiles	is a utility that reports and changes SIDs in Windows registry files. It currently only supports Windows NT.
rpcclient	is used to execute MS-RPC client side functions.
sharesec	manipulates share ACL permissions on SMB file shares.
smbcacls	is used to manipulate Windows NT access control lists.
smbclient	is a SMB/CIFS access utility, similar to FTP.
smbcontrol	is used to control running `smbd`, `nmbd` and `winbindd` daemons.
smbcquotas	is used to manipulate Windows NT quotas on SMB file shares.
smbd	is the main Samba daemon which provides SMB/CIFS services to clients.
smbget	is a simple utility with `wget`-like semantics, that can download files from SMB servers. You can specify the files you would like to download on the command-line.
smbpasswd	changes a user's Samba password.
smbspool	sends a print job to an SMB printer.
smbstatus	reports current Samba connections.
smbtar	is a shell script used for backing up SMB/CIFS shares directly to Linux tape drives or a file.
smbtree	is a text-based SMB network browser.
tdbbackup	is a tool for backing up or validating the integrity of Samba `.tdb` files.
tdbdump	is a tool used to print the contents of a Samba `.tdb` file.
tdbtool	is a tool which allows simple database manipulation from the command line.
testparm	checks an `smb.conf` file for proper syntax.
wbinfo	queries a running `winbindd` daemon.
winbindd	resolves names from Windows NT servers.
libnss_winbind.so	provides Name Service Switch API functions for resolving names from NT servers.
libnss_wins.so	provides API functions for Samba's implementation of the Windows Internet Naming Service.
libnetapi.so	provides the API functions for the administration tools used for Samba and remote CIFS servers.
libsmbclient.so	provides the API functions for the Samba SMB client tools.
libsmbsharemodes.so	provides API functions for accessing SMB share modes (locks etc.)
libwbclient.so	provides API functions for Windows domain client services.

Last updated on 2014-09-20 19:22:09 -0700

Wget-1.15

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-7.6 platform.

Package Information

- Download (HTTP): **http://ftp.gnu.org/gnu/wget/wget-1.15.tar.xz**
- Download (FTP): **ftp://ftp.gnu.org/gnu/wget/wget-1.15.tar.xz**
- Download MD5 sum: 7a279d5ac5594919124d5526e7143e28
- Download size: 1.7 MB
- Estimated disk space required: 22 MB (additional 2 MB for the tests)
- Estimated build time: 0.4 SBU (additional 0.1 SBU for the tests)

Wget Dependencies

OpenSSL-1.0.1i or GnuTLS-3.3.7

Optional

libidn-1.29, PCRE-8.35, libwww-perl-6.08 (required for the majority of the test suite), and **Dante**

User Notes: *http://wiki.linuxfromscratch.org/blfs/wiki/wget*

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-1.0.1i. It can be omitted if GnuTLS-3.3.7 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

Installed Program: wget
Installed Libraries: None
Installed Directories: None

Short Descriptions

wget   retrieves files from the Web using the HTTP, HTTPS and FTP protocols. It is designed to be non-interactive, for background or unattended operations.

Last updated on 2014-09-08 23:39:08 -0700

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-7.6 platform.

Package Information

- Download MD5 sum: e06c222e186f7cc013fd272d023710cb
- Download size: 288 KB
- Estimated disk space required: 2.0 MB
- Estimated build time: less than 0.1 SBU

User Notes: <ins>http://wiki.linuxfromscratch.org/blfs/wiki/WirelessTools</ins>

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

Installed Programs: ifrename, iwconfig, iwevent, iwgetid, iwlist, iwpriv, and iwspy
Installed Library: libiw.so
Installed Directories: None

Short Descriptions

ifrename	renames network interfaces based on various static criteria.
iwconfig	configures a wireless network interface.
iwevent	displays wireless events generated by drivers and setting changes.
iwgetid	reports ESSID, NWID or AP/Cell Address of wireless networks.
iwlist	gets detailed wireless information from a wireless interface.
iwpriv	configures optional (private) parameters of a wireless network interface.
iwspy	gets wireless statistics from specific node.
libiw.so	contains functions required by the wireless programs and provides an API for other programs.

Last updated on 2014-09-12 12:02:55 -0700

wpa_supplicant-2.2

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-7.6 platform.

- Download (HTTP): **http://hostap.epitest.fi/releases/wpa_supplicant-2.2.tar.gz**
- Download MD5 sum: 238e8e888bbd558e1a57e3eb28d1dd07
- Download size: 2.3 MB
- Estimated disk space required: 26 MB
- Estimated build time: 0.2 SBU

WPA Supplicant Dependencies

Recommended

libnl-3.2.25 and OpenSSL-1.0.1i

Optional

D-Bus-1.8.8, libxml2-2.9.1, and Qt-4.8.6

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/wpa_supplicant

Kernel Configuration

Enable the following options in the kernel configuration as well as specific device drivers for your hardware and recompile the kernel if necessary:

```
Networking support  --->
  Wireless  --->
    cfg80211 - wireless configuration API: Y or M
      cfg80211 wireless extensions compatibility: Y
    Generic IEEE 802.11 Networking Stack (mac80211): Y or M
Device Drivers  --->
  Network device support  --->
    Wireless LAN  --->
```

Select the options that support your hardware: `lspci` from pciutils-3.2.1 can be used to view your hardware configuration.

Installation of WPA Supplicant

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 Supplicant with NetworkManager-0.9.10.0, make sure that you have installed D-Bus-1.8.8 and libxml2-2.9.1, then add the following options to the WPA Supplicant build configuration file by running the following command:

```
CONFIG_CTRL_IFACE_DBUS_NEW=y
CONFIG_CTRL_IFACE_DBUS_INTRO=y
EOF
```

Install WPA Supplicant by running the following commands:

```
cd wpa_supplicant &&
make BINDIR=/sbin LIBDIR=/lib
```

If you have installed Qt-4.8.6 and wish to build the WPA Supplicant 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 Supplicant 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/fi.{epitest.hostap.WPASupplicant,w1.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 Supplicant 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 Supplicant 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-0.22 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.

```
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-20140919 package:

```
make install-service-wpa
```

If your router/access point uses DHCP to allocate IP addresses, you can install DHCP-4.3.1 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-6.4.3 instead of DHCP-4.3.1 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
```

```
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

Installed Programs: wpa_gui, wpa_supplicant, wpa_passphrase and wpa_cli
Installed Libraries: None
Installed Directories: None

Short Descriptions

`wpa_gui`	is a graphical frontend program for interacting with wpa_supplicant .
`wpa_supplicant`	is a daemon that can connect to a password protected wireless access point.
`wpa_passphrase`	takes an SSID and a password and generates a simple configuration that `wpa_supplicant` can understand.
`wpa_cli`	is a command line interface used to control a running `wpa_supplicant` daemon.

Last updated on 2014-09-17 21:56:07 -0700

Other Networking Programs

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/othernetprogs

NCPFS contains client and administration tools for use with Novell networks. See the User Notes for details.

Last updated on 2007-04-04 12:42:53 -0700

Chapter 16. Networking Utilities

This chapter contains some tools that come in handy when the network needs investigating.

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/basicnetworkingutilities

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-7.6 platform.

Package Information

- Download (HTTP): **http://pkgs.fedoraproject.org/repo/pkgs/avahi/avahi-0.6.31.tar.gz/2f22745b8f7368ad5a0a3fddac343f2d/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-2.40.0

Recommended

gobject-introspection-1.40.0, GTK+-2.24.24, GTK+-3.12.2, libdaemon-0.14 and libglade-2.6.4

Optional

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 priviliged access group for Avahi clients. Issue the following command as the *root* user:

```
groupadd -fg 86 netdev
```

Install Avahi by running the following commands:

```
sed -i 's/\(CFLAGS=.*\)-Werror \(.*\)/\1\2/' configure &&
sed -i -e 's/-DG_DISABLE_DEPRECATED=1//' \
 -e '/-DGDK_DISABLE_DEPRECATED/d' avahi-ui/Makefile.in &&
./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   \
            --with-systemdsystemunitdir=no &&
make
```

This package does not come with a test suite.

Now, as the *root* user:

```
make install
```

Command Explanations

`sed -i ...`: These seds allow the package to build after the deprecation of symbols in `gtkstock.h` by current gtk+-3 by removing `-Werror` and by removing the defines for G{,DK,TK}_DISABLE_DEPRECATED.

`--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.

`--with-systemdsystemunitdir=no`: Without it, the daemon fails to start in BLFS, which does not support systemd.

`--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 use this option, `avahi-daemon` won't be built.

`--enable-tests`: This option enables the building of tests and examples.

`--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-20140919](#) package.

```
make install-avahi
```

Contents

Installed Programs:	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
Installed Libraries:	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,
Installed Directories:	/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

`avahi-autoipd`	is a IPv4LL network address configuration daemon.
`avahi-bookmarks`	is a Web service showing mDNS/DNS-SD announced HTTP services using the Avahi daemon.
`avahi-browse`	browses for mDNS/DNS-SD services using the Avahi daemon.
`avahi-browse-domains`	browses for mDNS/DNS-SD services using the Avahi daemon.
`avahi-daemon`	is the Avahi mDNS/DNS-SD daemon.
`avahi-discover`	browses for mDNS/DNS-SD services using the Avahi daemon.
`avahi-discover-standalone`	browses for mDNS/DNS-SD services using the Avahi daemon.
`avahi-dnsconfd`	is a Unicast DNS server from mDNS/DNS-SD configuration daemon.
`avahi-publish`	registers a mDNS/DNS-SD service or host name or address mapping using the Avahi daemon.
`avahi-publish-address`	registers a mDNS/DNS-SD service or host name or address mapping using the Avahi daemon.
`avahi-publish-service`	registers a mDNS/DNS-SD service or host name or address mapping using the Avahi daemon.
`avahi-resolve`	resolves one or more mDNS/DNS host name(s) to IP address(es) (and vice versa) using the Avahi daemon.
`avahi-resolve-address`	resolves one or more mDNS/DNS host name(s) to IP address(es) (and vice versa) using the Avahi daemon.
`avahi-resolve-host-name`	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.

Last updated on 2014-09-19 14:39:35 -0700

BIND Utilities-9.10.0-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-9.10.0-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.

- Download (FTP): **ftp://ftp.isc.org/isc/bind9/9.10.0-P2/bind-9.10.0-P2.tar.gz**
- Download MD5 sum: 85f5bbd655f7fbb946fe128c5adcc9ca
- Download size: 8.0 MB
- Estimated disk space required: 107 MB
- Estimated build time: 0.8 SBU

BIND Utilities Dependencies

Optional

libcap-2.24 with PAM, libxml2-2.9.1, and OpenSSL-1.0.1i

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/bind-utils

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

Installed Programs: dig, host, and nslookup
Installed Libraries: None
Installed Directories: None

Short Descriptions

See the program descriptions in the BIND-9.10.0-P2 section.

Last updated on 2014-09-20 19:22:09 -0700

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-7.6 platform.

Package Information

- Download (HTTP): **http://pkgs.fedoraproject.org/repo/pkgs/mod_dnssd/mod_dnssd-0.6.tar.gz/bed3d95a98168bf0515922d1c05020c5/mod_dnssd-0.6.tar.gz**
- Download MD5 sum: bed3d95a98168bf0515922d1c05020c5
- Download size: 84 KB

- Estimated build time: less than 0.1 SBU

mod_dnssd Dependencies

Required

[Apache-2.4.10](#) and [Avahi-0.6.31](#)

Optional

[Lynx-2.8.8rel.2](#)

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/mod_dnssd

Installation of mod_dnssd

Install mod_dnssd by running the following commands:

```
sed -i 's/unixd_setup_child/ap_&/' src/mod_dnssd.c &&

./configure --prefix=/usr \
            --disable-lynx &&
make
```

This package does not come with a test suite.

Now, as the *root* user:

```
make install
sed -i 's| usr| /usr|' /etc/httpd/httpd.conf
```

Command Explanations

`sed ... src/mod_dnssd.c`: Fix an external function call that has been updated since this package was released.

`--disable-lynx`: This parameter turns off Lynx usage for documentation generation. Remove it if you have Lynx installed.

`sed ... /etc/httpd/httpd.conf`: Fix a directory path that the intallation procedure incorrectly puts in the httpd configuration file.

Contents

Installed Programs: None
Installed Library: mod_dnssd.so
Installed Directories: None

Short Descriptions

`mod_dnssd.so`   is the Apache HTTPD module.

Last updated on 2014-09-20 19:22:09 -0700

NetworkManager-0.9.10.0

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-7.6 platform.

Package Information

- Download (HTTP): **http://ftp.gnome.org/pub/gnome/sources/NetworkManager/0.9/NetworkManager-0.9.10.0.tar.xz**
- Download (FTP): **ftp://ftp.gnome.org/pub/gnome/sources/NetworkManager/0.9/NetworkManager-0.9.10.0.tar.xz**

- Download size: 2.5 MB
- Estimated disk space required: 127 MB (additional 10 MB for the tests)
- Estimated build time: 1.5 SBU

NetworkManager Dependencies

Required

dbus-glib-0.102, libndp-1.4, libnl-3.2.25, NSS-3.17, (or GnuTLS-3.3.7), and udev-extras (from eudev) (for GUdev)

Recommended

ConsoleKit-0.4.6, dhcpcd-6.4.3 or DHCP-4.3.1 (client only), gobject-introspection-1.40.0, Iptables-1.4.21, libsoup-2.46.0, newt-0.52.17 (for `nmtui`), Polkit-0.112, UPower-0.9.23, and Vala-0.24.0

Optional

GTK-Doc-1.20, Qt-4.8.6, Valgrind-3.10.0, wpa_supplicant-2.2 (built with D-Bus support), **libteam**, and **ModemManager**,

User Notes: *http://wiki.linuxfromscratch.org/blfs/wiki/NetworkManager*

Installation of NetworkManager

If Qt-4.8.6 and Qt-5.3.1 are installed, you need to choose Qt4 with `source setqt4`, before starting. Install NetworkManager by running the following commands:

```
./configure --prefix=/usr       \
            --sysconfdir=/etc    \
            --localstatedir=/var \
            --with-nmtui         \
            --disable-ppp        \
            --with-systemdsystemunitdir=no &&
make
```

An already active graphical session with bus address is necessary to run the tests. To test the results, issue: `make check`.

Now, as the *root* user:

```
make install
```

Command Explanations

--with-nmtui: This parameter enables build of `nmtui`.

--with-systemdsystemunitdir=no: This parameter is used for sysv init systems. If you use systemd, replace "no" by the proper directory.

--disable-ppp: This parameter disables parameteral PPP support in NetworkManager.

--enable-gtk-doc: Use this switch if you have installed GTK-Doc-1.20 and wish to build the API manuals.

--without-iptables: Use this switch if you don't have Iptables installed.

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
```

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-20140919](#) package.

```
make install-networkmanager
```

Contents

Installed Programs: NetworkManager, nm-avahi-autoipd.action, nm-dhcp-helper, nm-dispatcher, nm-online, nmcli, and, hardlinked to each other: nmtui, nmtui-connect, nmtui-edit, and nmtui-hostname

Installed Libraries: libnm-glib.so, libnm-glib-vpn.so, libnm-util.so, and modules under /usr/lib/NetworkManager

Installed Directories: /etc/NetworkManager, /usr/include/libnm-glib, /usr/include/NetworkManager, /usr/lib/NetworkManager, /usr/share/doc/NetworkManager, /usr/share/gtk-doc/html/libnm-glib, /usr/share/gtk-doc/html/libnm-util, /usr/share/gtk-doc/html/NetworkManager, /var/lib/NetworkManager, and /var/run/NetworkManager

Short Descriptions

`nmcli`	is a command-line tool for controlling NetworkManager and getting its status.
`nm-online`	is a utility to find out whether you are online.
`nmtui`	interactive ncurses based interface for nmcli .
`nmtui-connect`	interactive ncurses based interface connection activate/deactivate.
`nmtui-edit`	interactive ncurses based interface connection editor.
`nmtui-hostname`	interactive ncurses based interface hostname editor.
`NetworkManager`	is the network management daemon.
`libnm-glib.so`	contains functions used by NetworkManager .
`libnm-glib-vpn.so`	contains functions used by NetworkManager VPN plugins.
`libnm-util.so`	contains functions used by NetworkManager utils.

Last updated on 2014-09-17 21:56:07 -0700

Nmap-6.47

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-7.6 platform.

Package Information

- Download (HTTP): **http://nmap.org/dist/nmap-6.47.tar.bz2**
- Download MD5 sum: edfe81f6763223c0a29bfa15a8526e2a
- Download size: 7.5 MB
- Estimated disk space required: 133 MB (additional 1 MB for the tests)
- Estimated build time: 1.3 SBU (additional 0.1 SBU for the tests)

Nmap Dependencies

Recommended

> **Note**
>
> These packages are recommended because if they're not installed, the build process will compile and link against its own (often older) version.

[libpcap-1.6.2](#), [Lua-5.2.3](#), [PCRE-8.35](#), and [liblinear-1.94](#)

Optional

`...` *(partial line at top, illegible)*

Installation of Nmap

> **Note**
>
> This package does not support parallel build.

Install Nmap by running the following commands:

```
./configure --prefix=/usr &&
make -j1
```

If you wish to run the test suite, run the following command:

```
sed -i 's/lib./lib/' zenmap/test/run_tests.py
```

To test the results, issue: `make check` as the *root* user. Tests need a graphical session.

Now, as the *root* user:

```
make install
```

Contents

Installed Programs: ncat, ndiff, nmap, nmapfe, nmap-update, nping, uninstall_zenmap, xnmap and zenmap

Installed Libraries: None

Installed Directories: /usr/lib/python2.7/site-packages/{radialnet,zenmapCore,zenmapGUI}, /usr/share/ncat, /usr/share/nmap and /usr/share/zenmap

Short Descriptions

ncat	is a utility for reading and writing data across networks from the command line.
ndiff	is a tool to aid in the comparison of Nmap scans.
nmap	is a utility for network exploration and security auditing. It supports ping scanning, port scanning and TCP/IP fingerprinting.
nmapfe	is a symbolic link to `zenmap`.
nmap-update	is an updater for Nmap architecture-independent files.
xnmap	is a symbolic link to `zenmap`.
zenmap	is a Python based graphical nmap frontend viewer.

Last updated on 2014-09-19 13:13:19 -0700

Traceroute-2.0.20

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-7.6 platform.

Package Information

- Download (HTTP): **http://downloads.sourceforge.net/traceroute/traceroute-2.0.20.tar.gz**

- Download size: 68 KB
- Estimated disk space required: 648 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 &&
ln -sv -f traceroute /bin/traceroute6 &&
ln -sv -f traceroute.8 /usr/share/man/man8/traceroute6.8
```

Use `man 8 traceroute` and/or `man 8 traceroute6`, because `man traceroute` refer to the overwritten version installed in LFS by inetutils.

Contents

Installed Program: traceroute and traceroute6 (symlink)
Installed Libraries: None
Installed Directories: None

Short Descriptions

traceroute	does basically what it says: it traces the route your packets take from the host you are working on to another host on a network, showing all the intermediate hops (gateways) along the way.
traceroute6	is equivalent to `traceroute -6`.

Last updated on 2014-09-19 13:13:19 -0700

Whois-5.2.0

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-7.6 platform.

Package Information

- Download (HTTP): **http://ftp.debian.org/debian/pool/main/w/whois/whois_5.2.0.tar.xz**
- Download (FTP): **ftp://ftp.debian.org/debian/pool/main/w/whois/whois_5.2.0.tar.xz**
- Download MD5 sum: 0e5966b051735fff91792fa40c3d030f
- Download size: 80 KB
- Estimated disk space required: 1.4 MB
- Estimated build time: less than 0.1 SBU

Whois Dependencies

Optional

libidn-1.29

Installation of Whois

```
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 <u>Expect-5.45</u>.

```
make prefix=/usr install-whois
make prefix=/usr install-mkpasswd
make prefix=/usr install-pos
```

Command Explanations

HAVE_LIBIDN=1: This make variable adds internationalized string handling support to whois.

Contents

Installed Programs: whois and mkpasswd
Installed Libraries: None
Installed Directories: None

Short Descriptions

whois   is a client-side application which queries the whois directory service for information pertaining to a particular domain name.

Last updated on 2014-09-14 11:55:14 -0700

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-7.6 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-2.7.8, D-Bus Python-1.2.0, Wireless Tools-29, and Net-tools-CVS_20101030 (Wicd needs ifconfig and mii-tool from this package)

PyGTK-2.24.0 (for the GTK frontend), wpa_supplicant-2.2 (for WPA support), and dhcpcd-6.4.3 or DHCP-4.3.1 (for DHCP support)

Optional

pm-utils-1.4.1 (for suspend/resume integration), **Urwid** (for the Curses-based frontend), and **Babel** (for internationalization)

User Notes: *http://wiki.linuxfromscratch.org/blfs/wiki/wicd*

Installation of Wicd

Install Wicd by running the following commands:

```
sed -i '/wpath.logrotate\|wpath.systemd/d' setup.py &&
rm po/*.po                                           &&
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

`rm po/*.po`: This command removes the international messages associated with this package. The command is required unless Babel is installed. If it is installed, po/ast.po still needs to be removed in order for the build to complete.

`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-20140919 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

Installed Directories: /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

`wicd`	is the wicd daemon.
`wicd-cli`	is a command line interface for configuring the wicd daemon.
`wicd-client`	is the wicd client. This script attempts to automatically choose the relevant configuration interface.
`wicd-curses`	is a curses interface for configuring the wicd daemon.
`wicd-gtk`	is a GTK interface for configuring the wicd daemon

Last updated on 2014-09-20 19:22:09 -0700

Wireshark-1.12.1

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 a 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-7.6 platform.

Package Information

- Download (HTTP): **http://www.wireshark.org/download/src/all-versions/wireshark-1.12.1.tar.bz2**
- Download MD5 sum: 14b3e3d8979d1eb27ff085bb5f400e67
- Download size: 28 MB
- Estimated disk space required: 1.4 GB
- Estimated build time: 6.2 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-2.40.0 (to build the TTY-mode front-end only)

Note that you need Gtk+ or Qt4 installed, otherwise, pass `--disable-wireshark` to the `configure` command. SBU and disk space required are larger for the Qt GUI.

Recommended

GTK+-3.12.2 (to build the Gtk+3 GUI) and libpcap-1.6.2 (required to capture data)

Optional

GnuTLS-3.3.7, libgcrypt-1.6.2, Lua-5.2.3, MIT Kerberos V5-1.12.2, OpenSSL-1.0.1i, **adns**, **GeoIP**, and **PortAudio**

Optional (to build the GUI front-end)

GTK+-2.24.24, Qt-4.8.6, or Qt-5.3.1

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/wireshark

Kernel Configuration

The kernel must have the Packet protocol enabled for Wireshark to capture live packets from the network.

```
      Packet: sockets monitoring interface: M or Y
```

If built as a module, the name is `af_packet.ko`.

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
```

If you want an unpriviledged user to execute wireshark, run the following command as the _root_ user:

```
usermod -a -G wireshark <username>
```

If you have GTK+2 and 3, and Qt4 and 5, one GUI linked to GTK+3 and another one linked to Qt5 are built, by default. Instead, we chose to only build the GTK+3 GUI, as the BLFS default. If you prefer otherwise, some modifications are mecessary. For modifications in the `configure` switches, see "Command Explanations".

If you want to build a Qt GUI and have both Qt4 and 5 installed, issue either:

```
source setqt5
```

if you want the Qt5 GUI built, or:

```
source setqt4 &&
sed -i 's/Qt5 Qt/Qt/' configure
```

if you want the Qt4 GUI built.

Continue to install Wireshark by running the following commands:

```
./configure --prefix=/usr      \
            --with-gtk3=yes   \
            --with-qt=no       \
            --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-1.12.1 &&
install -v -m755 -d /usr/share/pixmaps/wireshark &&

install -v -m644    README{,.linux} doc/README.* doc/*.{pod,txt} \
                    /usr/share/doc/wireshark-1.12.1 &&

pushd /usr/share/doc/wireshark-1.12.1 &&
    for FILENAME in ../../wireshark/*.html; do
        ln -s -v -f $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 &&
```

```
                    /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-1.12.1
```

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 (as root user):

```
usermod -a -G wireshark <username>
```

Command Explanations

`sed -i 's/Qt5 Qt/Qt/' ...`: This command is required because, without it, libraries and includes from Qt5 are found and used first, if both versions are installed, when trying to build with Qt4, and `make` does not complete.

`--disable-wireshark`: This option is required if you have GTK+ installed but do not want to build the GTK+ and Qt GUIs.

`--with-gtk3=yes`: This switch is required to use GTK+3 for the GUI, if you are using `--with-qt=no`. Change gtk3 by gtk2,to use GTK+3 for the GUI.

`--with-qt=no`: This switch disables build of the Qt GUI. Replace "no" by "yes", if you want it to be built.

`--with-gtk2=yes`: This option is required if you want to use GTK+2, instead of 3, for the GUI. Notice that the GUI for only one GTK+ version (either 2 or 3) can be 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 interfaces.

Desktop file for the Qt GUI

If Qt GUI was built and you wish an entry in the desktop menu, there are two possibilities (instructions must be run as root).

If only the Qt GUI was built:

```
mv -v /usr/share/applications/wireshark.desktop \
      /usr/share/applications/wireshark-qt.desktop
```

If both, GTK+ and Qt GUIs were built:

```
cp -v /usr/share/applications/wireshark.desktop \
      /usr/share/applications/wireshark-qt.desktop
```

Now, fix it for `wireshark-qt`:

```
sed -e 's/ireshark/&-qt/' \
    -e 's/^\(Icon=wireshark\)-qt/\1/' \
    -i /usr/share/applications/wireshark-qt.desktop
```

> **Note**
>
> If you want to look at packets, make sure you don't filter them out with Iptables-1.4.21. If you want to exclude certain classes of packets, it is more efficient to do it with iptables than it is with Wireshark.

Installed Programs:	capinfos, captype, dftest, dumpcap, editcap, mergecap, randpkt, rawshark, reordercap, text2pcap, tshark, wireshark and wireshark-qt
Installed Libraries:	libfiletap.so, libwireshark.so, libwiretap.so, libwsutil.so, and numerous modules under /usr/lib/wireshark/plugins
Installed Directories:	/usr/lib/wireshark, /usr/share/doc/wireshark-1.12.1, /usr/share/pixmaps/wireshark, and /usr/share/wireshark

Short Descriptions

capinfos	reads a saved capture file and returns any or all of several statistics about that file. It is able to detect and read any capture supported by the Wireshark package.
captype	prints the file types of capture files.
dftest	is a display-filter-compiler test program.
dumpcap	is a network traffic dump tool. It lets you capture packet data from a live network and write the packets to a file.
editcap	edits and/or translates the format of capture files. It knows how to read libpcap capture files, including those of tcpdump, Wireshark and other tools that write captures in that format.
mergecap	combines multiple saved capture files into a single output file.
randpkt	creates random-packet capture files.
rawshark	dump and analyze raw libpcap data.
reordercap	reorder timestamps of input file frames into output file.
text2pcap	reads in an ASCII hex dump and writes the data described into a libpcap -style capture file.
tshark	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.
wireshark	is the GTK+ GUI network protocol analyzer. It lets you interactively browse packet data from a live network or from a previously saved capture file.
wireshark-qt	is the Qt GUI network protocol analyzer. It lets you interactively browse packet data from a live network or from a previously saved capture file.
libwireshark.so	contains functions used by the Wireshark programs to perform filtering and packet capturing.
libwiretap.so	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 wiretap directory.

Last updated on 2014-09-19 21:15:05 -0700

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-7.37.1

Introduction to cURL

The cURL package contains a 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-7.6 platform.

Package Information

- Download (HTTP): **http://curl.haxx.se/download/curl-7.37.1.tar.bz2**
- Download MD5 sum: 95c627abcf6494f5abe55effe7cd6a57
- Download size: 3.1 MB
- Estimated disk space required: 40 MB (additional 7 MB for tests)
- Estimated build time: 0.4 SBU (additional 8.2 SBU for tests)

cURL Dependencies

Recommended

Optional

[libidn-1.29](), [MIT Kerberos V5-1.12.2](), [OpenLDAP-2.4.39](), **[c-ares]()**, **[libmetalink]()**, **[libssh2]()**, and **[SPNEGO]()**

Optional for Running the Test Suite

[stunnel-5.03]() (for the HTTPS and FTPS tests) and [Valgrind-3.10.0]()

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/curl

Installation of cURL

Install cURL by running the following commands:

```
./configure --prefix=/usr              \
            --disable-static           \
            --enable-threaded-resolver &&
make
```

To test the results, issue: `make test`. Tests need many conditions to run successfully, and some may fail. Usually, each failed test takes a long time. If you wish to disable some tests, include them in the appropriate file and run the tests again:

```
cat >> tests/data/DISABLED << "EOF"
numb1
...
numbN
...
EOF
```

Now, as the *root* user:

```
make install &&
find docs \( -name "Makefile*" -o -name "*.1" -o -name "*.3" \) -exec rm {} \; &&
install -v -d -m755 /usr/share/doc/curl-7.37.1 &&
cp -v -R docs/*      /usr/share/doc/curl-7.37.1
```

Command Explanations

`--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-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-7.37.1

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.

Last updated on 2014-09-11 23:27:59 -0700

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

This package is known to build and work properly using an LFS-7.6 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/7.6/geoclue-0.12.0-gpsd_fix-1.patch**

GeoClue Dependencies

Required

dbus-glib-0.102, GConf-3.2.6 and libxslt-1.1.28

Recommended if you are building GNOME

libsoup-2.46.0 and NetworkManager-0.9.10.0

Optional

GPSD, GTK+-2.24.24 and **oFono**

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/geoclue

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 &&
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` in accordance with the old version of the FHS used before LFS-7.5.

Contents

Installed Programs: None
Installed Library: libgeoclue.so
Installed Directory: /usr/include/geoclue, /usr/share/geoclue-providers, and /usr/share/gtk-doc/html/geoclue

Short Descriptions

glib-networking-2.40.1

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-7.6 platform.

Package Information

- Download (HTTP): **http://ftp.gnome.org/pub/gnome/sources/glib-networking/2.40/glib-networking-2.40.1.tar.xz**
- Download (FTP): **ftp://ftp.gnome.org/pub/gnome/sources/glib-networking/2.40/glib-networking-2.40.1.tar.xz**
- Download MD5 sum: 505f8a40fad96944b292d1c48f4e5569
- Download size: 360 KB
- Estimated disk space required: 7.5 MB (additional 1.4 MB for the tests) MB
- Estimated build time: 0.1 SBU (additional less than 0.1 SBU for the tests)

GLib Networking Dependencies

Required

GnuTLS-3.3.7 and gsettings-desktop-schemas-3.12.2

Recommended

Certificate Authority Certificates and p11-kit-0.20.6

Optional

libproxy

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/glib-networking

Installation of GLib Networking

Install GLib Networking by running the following commands:

```
./configure --prefix=/usr                          \
            --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: None
Installed Libraries: libgiognomeproxy.so, libgiognutls.so and libgiolibproxy.so
Installed Directories: None

Introduction to ldns

ldns is a fast DNS library with the goal to simplify DNS programming and to allow developers to easily create software conforming to current RFCs and Internet drafts. This packages also includes the `drill` tool.

This package is known to build and work properly using an LFS-7.6 platform.

Package Information

- Download (HTTP): **http://www.nlnetlabs.nl/downloads/ldns/ldns-1.6.17.tar.gz**
- Download MD5 sum: a79423bcc4129e6d59b616b1cae11e5e
- Download size: 1.3 MB
- Estimated disk space required: 18 MB
- Estimated build time: 0.2 SBU

ldns Dependencies

Recommended

OpenSSL-1.0.1i

Optional

Certificate Authority Certificates and libpcap-1.6.2 (for example programs), Python-2.7.8 and SWIG-3.0.2 (for Python bindings), and Doxygen-1.8.8 (for html documentation)

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/ldns

Installation of ldns

Install ldns by running the following commands:

```
./configure --prefix=/usr      \
            --sysconfdir=/etc \
            --disable-static  \
            --with-drill      && 
make
```

If you have Doxygen-1.8.8 installed and want to build html documentation, run the following command:

```
make doc
```

This package does not come with a working test suite.

Now, as the *root* user:

```
make install
```

If you built html documentation, install it by running the following commands as the *root* user:

```
install -v -m755 -d /usr/share/doc/ldns-1.6.17 && 
install -v -m644 doc/html/* /usr/share/doc/ldns-1.6.17
```

Command Explanations

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

--with-drill: This option enables building of the `drill` tool.

`--with-examples`: This option enables building of the example programs.

`--with-pyldns`: This option enables building of the Python bindings.

Contents

Installed Programs: drill and ldns-config
Installed Library: libldns.so and /usr/lib/python2.7/site-packages/_ldns.so
Installed Directories: /usr/include/ldns and /usr/share/doc/ldns-1.6.17

`drill`	is a tool like `dig` from BIND Utilities-9.10.0-P2 designed to get all sorts of information out of the DNS.
`ldns-config`	shows compiler and linker flags for ldns usage.
`libldns.so`	provides the ldns API functions to programs.

Last updated on 2014-09-20 19:22:09 -0700

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-7.6 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-1.0.1i

Optional

Doxygen-1.8.8 (for API documentation)

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/libevent

Installation of libevent

Install libevent by running the following commands:

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

If you have Doxygen-1.8.8 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

Installed Program: event_rpcgen.py
Installed Libraries: libevent_core.so, libevent_extra.so, libevent_openssl.so, libevent_pthreads.so and libevent.so

libnice-0.1.7

Introduction to libnice

The libnice package is an implementation of the IETF's draft Interactive 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-7.6 platform.

Package Information

- Download (HTTP): **http://nice.freedesktop.org/releases/libnice-0.1.7.tar.gz**
- Download MD5 sum: ed74abea19b3f049baf095f137388f2a
- Download size: 808 KB
- Estimated disk space required: 35 MB
- Estimated build time: 1.6 SBU

libnice Dependencies

Required

GLib-2.40.0

Recommended

gst-plugins-base-1.4.1

Optional

gst-plugins-base-0.10.36, GTK-Doc-1.20, and **gupnp-igd**

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/libnice

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`. Note that two tests, test-io-stream-thread and test-io-stream-pollable, may fail due to test harness timing issues.

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

Installed Programs: stunbdc and stund
Installed Libraries: libnice.so and libgstnice.so (GStreamer Plugin)
Installed Directories: /usr/include/nice, /usr/include/stun, and /usr/share/gtk-doc/html/libnice

Short Descriptions

stunu	is a Session Traversal for NAT (STUN) daemon.
libnice.so	contains the libnice API functions.

Last updated on 2014-09-20 19:22:09 -0700

---

libnl-3.2.25

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-7.6 platform.

Package Information

- Download (HTTP): **http://www.carisma.slowglass.com/~tgr/libnl/files/libnl-3.2.25.tar.gz**
- Download MD5 sum: 03f74d0cd5037cadc8cdfa313bbd195c
- Download size: 816 KB
- Estimated disk space required: 22 MB (additional 1 MB for the tests and 37MB for the API documentation)
- Estimated build time: 0.4 SBU

Optional Download

- Download (HTTP): **http://www.carisma.slowglass.com/~tgr/libnl/files/libnl-doc-3.2.25.tar.gz**
- Download MD5 sum: 641f73052d9f54e720efe1a476a20237
- Download size: 15 MB

libnl Dependencies

Optional

Check-0.9.14 (for tests)

User Notes: *http://wiki.linuxfromscratch.org/blfs/wiki/libnl*

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
```

If you wish to install the API documentation, as the *root* user:

```
mkdir -vp /usr/share/doc/libnl-3.2.25 &&
tar -xf ../libnl-doc-3.2.25.tar.gz --strip-components=1 --no-same-owner \
        -C /usr/share/doc/libnl-3.2.25
```

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

Installed Programs:	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
Installed Libraries:	libnl-3.so, libnl-cli-3.so, libnl-genl-3.so, libnl-idiag-3.so, libnl-nf-3.so, libnl-route-3.so, and cli

Short Descriptions

`libnl*-3.so`   These libraries contain API functions used to access Netlink interfaces in Linux kernel.

Last updated on 2014-09-17 21:56:07 -0700

libpcap-1.6.2

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-7.6 platform.

Package Information

- Download (HTTP): **http://www.tcpdump.org/release/libpcap-1.6.2.tar.gz**
- Download MD5 sum: 5f14191c1a684a75532c739c2c4059fa
- Download size: 636 KB
- Estimated disk space required: 7.1 MB
- Estimated build time: less than 0.1 SBU

Additional Downloads

- Recommended patch: **http://www.linuxfromscratch.org/patches/blfs/7.6/libpcap-1.6.2-enable_bluetooth-1.patch** (Needed for bluez-5.21)

libpcap Dependencies

Optional

BlueZ-5.23, libnl-3.2.25, libusb-1.0.19, Software distribution for the **DAG**, and **Septel** range of passive network monitoring cards.

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/libpcap

Installation of libpcap

Install libpcap by running the following commands:

```
patch -Np1 -i ../libpcap-1.6.2-enable_bluetooth-1.patch &&
./configure --prefix=/usr &&
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_DATA.*libpcap.a\|RANLIB.*libpcap.a/ s/^/#/' Makefile
```

Now, as the *root* user:

```
make install
```

Command Explanations

--enable-bluetooth=no: Necessary, if the recommended patch is not applied, because since 1.6.1 this application needs a fix, in order to build with bluez-5.21.

Contents

Installed Program: pcap-config
Installed Libraries: libpcap.{a,so}
Installed Directory: /usr/include/pcap

Short Descriptions

`libpcap.{a,so}`   are libraries used for user-level packet capture.

Last updated on 2014-09-14 12:09:32 -0700

libndp-1.4

Introduction to libndp

The libndp package provides a wrapper for IPv6 Neighbor Discovery Protocol. It also provides a tool named ndptool for sending and receiving NDP messages.

This package is known to build and work properly using an LFS-7.6 platform.

Package Information

- Download (HTTP): **http://libndp.org/files/libndp-1.4.tar.gz**
- Download MD5 sum: 52c708d4b8729ae6e3781b3737a85e16
- Download size: 332 KB
- Estimated disk space required: 2.4 MB
- Estimated build time: less than 0.1 SBU

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/libndp

Installation of libndp

Install libndp by running the following command:

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

This package does not come with a test suite.

Now, as the *root* user:

```
make install
```

Contents

Installed Program: ndptool
Installed Library: libndp.so
Installed Directory: None

Short Descriptions

`ndptool`   tool for sending and receiving NDP messages.

`libndp.so`   provides a wrapper for IPv6 Neighbor Discovery Protocol.

Last updated on 2014-09-17 21:56:07 -0700

libsoup-2.46.0

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 an asynchronous API for use in threaded applications.

This package is known to build and work properly using an LFS-7.6 platform.

Package Information

- Download (HTTP): **http://ftp.gnome.org/pub/gnome/sources/libsoup/2.46/libsoup-2.46.0.tar.xz**
- Download (FTP): **ftp://ftp.gnome.org/pub/gnome/sources/libsoup/2.46/libsoup-2.46.0.tar.xz**
- Download MD5 sum: 86765c0093efaf3006fa2960d170d097

- Estimated disk space required: 24 MB (additional 10 MB to run the test suite)
- Estimated build time: 0.2 SBU (additional 0.3 SBU to run the test suite)

libsoup Dependencies

Required

glib-networking-2.40.1, libxml2-2.9.1 and SQLite-3.8.6

Recommended

gobject-introspection-1.40.0

Optional

Apache-2.4.10 (required to run the test suite), cURL-7.37.1 (required to run the test suite), GTK-Doc-1.20, PHP-5.6.0 compiled with XMLRPC-EPI support (only used for the XMLRPC regression tests) and Samba-4.1.11 (ntlm_auth is required to run the test suite).

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/libsoup

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.

`--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: libsoup-2.4.so and libsoup-gnome-2.4.so
Installed Directories: /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.

Last updated on 2014-09-16 13:49:04 -0700

libtirpc-0.2.5

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-7.6 platform.

Package Information

- Download (HTTP): **http://downloads.sourceforge.net/project/libtirpc/libtirpc/0.2.5/libtirpc-0.2.5.tar.bz2**
- Download MD5 sum: 8cd41a5ef5a9b50d0fb6abb98af15368
- Download size: 452 KB

- Estimated build time: less than 0.1 SBU

libtirpc Dependencies

Optional

[MIT Kerberos V5-1.12.2](#) for the GSSAPI

User Notes: [*http://wiki.linuxfromscratch.org/blfs/wiki/libtirpc*](http://wiki.linuxfromscratch.org/blfs/wiki/libtirpc)

Installation of libtirpc

Install libtirpc by running the following commands:

```
./configure --prefix=/usr     \
            --sysconfdir=/etc \
            --disable-static  \
            --disable-gssapi  &&
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

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

--disable-gssapi: This switch is needed if no GSSAPI is installed. Remove this switch if you have one installed (for example [MIT Kerberos V5-1.12.2](#)) and you wish to use it.

`mv -v /usr/lib/libtirpc.so.* ...`: Move shared libraries into /lib so they are available before /usr is mounted.

Contents

Installed Programs: None
Installed Libraries: libtirpc.so
Installed Directory: /usr/include/libtirpc

Short Descriptions

`libtirpc.so`   provides the Remote Procedure Call (RPC) API functions required by other programs.

Last updated on 2014-09-09 14:11:38 -0700

neon-0.30.0

Introduction to neon

neon is an HTTP and WebDAV client library, with a C interface.

This package is known to build and work properly using an LFS-7.6 platform.

Package Information

- Download (HTTP): **http://www.webdav.org/neon/neon-0.30.0.tar.gz**
- Download MD5 sum: fb60b3a124eeec441937a812c456fd94
- Download size: 892 KB
- Estimated disk space required: 28 MB
- Estimated build time: 0.1 SBU

neon Dependencies

Recommended

Optional

[libproxy](#), [MIT Kerberos V5-1.12.2](#), **pakchois**, and [libxml2-2.9.1](#)

User Notes: *http://wiki.linuxfromscratch.org/blfs/wiki/neon*

Installation of neon

Install neon by running the following commands:

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

To test the results, issue: `make -k check`. Some tests are known to fail.

Now, as the *root* user:

```
make install
```

Command Explanations

`--with-ssl`: This switch enables SSL support using OpenSSL or GnuTLS respectively. Remove it if you don't have any of these installed. To force GnuTLS usage when both are present, simply pass *--with-ssl=gnutls* to the `configure` script.

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

`--with-libxml2`: This switch forces the use of libxml2 instead of Expat.

Contents

Installed Program: neon-config
Installed Library: libneon.so
Installed Directories: /usr/include/neon and /usr/share/doc/neon-0.30.0

Short Descriptions

`libneon.so`   is used as a high-level interface to common HTTP and WebDAV methods.

Last updated on 2014-09-13 17:48:40 -0700

Serf-1.3.7

Introduction to Serf

The Serf package contains a C-based HTTP client library built upon the Apache Portable Runtime (APR) library. It multiplexes connections, running the read/write communication asynchronously. Memory copies and transformations are kept to a minimum to provide high performance operation.

This package is known to build and work properly using an LFS-7.6 platform.

Package Information

- Download (HTTP): **http://serf.googlecode.com/svn/src_releases/serf-1.3.7.tar.bz2**
- Download MD5 sum: 0a6fa745df4517dd8f79c75c538919bc
- Download size: 140 KB
- Estimated disk space required: 2.6 MB (additional 2.1 MB for the tests)
- Estimated build time: less than 0.1 SBU (additional 0.3 SBU for the tests)

Serf Dependencies

Required

[Apr-Util-1.5.3](#), [OpenSSL-1.0.1i](#), and [SCons-2.3.3](#)

Optional

[MIT Kerberos V5-1.12.2](#), for the GSSAPI

Installation of Serf

Install Serf by running the following commands:

```
sed -i "/Append/s:RPATH=libdir,::"   SConstruct &&
sed -i "/Default/s:lib_static,::"     SConstruct &&
sed -i "/Alias/s:install_static,::"  SConstruct &&
scons PREFIX=/usr
```

To test the results, issue: `scons check`.

Now, as the *root* user:

```
scons PREFIX=/usr install
```

Command Explanations

`sed -i "..."`: The first command removes the runtime path from a shared library and the next two commands disable building and installing of the static library.

`GSSAPI=/usr`: Use this switch if you have installed a GSSAPI library and you want serf to use it.

Contents

Installed Programs: None
Installed Library: libserf-1.so
Installed Directory: /usr/include/serf-1

Short Descriptions

`libserf-1.so`   contains the Serf API functions.

Last updated on 2014-09-10 06:19:10 -0700

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-2.8

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-7.6 platform.

Package Information

- Download (HTTP): **http://links.twibright.com/download/links-2.8.tar.bz2**
- Download (FTP): **ftp://mirror.ovh.net/gentoo-distfiles/distfiles/links-2.8.tar.bz2**
- Download MD5 sum: d5fb7c45ca41dad2b20f5c056498ea07
- Download size: 4 MB
- Estimated disk space required: 31 MB
- Estimated build time: 0.3 SBU

Links Dependencies

Recommended

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-1.6.13](#), [libjpeg-turbo-1.3.1](#), and [LibTIFF-4.0.3](#)

User Notes: ***http://wiki.linuxfromscratch.org/blfs/wiki/LinksBrowser***

Installation of Links

Install Links by running the following commands:

```
./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 -d -m755 /usr/share/doc/links-2.8 &&
install -v -m644 doc/links_cal/* KEYS BRAILLE_HOWTO \
    /usr/share/doc/links-2.8
```

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

Installed Program: links
Installed Libraries: None
Installed Directories: /usr/share/doc/links-2.8

Short Descriptions

`links`   is a text and graphics mode WWW browser.

Last updated on 2014-09-09 14:11:38 -0700

Lynx-2.8.8rel.2

Introduction to Lynx

Lynx is a text based web browser.

This package is known to build and work properly using an LFS-7.6 platform.

Package Information

- Download (HTTP): **http://lynx.isc.org/current/lynx2.8.8rel.2.tar.bz2**
- Download (FTP): **ftp://lynx.isc.org/current/lynx2.8.8rel.2.tar.bz2**
- Download MD5 sum: b231c2aa34dfe7ca25681ef4e55ee7e8
- Download size: 2.5 MB
- Estimated disk space required: 31 MB

Lynx Dependencies

Optional

OpenSSL-1.0.1i or GnuTLS-3.3.7 (experimental), Zip-3.0, UnZip-6.0, an MTA (that provides a `sendmail` command), and Sharutils-4.14 (for a `uudecode` program)

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/Lynx

Installation of Lynx

Install Lynx by running the following commands:

```
./configure --prefix=/usr            \
            --sysconfdir=/etc/lynx \
            --datadir=/usr/share/doc/lynx-2.8.8rel.2 \
            --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-2.8.8rel.2/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-2.8.8rel.2: This parameter is used so that the documentation files are installed into `/usr/share/doc/lynx-2.8.8rel.2` 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.

`--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-2.8.8rel.2/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. As the *root* user, change this setting:

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). Still as the *root* user:

```
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-7.4, set this option to "vi").

By default, Lynx doesn't save cookies between sessions. Again as the *root* user, 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

Installed Program: lynx
Installed Libraries: None
Installed Directories: /etc/lynx and /usr/share/doc/lynx-2.8.8rel.2

Short Descriptions

lynx   is a general purpose, text-based, distributed information browser for the World Wide Web.

Last updated on 2014-09-10 06:19:10 -0700

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-7.6 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/7.6/w3m-0.5.3-bdwgc72-1.patch**

W3m Dependencies

Required

GC-7.4.2

Optional

GPM-1.20.7, OpenSSL-1.0.1i, Imlib2-1.4.6, GTK+-2.24.24, **Imlib** (not recommended: obsolete, abandoned upstream, **buggy**, and gives no additional functionality as compared to other image loading libraries), gdk-pixbuf-2.30.8, Compface-1.5.2, and **nkf**, a Mail User Agent, and an External Browser

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/W3M

Installation of W3m

Install w3m by running the following commands:

```
sed -i 's#gdk-pixbuf-xlib-2.0#& x11#' configure &&


./configure --prefix=/usr --sysconfdir=/etc &&
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 's#gdk-pixbuf-xlib-2.0#& x11#' configure`: This sed fixes compiling w3m using GTK+-2.24.24 as its image library. It has no impact if GTK+-2.24.24 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`.

Last updated on 2014-09-20 19:22:09 -0700

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).

Fetchmail-6.3.26

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-7.6 platform.

Package Information

- Download (FTP): **ftp://ftp.at.gnucash.org/pub/infosys/mail/fetchmail/fetchmail-6.3.26.tar.xz**
- Download MD5 sum: 61b66faad044afa26e142bb1791aa2b3

- Estimated disk space required: 14 MB
- Estimated build time: 0.1 SBU

Fetchmail Dependencies

Required

OpenSSL-1.0.1i and a local MDA (Procmail-3.22)

Optional

Python-2.7.8 and Tk-8.6.2

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/fetchmail

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 configuration options once you get used to it.

Contents

Installed Programs: fetchmail and fetchmailconf
Installed Libraries: None
Installed Directories: None

Short Descriptions

`fetchmail`   when executed as a user, this will source `~/.fetchmailrc` and download the appropriate mail.

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-7.6 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/7.6/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-1.0.1i or NSS-3.17, MIT Kerberos V5-1.12.2 (for IMAP GSSAPI authentication), and an MTA

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/mailx

Installation of Heirloom mailx

> **Note**
>
> This package does not support parallel build.

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 -j1
```

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

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`.

Last updated on 2014-09-20 19:22:09 -0700

Mutt-1.5.23

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-7.6 platform.

Package Information

- Download (FTP): **ftp://ftp.mutt.org/mutt/mutt-1.5.23.tar.gz**
- Download MD5 sum: 11f5b6a3eeba1afa1257fe93c9f26bff
- Download size: 3.7 MB
- Estimated disk space required: 36 MB (plus a further 8MB for the PDF manual)
- Estimated build time: 0.7 SBU (plus a further 0.2SBU to regenerate the html if the required dependencies are present, and 0.2 SBU to build the PDF manual)

Mutt Dependencies

Optional

Aspell-0.60.6.1, Cyrus SASL-2.1.26, GDB-7.8, GnuPG-2.0.26, GPGME-1.5.1, **libgssapi**, libidn-1.29, MIT Kerberos V5-1.12.2, **Mixmaster**, an MTA (that provides a `sendmail` command), S-Lang-2.2.4, OpenSSL-1.0.1i or GnuTLS-3.3.7, Berkeley DB-6.1.19 or **QDBM** or **Tokyo Cabinet**

Optional (To Regenerate HTML Documentation)

libxslt-1.1.28 and either Lynx-2.8.8rel.2, w3m-0.5.3, or **ELinks**

Optional (To Generate PDF Manual)

docbook-dsssl-1.79, OpenJade-1.3.2, and texlive-20140525

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/mutt

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
```

```
chgrp -v mail /var/mail
```

Install Mutt by running the following commands:

```
./configure --prefix=/usr      \
            --sysconfdir=/etc \
            --with-docdir=/usr/share/doc/mutt-1.5.23 \
            --enable-pop       \
            --enable-imap      \
            --enable-hcache    \
            --without-qdbm     \
            --with-gdbm        \
            --without-bdb      \
            --without-tokyocabinet &&
make
```

To generate the PDF manual with texlive-20140525, 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-1.5.23
```

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-1.0.1i 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-1.5.23/samples/gpg.rc >> ~/.muttrc
```

Contents

Installed Directories: /usr/share/doc/mutt-1.5.23

Short Descriptions

`flea`	is a bug submitter for Mutt .
`mutt`	is a Mail User Agent (MUA) which enables you to read, write and delete your email.
`mutt_dotlock`	implements the mail spool file lock.
`muttbug`	is a script that executes `flea` .
`pgpewrap`	prepares a command line for the GnuPG-2.0.26 utilities.
`pgpring`	is a key ring dumper for **PGP**. It is not needed for GnuPG-2.0.26.
`smime_keys`	manages a keystore for S/MIME certificates.

Last updated on 2014-09-20 19:22:09 -0700

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-7.6 platform.

Package Information

- Download (HTTP): **http://www.ring.gr.jp/archives/net/mail/procmail/procmail-3.22.tar.gz**
- Download (FTP): **ftp://ftp.ucsb.edu/pub/mirrors/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

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/procmail

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

Installed Directories: None

Short Descriptions

`formail`	is a filter that can be used to format mail into mailbox format.
`lockfile`	is a utility that can lock a file for single use interactively or in a script.
`mailstat`	prints a summary report of mail that has been filtered by `procmail` since the last time `mailstat` was ran.
`procmail`	is an autonomous mail processor. It performs all the functions of an MDA (Mail Delivery Agent).

Last updated on 2014-09-20 19:22:09 -0700

Re-alpine-2.03

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-7.6 platform.

Package Information

- Download (HTTP): **http://sourceforge.net/projects/re-alpine/files/re-alpine-2.03.tar.bz2**
- Download MD5 sum: 566d269d4bd43aba68f377110a6295d5
- Download size: 5.1 MB
- Estimated disk space required: 122 MB
- Estimated build time: 1.0 SBU

Re-alpine Dependencies

Recommended

OpenSSL-1.0.1i

Optional

OpenLDAP-2.4.39, MIT Kerberos V5-1.12.2, Aspell-0.60.6.1, Tcl-8.6.2, and Linux-PAM-1.1.8

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/re-alpine

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.

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 rpload
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.
`rpload`	is an utility for uploading a local pinerc or address book to an IMAP server.

Last updated on 2014-09-20 19:22:09 -0700

Other Mail and News Programs

Balsa-2.5.1 is a GTK2 based mail client.

SeaMonkey-2.29 includes both a mail client and newsreader in its installation.

Thunderbird-31.1.1 is a mail/news client based on the Mozilla code base.

Last updated on 2013-06-01 05:20:39 -0700

Part V. Servers

Chapter 20. Major Servers

Major servers are the programs that provide content or services to users or other programs.

Apache-2.4.10

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-7.6 platform.

Package Information

- Download (HTTP): **http://archive.apache.org/dist/httpd/httpd-2.4.10.tar.bz2**
- Download MD5 sum: 44543dff14a4ebc1e9e2d86780507156
- Download size: 4.9 MB
- Estimated disk space required: 94 MB
- Estimated build time: 0.7 SBU

Additional Downloads

Apache HTTPD Dependencies

Required

[Apr-Util-1.5.3](#) and [PCRE-8.35](#)

Recommended

[OpenSSL-1.0.1i](#)

Optional

[Berkeley DB-6.1.19](#), [Doxygen-1.8.8](#), [libxml2-2.9.1](#), [Lynx-2.8.8rel.2](#), [OpenLDAP-2.4.39](#) ([Apr-Util-1.5.3](#) needs to be installed with ldap suport), [rsync-3.1.1](#), **[Distcache](#)**, and [Lua-5.2.3](#)

User Notes: ***http://wiki.linuxfromscratch.org/blfs/wiki/apache***

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-2.4.10-blfs_layout-1.patch &&
sed '/dir.*CFG_PREFIX/s@^@#@' -i support/apxs.in &&
./configure --enable-authnz-fcgi                     \
            --enable-layout=BLFS                      \
            --enable-mods-shared="all cgi"            \
            --enable-mpms-shared=all                  \
            --enable-suexec=shared                    \
            --with-apr=/usr/bin/apr-1-config          \
            --with-apr-util=/usr/bin/apu-1-config     \
            --with-suexec-bin=/usr/lib/httpd/suexec   \
            --with-suexec-caller=apache               \
            --with-suexec-docroot=/srv/www            \
            --with-suexec-logfile=/var/log/httpd/suexec.log \
            --with-suexec-uidmin=100                  \
            --with-suexec-userdir=public_html         &&
make
```

This package does not come with a test suite.

Now, as the *root* user (notice that DESTDIR does not work properly as unpriviledged 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

`sed '/dir.*CFG_PREFIX/s@^@#@'...`: Forces the apxs utility to use absolute pathnames for modules, when instructed to do so.

`--enable-authnz-fcgi`: Build FastCGI authorizer-based authentication and authorization (mod_authnz_fcgi.so fast CGI module).

`--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.

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 setgid *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/extra/*

Configuration Information

See **file:///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-20140919 package.

```
make install-httpd
```

Contents

Installed Programs: ab, apachectl, apxs, checkgid, dbmmanage, fcgistarter, htcacheclean, htdbm, htdigest, htpasswd, httpd, httxt2dbm, logresolve, rotatelogs, and suexec

Installed Libraries: Several libraries under /usr/lib/httpd/modules/

Installed Directories: /etc/httpd, /srv/www, /usr/include/httpd, /usr/lib/httpd, /usr/share/httpd, /var/log/httpd, and /var/run/httpd

Short Descriptions

ab	is a tool for benchmarking your Apache HTTP server.
apachectl	is a front end to the Apache HTTP server which is designed to help the administrator control the functioning of the Apache httpd daemon.
apxs	is a tool for building and installing extension modules for the Apache HTTP server.
checkgid	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.
dbmmanage	is used to create and update the DBM format files used to store usernames and passwords for basic authentication of HTTP users.
htcacheclean	is used to clean up the disk cache.
htdbm	is used to manipulate the DBM password databases.
htdigest	is used to create and update the flat-files used to store usernames, realms and passwords for digest authentication of HTTP users.
htpasswd	is used to create and update the flat-files used to store usernames and passwords for basic authentication of HTTP users.
httpd	is the Apache HTTP server program.
httxt2dbm	is used to generate DBM files from text, for use in RewriteMap.
logresolve	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.

Last updated on 2014-09-20 19:22:09 -0700

BIND-9.10.0-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

This package is known to build and work properly using an LFS-7.6 platform.

Package Information

- Download (FTP): **ftp://ftp.isc.org/isc/bind9/9.10.0-P2/bind-9.10.0-P2.tar.gz**
- Download MD5 sum: 85f5bbd655f7fbb946fe128c5adcc9ca
- Download size: 8.0 MB
- Estimated disk space required: 101 MB (additional 54 MB to run the test suite)
- Estimated build time: 1.6 SBU (additional 24 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/7.6/bind-9.10.0-P2-use_iproute2-1.patch**

BIND Dependencies

Optional

libcap-2.24 with PAM, libxml2-2.9.1, MIT Kerberos V5-1.12.2, and OpenSSL-1.0.1i

Optional database backends

PostgreSQL-9.3.5, MariaDB-10.0.13 or **MySQL**, Berkeley DB-6.1.19, OpenLDAP-2.4.39, and unixODBC-2.3.2

Optional (to run the test suite)

Net::DNS-0.76 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-1.8.8, texlive-20140525, and libxslt-1.1.28

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/bind

Installation of BIND

If you have chosen not to install net-tools, apply the iproute2 patch with the following command:

```
patch -Np1 -i ../bind-9.10.0-P2-use_iproute2-1.patch
```

Install BIND by running the following commands:

```
sed -e 's/resolver //'   \
    -e 's/rpz //'        \
    -e 's/statistics //' \
    -e 's/xfer //'       \
    -i bin/tests/system/conf.sh.in &&
./configure --prefix=/usr            \
            --sysconfdir=/etc        \
            --localstatedir=/var     \
            --mandir=/usr/share/man  \
            --enable-threads         \
            --with-libtool           \
            --disable-static         \
            --with-randomdev=/dev/urandom &&
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
```

```
grep "R:PASS" check.log | wc -l
```

and the following command check tests that failed:

```
grep -A1 "R:FAIL" check.log
```

Finally, install the package as the *root* user:

```
make install &&
chmod -v 0755 /usr/lib/lib{bind9,dns,isc{,cc,cfg},lwres}.so &&

install -v -m755 -d /usr/share/doc/bind-9.10.0-P2/{arm,misc} &&
install -v -m644    doc/arm/*.html \
                    /usr/share/doc/bind-9.10.0-P2/arm &&
install -v -m644 \
    doc/misc/{dnssec,ipv6,migrat*,options,rfc-compliance,roadmap,sdb} \
    /usr/share/doc/bind-9.10.0-P2/misc
```

Command Explanations

`sed ... bin/tests/system/conf.sh.in`: This command removes tests that fail (some for unknown reasons).

--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.

--with-randomdev=/dev/urandom: This parameter specifes a non-blocking random device for use with digital signatures.

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

`chmod 0755 /usr/lib/{lib{bind9,dns,isc{,cc,cfg},lwres}.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`, `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/urandom c 1 9 &&
chmod 666 /srv/named/dev/{null,urandom} &&
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 `rdnc.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
```

```
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
                                       // facility
      severity info;                   // only send priority info
                                       // and higher
  };

  channel default_debug {
      file "named.run";                // write to named.run in
                                       // the working directory
                                       // Note: stderr is used instead
                                       // of "named.run"
                                       // if the server is started
                                       // with the '-f' option.
      severity dynamic;                // 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           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.

```
.                    6D   IN   NS    A.ROOT-SERVERS.NET.
.                    6D   IN   NS    B.ROOT-SERVERS.NET.
.                    6D   IN   NS    C.ROOT-SERVERS.NET.
.                    6D   IN   NS    D.ROOT-SERVERS.NET.
.                    6D   IN   NS    E.ROOT-SERVERS.NET.
.                    6D   IN   NS    F.ROOT-SERVERS.NET.
.                    6D   IN   NS    G.ROOT-SERVERS.NET.
.                    6D   IN   NS    H.ROOT-SERVERS.NET.
.                    6D   IN   NS    I.ROOT-SERVERS.NET.
.                    6D   IN   NS    J.ROOT-SERVERS.NET.
.                    6D   IN   NS    K.ROOT-SERVERS.NET.
.                    6D   IN   NS    L.ROOT-SERVERS.NET.
.                    6D   IN   NS    M.ROOT-SERVERS.NET.
A.ROOT-SERVERS.NET.  6D   IN   A     198.41.0.4
B.ROOT-SERVERS.NET.  6D   IN   A     192.228.79.201
C.ROOT-SERVERS.NET.  6D   IN   A     192.33.4.12
D.ROOT-SERVERS.NET.  6D   IN   A     199.7.91.13
E.ROOT-SERVERS.NET.  6D   IN   A     192.203.230.10
F.ROOT-SERVERS.NET.  6D   IN   A     192.5.5.241
G.ROOT-SERVERS.NET.  6D   IN   A     192.112.36.4
H.ROOT-SERVERS.NET.  6D   IN   A     128.63.2.53
I.ROOT-SERVERS.NET.  6D   IN   A     192.36.148.17
J.ROOT-SERVERS.NET.  6D   IN   A     192.58.128.30
K.ROOT-SERVERS.NET.  6D   IN   A     193.0.14.129
L.ROOT-SERVERS.NET.  6D   IN   A     199.7.83.42
M.ROOT-SERVERS.NET.  6D   IN   A     202.12.27.33
EOF
```

The `root.hints` file is a list of root name servers. This file must be updated periodically with the `dig` utility. A current copy of root.hints can be obtained from **ftp://rs.internic.net/domain/named.root**. Consult the **BIND 9 Administrator Reference Manual** for details.

Create or modify `resolv.conf` to use the new name server with the following commands:

> **Note**
>
> Replace *<yourdomain.com>* with your own valid domain name.

```
cp /etc/resolv.conf /etc/resolv.conf.bak &&
cat > /etc/resolv.conf << "EOF"
search <yourdomain.com>
nameserver 127.0.0.1
EOF
```

Set permissions on the `chroot` jail with the following command:

```
chown -R named:named /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-20140919 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

Contents

Installed Programs: arpaname, bind9-config hardlinked to isc-config.sh, ddns-confgen, delv, dig, dnssec-checkds, dnssec-coverage, dnssec-dsfromkey, dnssec-importkey, dnssec-keyfromlabel, dnssec-keygen, dnssec-revoke, dnssec-settime, dnssec-signzone, dnssec-verify, genrandom, host, isc-hmac-fixup, lwresd hardlinked to named, named-checkconf, named-checkzone, named-compilezone (symlink), named-journalprint, named-rrchecker, nsec3hash, nslookup, nsupdate, rndc, rndc-confgen, and tsig-keygen (symlink)

Installed Libraries: libbind9.so, libdns.so, libirs.so, libisc.so, libisccc.so, libisccfg.so, and liblwres.so

Installed Directories: /srv/named, /usr/include/bind9, /usr/include/dns, /usr/include/dst, /usr/include/irs, /usr/include/isc, /usr/include/isccc, /usr/include/isccfg, /usr/include/lwres, /usr/include/pk11, /usr/include/pkcs11, and /usr/share/doc/bind-9.10.0-P2

Short Descriptions

`dig`	interrogates DNS servers.
`dnssec-keygen`	is a key generator for secure DNS.
`dnssec-signzone`	generates signed versions of zone files.
`host`	is a utility for DNS lookups.
`lwresd`	is a caching-only name server for local process use.
`named`	is the name server daemon.
`named-checkconf`	checks the syntax of `named.conf` files.
`named-checkzone`	checks zone file validity.
`nslookup`	is a program used to query Internet domain nameservers.
`nsupdate`	is used to submit DNS update requests.
`rndc`	controls the operation of BIND.
`rndc-confgen`	generates `rndc.conf` files.

Last updated on 2014-09-19 13:13:19 -0700

ProFTPD-1.3.5

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-7.6 platform.

Package Information

- Download (FTP): **ftp://ftp.proftpd.org/distrib/source/proftpd-1.3.5.tar.gz**
- Download MD5 sum: aff1bff40e675244d72c4667f203e5bb
- Download size: 7.2 MB
- Estimated disk space required: 34 MB
- Estimated build time: 0.3 SBU

ProFTPD Dependencies

Optional

libcap-2.24 with PAM, Linux-PAM-1.1.8, MariaDB-10.0.13 or **MySQL**, OpenSSL-1.0.1i, PCRE-8.35, PostgreSQL-9.3.5 and to run tests: Check-0.9.14 and **Test::Unit-0.14**

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/proftpd

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        &&
```

```
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. Even when using that version of Test::Unit, there are many failures (41/1397) although the program appears to run well. The tests take a long time (45 minutes, not CPU dependent) and are not recommended. To test the results anyway, add the switch: `--enable-tests` to the `configure`, and issue: `make check`. If the tests are run with root privileges, more tests are run, but there are more failures.

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.

> **Note**
>
> Support for most of the dependency packages requires using options passed to the `configure` script. View the output from `./configure --help` for complete information about enabling dependency packages.

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
```

```
  MaxInstances                   30

  # Set the user and group that the server normally runs at.
  User                           proftpd
  Group                          proftpd

  # To cause every FTP user to be "jailed" (chrooted) into their home
  # directory, uncomment this line.
  #DefaultRoot ~


  # 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-20140919](#) package.

```
make install-proftpd
```

Contents

Installed Programs: ftpcount, ftpdctl, ftpasswd, ftpmail, ftpquota, ftpscrub, ftptop, ftpshut, ftpcount, ftpwho, and proftpd

Installed Libraries: None

Installed Directory: /usr/lib/proftpd

Short Descriptions

`proftpd`	is the FTP daemon.
`ftpcount`	shows the current number of connections.
`ftpdctl`	is used to control the proftpd daemon while it is running.
`ftpasswd`	is a Perl script designed to create and manage AuthUserFiles and AuthGroupFiles of the correct format for proftpd.
`ftpmail`	is a Perl script for sending email based on the proftpd TransferLog.
`ftpquota`	is a Perl script designed to create and manage limits and tally files for the mod_quotatab + mod_quotatab_file module combination for proftpd.
`ftpscrub`	provides a way to scrub the scoreboard file on demand.
`ftpshut`	shuts down all proftpd servers at a given time.
`ftptop`	displays running status on connections.
`ftpwho`	shows current process information for each session.

Last updated on 2014-09-21 12:24:38 -0700

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vsftpd-3.0.2

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-7.6 platform.

Package Information

- Download (FTP): **https://security.appspot.com/downloads/vsftpd-3.0.2.tar.gz**
- Download MD5 sum: 8b00c749719089401315bd3c44dddbb2
- Download size: 196 KB
- Estimated disk space required: 1.8 MB
- Estimated build time: less than 0.1 SBU

vsftpd Dependencies

Optional

libcap-2.24 with PAM, Linux-PAM-1.1.8, and OpenSSL-1.0.1i

User Notes: *http://wiki.linuxfromscratch.org/blfs/wiki/vsftpd*

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 /usr/share/vsftpd/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 (`/usr/share/vsftpd/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

`/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=/usr/share/vsftpd/empty
EOF
```

Boot Script

Install the `/etc/rc.d/init.d/vsftpd` init script included in the blfs-bootscripts-20140919 package.

```
make install-vsftpd
```

Contents

Installed Program: vsftpd
Installed Libraries: None
Installed Directories: //usr/share/vsftpd, /home/ftp

Short Descriptions

vsftpd is the FTP daemon.

Last updated on 2014-09-21 12:24:38 -0700

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).

Dovecot-2.2.13

Introduction to Dovecot

Dovecot is an Internet Message Access Protocol (IMAP) and Post Office Protocol (POP) server, written primarily with security in mind. Dovecot aims to be lightweight, fast and easy to set up as well as highly configurable and easily extensible with plugins.

This package is known to build and work properly using an LFS-7.6 platform.

Package Information

- Download (HTTP): **http://www.dovecot.org/releases/2.2/dovecot-2.2.13.tar.gz**
- Download MD5 sum: a3eb1c0b1822c4f2b0fe9247776baa71
- Download size: 4.4 MB
- Estimated disk space required: 203 MB
- Estimated build time: 1.6 SBU

Dovecot Dependencies

Optional

[libcap-2.24 with PAM](libcap-2.24), OpenSSL-1.0.1i, [MIT Kerberos V5-1.12.2](MIT) (for GSSAPI support), Linux-PAM-1.1.8, OpenLDAP-2.4.39, PostgreSQL-9.3.5, MariaDB-10.0.13 or **MySQL**, SQLite-3.8.6, and CLucene-2.3.3.4

*User Notes: **http://wiki.linuxfromscratch.org/blfs/wiki/dovecot***

There should be dedicated users and groups for unprivileged Dovecot processes and for processing users' logins. Issue the following commands as the *root* user:

```
groupadd -g 42 dovecot &&
useradd -c "Dovecot unprivileged user" -d /dev/null -u 42 \
        -g dovecot -s /bin/false dovecot &&
groupadd -g 43 dovenull &&
useradd -c "Dovecot login user" -d /dev/null -u 43 \
        -g dovenull -s /bin/false dovenull
```

Install Dovecot by running the following commands:

```
./configure --prefix=/usr \
            --sysconfdir=/etc \
            --localstatedir=/var \
            --docdir=/usr/share/doc/dovecot-2.2.13 \
            --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-ldap`: This switch enables OpenLDAP authentication support.

`--with-pgsql`: This switch enables PostgreSQL authentication support.

`--with-mysql`: This switch enables MySQL authentication support.

`--with-sqlite`: This switch enables SQLite authentication support.

`--with-lucene`: This switch enables CLucene full text search support.

`--with-krb5`: This switch enables GSSAPI authentication support.

Configuring Dovecot

Config Files

`/etc/dovecot/dovecot.conf`, `/etc/dovecot/conf.d/*`, and `/etc/dovecot/local.conf`

Configuration Information

Copy an example configuration, which you can use as a starting point:

```
cp -rv /usr/share/doc/dovecot-2.2.13/example-config/* /etc/dovecot
```

The following configuration is a simple proof of concept with IMAP service using local users for authentication and mailbox location. Reading files from the `conf.d` directory is commented out since the included example configuration requires OpenSSL and Linux PAM.

```
sed -i '/^\!include / s/^/#/' /etc/dovecot/dovecot.conf &&
chmod -v 1777 /var/mail &&
cat > /etc/dovecot/local.conf << "EOF"
protocols = imap
ssl = no
# The next line is only needed if you have no IPv6 network interfaces
listen = *
mail_location = mbox:~/Mail:INBOX=/var/mail/%u
userdb {
  driver = passwd
}
passdb {
  driver = shadow
}
EOF
```

Boot Script

If you want the Dovecot server to start automatically when the system is booted, install the `/etc/rc.d/init.d/dovecot` init script included in the [blfs-bootscripts-20140919](#) package.

```
make install-dovecot
```

Contents

Installed Programs: doveadm, doveconf, dovecot, dsync, and various internal programs
Installed Libraries: various internal plugins
Installed Directories: /etc/dovecot, /usr/include/dovecot, /usr/lib/dovecot, /usr/libexec/dovecot, and /usr/share/doc/dovecot-2.2.13

Short Descriptions

doveadm	is the Dovecot administration tool.
doveconf	is Dovecot 's configuration dumping utility.
dovecot	is the IMAP and POP server.
dsync	is Dovecot 's mailbox synchronization utility.

Last updated on 2014-09-21 16:43:46 -0700

Exim-4.84

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-7.6 platform.

Package Information

- Download (HTTP): **http://ftp.exim.org/pub/exim/exim4/exim-4.84.tar.bz2**
- Download (FTP): **ftp://ftp.exim.org/pub/exim/exim4/exim-4.84.tar.bz2**
- Download MD5 sum: 3d14522e604b687b9e515f5aa739b2c0
- Download size: 1.7 MB
- Estimated disk space required: 17 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

[PCRE-8.35](#)

Optional

[Berkeley DB-6.1.19](#) or **TDB** (as an alternative to GDBM, built in LFS), [X Window System](#), [OpenLDAP-2.4.39](#), [OpenSSL-1.0.1i](#) or [GnuTLS-3.3.7](#), [Cyrus SASL-2.1.26](#), [MariaDB-10.0.13](#) or **MySQL**, [PostgreSQL-9.3.5](#), [SQLite-3.8.6](#), [Linux-PAM-1.1.8](#), and **OpenDMARC**

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/exim

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 &&
```

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 &&
echo -e "USE_GDBM = yes\nDBMLIB = -lgdbm" >> 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-4.84 &&
install -v -m644 doc/* /usr/share/doc/exim-4.84 &&
ln -sfv 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.

`echo -e ... > Local/Makefile`: Setting those variables allows to use GDBM instead of the default Berkeley DB. Remove this command if you have installed Berkeley DB-6.1.19.

`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 -sfv 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-4.84/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-4.84/doc/html/spec_html/ch41.html**.

To use a backend database other than Berkeley DB, see the instructions at **http://exim.org/exim-html-4.84/doc/html/spec_html/ch04.html#SECTdb**.

For SSL functionality, see the instructions at **http://exim.org/exim-html-4.84/doc/html/spec_html/ch04.html#SECTinctlsssl** and **http://exim.org/exim-html-4.84/doc/html/spec_html/ch39.html**.

For tcpwrappers functionality, see the instructions at **http://exim.org/exim-html-4.84/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-4.84/doc/html/spec_html/index.html**.

For information about linking Linux-PAM, refer to the instructions **http://exim.org/exim-html-4.84/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-4.84/doc/html/spec_html/ch09.html**.

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-4.84/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-20140919 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-4.84-3, exim_checkaccess, exim_dbmbuild, exim_dumpdb, exim_fixdb, exim_lock, exim_tidydb, eximstats, exinext, exipick, exiqgrep, exiqsumm, exiwhat, and optionally, eximon, eximon.bin, and sendmail (symlink)

Installed Libraries: None

Installed Directories: /usr/share/doc/exim-4.84 and /var/spool/exim

Short Descriptions

exicyclog	cycles Exim log files.
exigrep	searches Exim log files.
exim	is a symlink to the **exim-4.84-3** MTA daemon.
exim-4.84-3	is the Exim mail transport agent daemon.
exim_checkaccess	states whether a given recipient address from a given host is acceptable or not.
exim_dbmbuild	creates and rebuilds Exim databases.
exim_dumpdb	writes the contents of Exim databases to the standard output.
exim_fixdb	modifies data in Exim databases.
exim_lock	locks a mailbox file.
exim_tidydb	removes old records from Exim databases.
eximstats	generates mail statistics from Exim log files.
exinext	queries remote host retry times.
exipick	selects messages based on various criteria.

exiqsumm	produces a summary of the messages in the mail queue.
exiwhat	queries running Exim processes.
eximon	is a start-up shell script for `eximon.bin` used to set the required environment variables before running the program.
eximon.bin	is a monitor program which displays current information in an X window, and also contains a menu interface to Exim 's command line administration options.

Last updated on 2014-09-21 16:43:46 -0700

Postfix-2.11.1

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-7.6 platform.

Package Information

- Download (FTP): **ftp://ftp.porcupine.org/mirrors/postfix-release/official/postfix-2.11.1.tar.gz**
- Download MD5 sum: 56ac1f1a79737c4ac1e24535a122a4a6
- Download size: 3.9 MB
- Estimated disk space required: 170 MB
- Estimated build time: 0.4 SBU

Postfix Dependencies

Required

Berkeley DB-6.1.19

Recommended

Cyrus SASL-2.1.26 and OpenSSL-1.0.1i

Optional

MariaDB-10.0.13 or **MySQL**, OpenLDAP-2.4.39, PCRE-8.35, PostgreSQL-9.3.5, SQLite-3.8.6, and **CDB** or **TinyCDB**

Note that SQLite, MySQL, PostgreSQL and CDB are only useful if there is a known need for them.

User Notes: *http://wiki.linuxfromscratch.org/blfs/wiki/postfix*

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

Run the following command to enable Postfix to compile against the current version of BerkeleyDB:

```
sed -i "s/DB_VERSION_MAJOR == 5/DB_VERSION_MAJOR >= 5/" src/util/dict_db.c
```

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/*
```

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 -llber'
```

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_PGSQL -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>/libcdb.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="-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 \
```

```
        html_directory=/usr/share/doc/postfix-2.11.1/html \
        readme_directory=/usr/share/doc/postfix-2.11.1/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.

`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-20140919](#) package.

```
make install-postfix
```

Contents

Installed Libraries: None

Installed Directories: /etc/postfix, /usr/lib/postfix, /usr/share/doc/postfix-2.11.1, /var/lib/postfix, and /var/spool/postfix

Short Descriptions

`mailq`	A symlink to `sendmail`.
`newaliases`	A symlink to `sendmail`.
`postalias`	is a utility for Postfix alias database maintenance
`postcat`	Prints the contents of files from the Postfix queue in human readable format.
`postconf`	Displays or changes the value of Postfix configuration parameters.
`postdrop`	Creates a file in the maildrop directory and copies its standard input to the file.
`postfix`	is the Postfix control program.
`postkick`	Sends requests to the specified service over a local transport channel.
`postlock`	Locks a mail folder for exclusive use, and executes commands passed to it.
`postlog`	A Postfix -compatible logging interface for use in, for example, shell scripts.
`postmap`	Creates or queries one or more Postfix lookup tables, or updates an existing one.
`postmulti`	is the Postfix multi-instance manager. It allows a system administrator to manage multiple Postfix instances on a single host.
`postqueue`	The Postfix user interface for queue management.
`postsuper`	The Postfix user interface for superuser queue management.
`sendmail`	is the Postfix to Sendmail compatibility interface.

Last updated on 2014-09-09 14:11:38 -0700

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sendmail-8.14.9

Introduction to sendmail

The sendmail package contains a Mail Transport Agent (MTA).

This package is known to build and work properly using an LFS-7.6 platform.

Package Information

- Download (FTP): **ftp://ftp.sendmail.org/pub/sendmail/sendmail.8.14.9.tar.gz**
- Download MD5 sum: 6a3bdceffa592316f830be289a4bd783
- Download size: 2.0 MB
- Estimated disk space required: 16 MB
- Estimated build time: 0.3 SBU

sendmail Dependencies

Required

OpenLDAP-2.4.39 (client)

Recommanded

OpenSSL-1.0.1i and Cyrus SASL-2.1.26

Optional

Procmail-3.22, **nph**, and ghostscript-9.14 (for creating PDF documentation)

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/sendmail

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                                    &&
```

```
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 -ldb')
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

sed -i 's|/usr/man/man|/usr/share/man/man|' \
    devtools/OS/Linux             &&

sed -i -r "s/^# if (DB.*)$/# if (\1) || DB_VERSION_MAJOR >= 5/" \
    include/sm/bdb.h              &&

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-8.14.9/{cf,sendmail} &&

install -v -m644 CACerts FAQ KNOWNBUGS LICENSE PGPKEYS README RELEASE_NOTES \
        /usr/share/doc/sendmail-8.14.9 &&

install -v -m644 sendmail/{README,SECURITY,TRACEFLAGS,TUNING} \
        /usr/share/doc/sendmail-8.14.9/sendmail &&

install -v -m644 cf/README /usr/share/doc/sendmail-8.14.9/cf &&

for manpage in sendmail editmap mailstats makemap praliases smrsh
do
    install -v -m644 $manpage/$manpage.8 /usr/share/man/man8
done &&

install -v -m644 sendmail/aliases.5    /usr/share/man/man5 &&
install -v -m644 sendmail/mailq.1      /usr/share/man/man1 &&
install -v -m644 sendmail/newaliases.1 /usr/share/man/man1 &&
install -v -m644 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-8.14.9 &&
install -v -m644 op.ps op.txt op.pdf /usr/share/doc/sendmail-8.14.9 &&
cd ../..
```

Command Explanations

`cat > devtools/Site/site.config.m4 << "EOF"`: This creates a configuration file changing some of the default settings.

`sed ... devtools/OS/Linux`: The site.config.m4 does not honor a change to the man directory, so fix it in the OS definitions.

`sed ... include/sm/bdb.h`: This allows sendmail to build properly with Berkeley DB-6.1.19 versions 5 and above.

`sh Build; sh Build sendmail.cf; sh Build install-cf; sh Build install`: sendmail uses an m4 based build script to create the various `Makefile`s. These commands build and install the package.

`for manpage in...;do...;done; install ...`: The man pages are installed already formatted and `man` displays them somewhat garbled. These commands replace the formatted pages with pages `man` can display properly.

Configuring sendmail

Config Files

/etc/mail/*

Configuration Information

Create the `/etc/mail/local-host-names` and `/etc/mail/aliases` files using the following commands as the *root* user:

```
echo $(hostname) > /etc/mail/local-host-names
cat > /etc/mail/aliases << "EOF"
postmaster: root
MAILER-DAEMON: root

EOF
newaliases
```

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:

```
cd /etc/mail &&
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-20140919 package.

```
make install-sendmail
```

Installed Programs:	editmap, mailstats, makemap, praliases, sendmail, smrsh, and vacation; symlinks to /usr/sbin/sendmail: hoststat, mailq, newaliases, and purgestat
Installed Libraries:	None
Installed Directories:	/etc/mail, /usr/share/doc/sendmail-8.14.9, /var/spool/mqueue, and /var/spool/clientmqueue

Short Descriptions

editmap	queries and edits sendmail map files.
hoststat	prints sendmail 's persistent host status.
mailstats	displays sendmail statistics.
mailq	prints a summary of outbound mail messages waiting for delivery.
makemap	creates sendmail map files.
newaliases	rebuilds /etc/mail/aliases.db from the contents of /etc/mail/aliases.
praliases	displays current sendmail aliases.
purgestat	causes sendmail to clear (purge) all its host-status information.
sendmail	is the sendmail mail transport agent.
smrsh	is a restricted shell for sendmail .
vacation	is an email auto responder.

Last updated on 2014-09-21 16:43:46 -0700

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-6.1.19

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-7.6 platform.

Package Information

- Download (HTTP): **http://download.oracle.com/berkeley-db/db-6.1.19.tar.gz**
- Download MD5 sum: bfea581b42dc0fc247041e7d48cfd7fb
- Download size: 36 MB
- Estimated disk space required: 300 MB with Java and Tcl supports
- Estimated build time: 0.8 SBU

Berkeley DB Dependencies

Optional

Tcl-8.6.2, OpenJDK-1.7.0.65/IcedTea-2.5.2, and Sharutils-4.14 (for the uudecode command)

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/db

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
```

```
make docdir=/usr/share/doc/db-6.1.19 install &&
chown -v -R root:root                          \
      /usr/bin/db_*                            \
      /usr/include/db{,_185,_cxx}.h            \
      /usr/lib/libdb*.{so,la}                  \
      /usr/share/doc/db-6.1.19
```

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-6.1.19 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, libdb_cxx.so, libdb_java.so, and libdb_tcl.so
Installed Directory: /usr/share/doc/db-6.1.19

Short Descriptions

`db_archive`	prints the pathnames of log files that are no longer in use.
`db_checkpoint`	is a daemon process used to monitor and checkpoint database logs.
`db_deadlock`	is used to abort lock requests when deadlocks are detected.
`db_dump`	converts database files to a flat file format readable by `db_load`.
`db_hotbackup`	creates "hot backup" or "hot failover" snapshots of Berkeley DB databases.
`db_load`	is used to create database files from flat files created with `db_dump`.
`db_log_verify`	verifies the log files of a database.
`db_printlog`	converts database log files to human readable text.
`db_recover`	is used to restore a database to a consistent state after a failure.
`db_replicate`	is a daemon process that provides replication/HA services on a transactional environment.
`db_stat`	displays database environment statistics.
`db_tuner`	analyzes the data in a btree database, and suggests a page size that is likely to deliver optimal operation.
`db_upgrade`	is used to upgrade database files to a newer version of Berkeley DB .
`db_verify`	is used to run consistency checks on database files.

Last updated on 2014-09-15 22:13:43 -0700

MariaDB-10.0.13

Introduction to MariaDB

MariaDB is a community-developed fork and a drop-in replacement for the MySQL relational database management system.

This package is known to build and work properly using an LFS-7.6 platform.

Package Information

- Download (FTP): **ftp://mirrors.fe.up.pt/pub/mariadb/mariadb-10.0.13/source/mariadb-10.0.13.tar.gz**
- Download MD5 sum: 7b2e88864b51d7d0607dc37abb8a0adb
- Download size: 49 MB
- Estimated disk space required: 1.4 GB
- Estimated build time: 9.4 SBU (additional 0.4 SBU for the tests)

> **Note**
>
> The installed size of MariaDB is 297 MB, but this can be reduced by about 160 MB, if desired, by removing the /usr/share/mysql/test directory after installation.

MariaDB Dependencies

Required

CMake-3.0.1 and OpenSSL-1.0.1i

Recommended

libevent-2.0.21

Optional

Boost-1.56.0, libxml2-2.9.1, Linux-PAM-1.1.8, PCRE-8.35, unixODBC-2.3.2, Valgrind-3.10.0, **libaio**, **Judy**, **Sphinx**, and **TokuDB**

User Notes: *http://wiki.linuxfromscratch.org/blfs/wiki/mariadb*

Installation of MariaDB

> **Warning**
>
> MariaDB and MySQL cannot be installed on the same system without extensive changes to the build configuration of one of the two applications.

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
```

Install MariaDB by running the following commands:

```
sed -i "s@data/test@\${INSTALL_MYSQLTESTDIR}@g" sql/CMakeLists.txt &&
sed -i "s/srv_buf_size/srv_sort_buf_size/" storage/innobase/row/row0log.cc &&
mkdir build &&
cd build &&
cmake -DCMAKE_BUILD_TYPE=Release \
      -DCMAKE_INSTALL_PREFIX=/usr \
      -DINSTALL_DOCDIR=share/doc/mysql \
      -DINSTALL_DOCREADMEDIR=share/doc/mysql \
      -DINSTALL_MANDIR=share/man \
      -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 \
      -DWITH_EXTRA_CHARSETS=complex \
      -DWITH_EMBEDDED_SERVER=ON \
      -DTOKUDB_OK=0 \
      .. &&
make
```

Now, as the *root* user:

```
make install
```

Command Explanations

`sed -i ...`: First sed sets correct installation directory for some components. Second sed fixes a bug in the code.

-DWITH_EMBEDDED_SERVER=ON: This switch enables compiling the embedded server library needed by certain applications, such as Amarok..

-DWITH_EXTRA_CHARSETS=complex: This switch enables support for the complex character sets.

-DWITHOUT_SERVER=ON -DWITH_UNIT_TESTS=OFF: Use these switches if you don't want the server and would like to build the client only.

> **Note**
>
> There are numerous options available to `cmake`. Check the output of the `cmake . -LH` for additional customization options.

Configuring MySQL

Config Files

`/etc/mysql/my.cnf` and `~/.my.cnf`

Configuration Information

Create basic `/etc/mysql/my.cnf` using the following command as the *root* user:

```
install -v -dm 755 /etc/mysql &&
cat > /etc/mysql/my.cnf << "EOF"
# Begin /etc/mysql/my.cnf

# The following options will be passed to all MySQL clients
[client]
#password       = your_password
port            = 3306
socket          = /run/mysqld/mysqld.sock

# The MySQL server
[mysqld]
port            = 3306
socket          = /run/mysqld/mysqld.sock
datadir         = /srv/mysql
skip-external-locking
key_buffer_size = 16M
max_allowed_packet = 1M
sort_buffer_size = 512K
net_buffer_length = 16K
myisam_sort_buffer_size = 8M

# 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_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 MariaDB server is running. Start the server using the following commands as the *root* user:

```
install -v -m755 -o mysql -g mysql -d /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.

```
mysqladmin -u root 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-20140919 package as the *root* user to start the MariaDB server during system boot-up.

```
make install-mysql
```

Contents

Installed Programs: aria_chk, aria_dump_log, aria_ftdump, aria_pack, aria_read_log, innochecksum, msql2mysql, my_print_defaults, myisam_ftdump, myisamchk, myisamlog, myisampack, mysql, mysql_client_test, mysql_client_test_embedded, mysql_config, mysql_convert_table_format, mysql_embedded, mysql_find_rows, mysql_fix_extensions, mysql_install_db, mysql_plugin, mysql_secure_installation, mysql_setpermission, mysql_tzinfo_to_sql, mysql_upgrade, mysql_waitpid, mysql_zap, mysqlaccess, mysqladmin, mysqlbinlog, mysqlbug, mysqlcheck, mysqld, mysqld_multi, mysqld_safe, mysqldump, mysqldumpslow, mysqlhotcopy, mysqlimport, mysqlshow, mysqlslap, mysqltest, mysqltest_embedded, mytop, perror, replace, resolve_stack_dump, and resolveip

Installed Libraries: libmysqlclient.{so,a}, libmysqlclient_r.{so,a} (symbolic links to libmysqlclient.{so,a}), libmysqld.{so,a}, libmysqlservices.a, and several under /usr/lib/mysql/plugin/

Installed Directories: /etc/mysql, /srv/mysql, /usr/include/mysql, /usr/lib/mysql, /usr/share/doc/mysql, and /usr/share/mysql

Descriptions of all the programs and libraries would be several pages long. Instead, consult the man pages or the online documentation at **https://mariadb.com/kb/en/mariadb-documentation/**.

The Perl DBI modules must be installed for some of the MariaDB support programs to function properly.

Last updated on 2014-09-15 22:13:43 -0700

PostgreSQL-9.3.5

Introduction to PostgreSQL

PostgreSQL is an advanced object-relational database management system (ORDBMS), derived from the Berkeley Postgres database management system.

This package is known to build and work properly using an LFS-7.6 platform.

Package Information

- Download (HTTP): **http://ftp.postgresql.org/pub/source/v9.3.5/postgresql-9.3.5.tar.bz2**
- Download (FTP): **ftp://ftp.postgresql.org/pub/source/v9.3.5/postgresql-9.3.5.tar.bz2**
- Download MD5 sum: 5059857c7d7e6ad83b6d55893a121b59
- Download size: 16 MB
- Estimated disk space required: 183 MB (additional 168 MB to run the testsuite)
- Estimated build time: 1.6 SBU (additional 0.3 SBU to run the testsuite)

PostgreSQL Dependencies

Optional

Python-2.7.8, Tcl-8.6.2, OpenSSL-1.0.1i, libxml2-2.9.1, libxslt-1.1.28, OpenLDAP-2.4.39, Linux-PAM-1.1.8, MIT Kerberos V5-1.12.2 and **Bonjour**

Optional (To Regenerate Documentation)

docbook-4.5, docbook-dsssl-1.79, OpenJade-1.3.2, and SGMLSpm-1.1

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/postgresql

Installation of PostgreSQL

Install PostgreSQL with the following commands:

```
sed -i '/DEFAULT_PGSOCKET_DIR/s@/tmp@/run/postgresql@' src/include/pg_config_manual.h &&
./configure --prefix=/usr        \
            --enable-thread-safety \
            --docdir=/usr/share/doc/postgresql-9.3.5 &&
make
```

There are a number of programs in the `contrib/` directory. If you are going to run this installation as a server and wish to build some of them, enter `make -C contrib` or `make -C contrib/<SUBDIR-NAME>` for each subdirectory.

Now, as the `root` user:

```
make install     &&
make install-docs
```

If you made any of the `contrib/` programs, as the `root` user:

```
make -C contrib/<SUBDIR-NAME> install
```

> **Warning**
>
> This package contains a known security hole that allows other users on the same machine to gain access to an operating system account while it is doing "make check": CVE-2014-0067. Tests must be run after install, with postgresql server down, as unprivileged user.

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

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 -i ...`: This sed changes server socket location from `/tmp` to `/run/postgresql`.

--docdir=/usr/share/doc/postgresql-9.3.5: 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

`$PGDATA/pg_ident.con`, `$PGDATA/pg_hba.conf` and `$PGDATA/postgresql.conf`

The PGDATA environment variable is used to distinguish database clusters from one another by setting it to the value of the directory which contains the cluster desired. The three configuration files exist in every PGDATA/ directory. Details on the format of the files and the options that can be set in each can be found in **file:///usr/share/doc/postgresql-9.3.5/html/index.html**.

Boot Script

Install the `/etc/rc.d/init.d/postgresql` init script included in the blfs-bootscripts-20140919 package.

```
make install-postgresql
```

Contents

Installed Programs: clusterdb, createdb, createlang, createuser, dropdb, droplang, dropuser, ecpg, initdb, pg_basebackup, pg_config, pg_controldata, pg_ctl, pg_dump, pg_dumpall, pg_isready, pg_receivexlog, pg_resetxlog, pg_restore, pltcl_delmod, pltcl_listmod, pltcl_loadmod, postgres, postmaster, psql, reindexdb, vacuumdb, and optionally (in contrib/) oid2name, pg_archivecleanup,

Installed Libraries:	libecpg.{so,a}, libecpg_compat.{so,a}, libpgcommon.a, libpgport.a, libpgtypes.{so,a}, libpq.{so,a}, various charset modules, and optionally programming language modules under /usr/lib/postgresql
Installed Directories:	/srv/pgsql, /usr/include/libpq, /usr/include/postgresql, /usr/lib/postgresql, /usr/share/doc/postgresql-9.3.5, and /usr/share/postgresql

Short Descriptions

clusterdb	is a utility for reclustering tables in a PostgreSQL database.
createdb	creates a new PostgreSQL database.
createlang	defines a new PostgreSQL procedural language.
createuser	defines a new PostgreSQL user account.
dropdb	removes a PostgreSQL database.
droplang	removes a PostgreSQL procedural language.
dropuser	removes a PostgreSQL user account.
ecpg	is the embedded SQL preprocessor.
initdb	creates a new database cluster.
oid2name	resolves OIDs (Object IDs) and file nodes in a PostgreSQL data directory.
pg_archivecleanup	clean up PostgreSQL WAL (write-ahead log) archive files.
pg_basebackup	takes base backups of a running PostgreSQL cluster.
pg_config	retrieves PostgreSQL version information.
pg_controldata	returns information initialized during `initdb`, such as the catalog version and server locale.
pg_ctl	controls stopping and starting the database server.
pg_dump	dumps database data and metadata into scripts which are used to recreate the database.
pg_dumpall	recursively calls `pg_dump` for each database in a cluster.
pg_isready	check the connection status of a PostgreSQL server.
pg_resetxlog	clears the write-ahead log and optionally resets some fields in the `pg_control` file.
pg_restore	creates databases from dump files created by `pg_dump`.
pg_standby	supports the creation of a PostgreSQL warm standby server.
pg_test_fsync	determine fastest wal_sync method for PostgreSQL.
pg_test_timing	measure timing overhead.
pg_upgrade	upgrade a PostgreSQL server instance.
pg_xlogdump	display a human-readable rendering of the write-ahead log of a PostgreSQL database cluster.
pgbench	run a benchmark test on PostgreSQL.
pltcl_delmod	is a support script used to delete a module from a PL/Tcl table. The command requires the **Pgtcl** package to be installed also.
pltcl_listmod	is a support script used to list the modules in a PL/Tcl table. The command requires the **Pgtcl** package to be installed also.
pltcl_loadmod	is a support script used to load a module into a PL/Tcl table. The command requires the **Pgtcl** package to be installed also.
postgres	is a single user database server, generally used for debugging.
postmaster	(a symlink to `postgres`) is a multi-user database daemon.
psql	is a console based database shell.
reindexdb	is a utility for rebuilding indexes in a database.
vacuumdb	compacts databases and generates statistics for the query analyzer.
vacuumlo	remove orphaned large objects from a PostgreSQL database.
`libecpg.{so,a}`	contains functions to support embedded SQL in C programs.
`libecpg_compat.{so,a}`	is the ecpg compatibility library.
`libgport.a`	is the port-specific subsystem of the Postgres backend.
`libpgtypes.{so,a}`	contains functions for dealing with Postgres data types.
`libpq.{so,a}`	is the C programmer's API to Postgres.

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-7.6 platform.

Package Information

- Download (HTTP): **http://sqlite.org/2014/sqlite-autoconf-3080600.tar.gz**
- Download MD5 sum: f7e4a156b583abeba349629e2364224b
- Download size: 1.9 MB
- Estimated disk space required: 16 MB (additional 24 MB for the Optional Documentation)
- Estimated build time: 0.2 SBU

Additional Downloads

Optional Documentation

- Download (HTTP): **http://sqlite.org/2014/sqlite-doc-3080600.zip**
- Download MD5 sum: e65b1a9569d3e3129538942255db0af1
- Download size: 4.6 MB

SQLite Dependencies

Optional

UnZip-6.0 (required to unzip the documentation)

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/sqlite

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-3080600.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-3.8.6 &&
cp -v -R sqlite-doc-3080600/* /usr/share/doc/sqlite-3.8.6
```

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**.

Installed Program:	sqlite3
Installed Library:	libsqlite3.so
Installed Directory:	/usr/share/doc/sqlite-3.8.6

Short Descriptions

sqlite3	A terminal-based front-end to the SQLite library that can evaluate queries interactively and display the results.
libsqlite3.so	contains the SQLite API functions.

Last updated on 2014-09-15 12:23:10 -0700

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-2.4.39

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-7.6 platform.

Package Information

- Download (FTP): **ftp://ftp.openldap.org/pub/OpenLDAP/openldap-release/openldap-2.4.39.tgz**
- Download MD5 sum: b0d5ee4b252c841dec6b332d679cf943
- Download size: 5.3 MB
- Estimated disk space required: 48 MB (client) 103 MB (server)
- Estimated build time: 0.9 SBU (client) 1.8 SBU (server)

Additional Downloads

- Required patch: **http://www.linuxfromscratch.org/patches/blfs/7.6/openldap-2.4.39-blfs_paths-1.patch**
- Required patch: **http://www.linuxfromscratch.org/patches/blfs/7.6/openldap-2.4.39-symbol_versions-1.patch**

OpenLDAP Dependencies

Required

Berkeley DB-6.1.19 (only if building server)

Recommended

Cyrus SASL-2.1.26 and OpenSSL-1.0.1i

Optional

ICU-53.1, MariaDB-10.0.13 or **MySQL** or PostgreSQL-9.3.5, **OpenSLP**, Pth-2.0.7 and unixODBC-2.3.2

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/openldap

Installation of OpenLDAP

> **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 these commands instead of the following ones (no test suite available):

```
            autoconf &&
            ./configure --prefix=/usr     \
                        --sysconfdir=/etc \
                        --disable-static  \
                        --enable-dynamic  \
                        --disable-debug   \
                        --disable-slapd &&
            make depend &&
            make
```

Then, as the *root* user:

```
            make install
```

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-2.4.39-blfs_paths-1.patch &&
patch -Np1 -i ../openldap-2.4.39-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`. Tests may fail after a long time (~ 5 SBU).

Now, as the *root* user:

```
make install &&

chmod -v 700 /var/lib/openldap                               &&
chown -v -R root:ldap /var/lib/openldap                      &&
chmod -v 640 /etc/openldap/{slapd.{conf,ldif},DB_CONFIG.example}      &&
chown -v root:ldap /etc/openldap/{slapd.{conf,ldif},DB_CONFIG.example} &&
install -v -dm700 -o ldap -g ldap /etc/openldap/slapd.d      &&

install -v -dm755  /usr/share/doc/openldap-2.4.39 &&
cp -vfr doc/drafts /usr/share/doc/openldap-2.4.39 &&
cp -vfr doc/rfc    /usr/share/doc/openldap-2.4.39 &&
cp -vfr doc/guide  /usr/share/doc/openldap-2.4.39
```

Having slapd configuration files and ldap databases in /var/lib/openldap readable by anyone is a SECURITY ISSUE, especially since a file stores admin password in PLAIN TEXT. That's why mode 640 and root:ldap ownership were used. Owner is root, so only root can modify the file, and group is ldap, so that the group which owns slapd daemon could read but not modify the file in case of a security breach.

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-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.

--libexecdir=/usr/lib: This switch controls where the `/usr/lib/openldap` directory is installed. Everything in that directory is a library, so it belongs under `/usr/lib` instead of `/usr/libexec`.

`--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-2.4.39/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-20140919 package using the following command:

```
make install-slapd
```

> **Note**
>
> 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
```

```
ldapsearch -x -b '' -s base '(objectclass=*)' namingContexts
```

The expected result is:

```
# extended LDIF
#
# LDAPv3
# base <> with scope base
# filter: (objectclass=*)
# requesting: namingContexts
#

#
dn:
namingContexts: dc=my-domain,dc=com

# search result
search: 2
result: 0 Success

# numResponses: 2
# numEntries: 1
```

Contents

Installed Programs: ldapadd, ldapcompare, ldapdelete, ldapexop, ldapmodify, ldapmodrdn, ldappasswd, ldapsearch, ldapurl, ldapwhoami, slapacl, slapadd, slapauth, slapcat, slapd, slapdn, slapindex, slappasswd, slapschema, and slaptest

Installed Libraries: liblber.so, libldap.so, libldap_r.so, and several under /usr/lib/openldap

Installed Directories: /etc/openldap, /usr/lib/openldap, /usr/share/doc/openldap-2.4.39, and /var/lib/openldap

Short Descriptions

ldapadd	opens a connection to an LDAP server, binds and adds entries.
ldapcompare	opens a connection to an LDAP server, binds and performs a compare using specified parameters.
ldapdelete	opens a connection to an LDAP server, binds and deletes one or more entries.
ldapexop	issues the LDAP extended operation specified by oid or one of the special keywords whoami, cancel, or refresh.
ldapmodify	opens a connection to an LDAP server, binds and modifies entries.
ldapmodrdn	opens a connection to an LDAP server, binds and modifies the RDN of entries.
ldappasswd	is a tool used to set the password of an LDAP user.
ldapsearch	opens a connection to an LDAP server, binds and performs a search using specified parameters.
ldapurl	is a command that allows to either compose or decompose LDAP URIs.
ldapwhoami	opens a connection to an LDAP server, binds and displays whoami information.
slapacl	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.
slapadd	is used to add entries specified in LDAP Directory Interchange Format (LDIF) to an LDAP database.
slapauth	is used to check the behavior of the slapd in mapping identities for authentication and authorization purposes, as specified in slapd.conf.
slapcat	is used to generate an LDAP LDIF output based upon the contents of a slapd database.
slapd	is the standalone LDAP server.
slapdn	checks a list of string-represented DNs based on schema syntax.
slapindex	is used to regenerate slapd indexes based upon the current contents of a database.
slappasswd	is an OpenLDAP password utility.
slapschema	is used to check schema compliance of the contents of a slapd database.
slaptest	checks the sanity of the `slapd.conf` file.
liblber.so	is a set of Lightweight Basic Encoding Rules routines. These routines are used by the LDAP library routines to encode and decode LDAP protocol elements using the (slightly simplified) Basic Encoding Rules defined by LDAP. They are not normally used directly by an LDAP application program except in the handling of controls and extended operations.
libldap.so	supports the LDAP programs and provide functionality for other programs interacting with LDAP.

Unbound-1.4.22

Introduction to Unbound

Unbound is a validating, recursive, and caching DNS resolver. It is designed as a set of modular components that incorporate modern features, such as enhanced security (DNSSEC) validation, Internet Protocol Version 6 (IPv6), and a client resolver library API as an integral part of the architecture.

This package is known to build and work properly using an LFS-7.6 platform.

Package Information

- Download (HTTP): **http://www.unbound.net/downloads/unbound-1.4.22.tar.gz**
- Download MD5 sum: 59728c74fef8783f8bad1d7451eba97f
- Download size: 4.6 MB
- Estimated disk space required: 42 MB (additional 70 MB for docs and 5 MB for tests)
- Estimated build time: 0.6 SBU (additional less than 0.1 SBU for docs and 0.2 SBU for tests)

Unbound Dependencies

Required

ldns-1.6.17 and OpenSSL-1.0.1i

Optional

libevent-2.0.21, Python-2.7.8, SWIG-3.0.2 (for Python bindings), and Doxygen-1.8.8 (for html documentation)

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/unbound

Installation of Unbound

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

```
groupadd -g 88 unbound &&
useradd -c "Unbound DNS resolver" -d /var/lib/unbound -u 88 \
        -g unbound -s /bin/false unbound
```

Install Unbound by running the following commands:

```
./configure --prefix=/usr      \
            --sysconfdir=/etc \
            --disable-static  \
            --with-pidfile=/run/unbound.pid &&
make
```

If you have Doxygen-1.8.8 package installed and want to build html documentation, run the following command:

```
make doc
```

To test the results, issue `make check`.

Now, as the *root* user:

```
make install &&
mv -v /usr/sbin/unbound-host /usr/bin/
```

If you built html documentation, install it by running the following commands as the *root* user:

```
install -v -m755 -d /usr/share/doc/unbound-1.4.22 &&
install -v -m644 doc/html/* /usr/share/doc/unbound-1.4.22
```

Command Explanations

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

`--with-pyunbound:` This option enables building of the Python bindings.

Configuring Unbound

Config Files

`/etc/unbound/unbound.conf`

Configuration Information

In the default configuration, **unbound** will bind to localhost (127.0.0.1 IP address) and allow recursive queries only from localhost clients. If you want to use **unbound** for local DNS resolution, run the following command as the *root* user:

```
echo "nameserver 127.0.0.1" > /etc/resolv.conf
```

If you are using a DHCP client for connecting to a network, `/etc/resolv.conf` gets overwritten with values provided by DHCP server. You can override this, for example in [DHCP-4.3.1](#), by running the following command:

```
sed -i '/request /i\supersede domain-name-servers 127.0.0.1;' \
        /etc/dhcp/dhclient.conf
```

For advanced configuration see `/etc/unbound/unbound.conf` file and the documentation.

Boot Script

If you want the Unbound server to start automatically when the system is booted, install the `/etc/rc.d/init.d/unbound` init script included in the [blfs-bootscripts-20140919](#) package.

```
make install-unbound
```

Contents

Installed Programs: unbound, unbound-anchor, unbound-checkconf, unbound-control, unbound-control-setup, and unbound-host

Installed Library: libunbound.so and /usr/lib/python2.7/site-packages/_unbound.so

Installed Directories: /etc/unbound and /usr/share/doc/unbound-1.4.22

Short Descriptions

unbound	is a DNS resolver daemon.
unbound-anchor	performs setup or update of the root trust anchor for DNSSEC validation.
unbound-checkconf	checks unbound configuration file for syntax and other errors.
unbound-control	performs remote administration on the unbound DNS resolver.
unbound-control-setup	generates self-signed certificate and private keys for the server and client.
unbound-host	is a DNS lookup utility similar to host from [BIND Utilities-9.10.0-P2](#).
libunbound.so	provides the Unbound API functions to programs.

Last updated on 2013-07-21 21:06:50 +0200

xinetd-2.3.15

Introduction to xinetd

xinetd is the eXtended InterNET services daemon, a secure replacement for `inetd`.

This package is known to build and work properly using an LFS-7.6 platform.

Package Information

- Download (FTP): **[ftp://anduin.linuxfromscratch.org/BLFS/svn/x/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

Optional

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/xinetd

Installation of xinetd

Install xinetd by running the following commands:

```
sed -i -e "s/exec_server/child_process/" xinetd/builtins.c      &&
sed -i -e "/register unsigned count/s/register//" xinetd/itox.c  &&
./configure --prefix=/usr --mandir=/usr/share/man --with-loadavg &&
make
```

This package does not come with a test suite.

Now, as the *root* user:

```
make install
```

Command Explanations

`sed ... xinetd/builtins.c`: This command fixes a security issue.

`sed ... xinetd/itox.c`: This command fixes 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 &&
```

```
service systat
{
    disable         = yes
    socket_type     = stream
    wait            = no
    user            = nobody
    server          = /bin/ps
    server_args     = -auwwx
    only_from       = 128.138.209.0
    log_on_success  = HOST
}

# End /etc/xinetd.d/systat
EOF

cat > /etc/xinetd.d/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
```

```
   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.

Boot Script

As the *root* user, install the `/etc/rc.d/init.d/xinetd` init script included in the [blfs-bootscripts-20140919](#) 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

Installed Programs: itox, xconv.pl, and xinetd
Installed Libraries: None
Installed Directories: /etc/xinetd.d/

Short Descriptions

itox   is a utility used for converting `inetd.conf` files to `xinetd.conf` format.

xconv.pl   is a Perl script used for converting `inetd.conf` files to `xinetd.conf` format, similar to **itox**.

xinetd   is the Internet services daemon.

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).

User Notes: *http://wiki.linuxfromscratch.org/blfs/wiki/Xorg7*

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-1.15 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-1.8.10p3 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

> **Note**
>
> The following instructions assume that the shell startup files have been set up as described in The Bash Shell Startup Files.

First, you'll need to create a working directory:

```
mkdir 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="<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="<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
```

> **Note**
>
> If you've decided to use the standard /usr prefix, you can omit the remainder of this page and continue at util-macros-1.19.0.

If you've decided to *not* use the standard prefix, 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. It is also helpful to specify additional search paths for gcc and an include directory for the aclocal program. 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

pathappend $XORG_PREFIX/lib            LIBRARY_PATH
pathappend $XORG_PREFIX/include        C_INCLUDE_PATH
pathappend $XORG_PREFIX/include        CPLUS_INCLUDE_PATH

ACLOCAL='aclocal -I $XORG_PREFIX/share/aclocal'

export PATH PKG_CONFIG_PATH ACLOCAL LIBRARY_PATH C_INCLUDE_PATH CPLUS_INCLUDE_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@$XORG_PREFIX@g" -i /etc/man_db.conf
```

Some applications look for shared files in /usr/share/X11. Create a symbolic link to the proper location as the *root* user:

```
ln -s $XORG_PREFIX/share/X11 /usr/share/X11
```

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
```

Last updated on 2014-08-17 11:21:21 -0700

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-7.6 platform.

Package Information

- Download (HTTP): **http://xorg.freedesktop.org/releases/individual/util/util-macros-1.19.0.tar.bz2**
- Download (FTP): **ftp://ftp.x.org/pub/individual/util/util-macros-1.19.0.tar.bz2**
- Download MD5 sum: 1cf984125e75f8204938d998a8b6c1e1
- Download size: 80 KB
- Estimated disk space required: 500 KB
- Estimated build time: less than 0.1 SBU

util-macros Dependencies

Required

Xorg build environment (should be set for the following instructions to work)

Installation of util-macros

Install util-macros 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 Programs: None
Installed Libraries: None
Installed Directory: $XORG_PREFIX/share/pkgconfig and $XORG_PREFIX/share/util-macros

Last updated on 2014-09-10 06:19:10 -0700

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-7.6 platform.

Package Information

- Download (HTTP): **http://xorg.freedesktop.org/releases/individual/proto/**
- Download (FTP): **ftp://ftp.x.org/pub/individual/proto/**
- Download size: 3.3 MB
- Estimated disk space required: 26 MB
- Estimated build time: 0.8 SBU

Xorg Protocol Headers Dependencies

Required

util-macros-1.19.0

Sudo-1.8.10p3 and Wget-1.15

Optional

fop-1.1, libxslt-1.1.28, xmlto-0.0.26 and **AsciiDoc** (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.

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/Xorg7ProtocolHeaders

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
a3d2cbe60a9ca1bf3aea6c93c817fee3  dri3proto-1.0.tar.bz2
e7431ab84d37b2678af71e29355e101d  fixesproto-5.0.tar.bz2
36934d00b00555eaacde9f091f392f97  fontsproto-2.1.3.tar.bz2
5565f1b0facf4a59c2778229c1f70d10  glproto-1.4.17.tar.bz2
6caebead4b779ba031727f66a7ffa358  inputproto-2.3.1.tar.bz2
677ea8523eec6caca86121ad2dca0b71  kbproto-1.0.6.tar.bz2
2d569c75884455c7148d133d341e8fd6  presentproto-1.0.tar.bz2
ce4d0b05675968e4c83e003cc809660d  randrproto-1.4.0.tar.bz2
1b4e5dede5ea51906f1530ca1e21d216  recordproto-1.14.2.tar.bz2
a914ccc1de66ddeb4b611c6b0686e274  renderproto-0.11.1.tar.bz2
cfdb57dae221b71b2703f8e2980eaaf4  resourceproto-1.2.0.tar.bz2
edd8a73775e8ece1d69515dd17767bfb  scrnsaverproto-1.2.2.tar.bz2
e658641595327d3990eab70fdb55ca8b  videoproto-2.3.2.tar.bz2
5f4847c78e41b801982c8a5e06365b24  xcmiscproto-1.2.2.tar.bz2
70c90f313b4b0851758ef77b95019584  xextproto-7.3.0.tar.bz2
120e226ede5a4687b25dd357cc9b8efe  xf86bigfontproto-1.2.0.tar.bz2
a036dc2fcbf052ec10621fd48b68dbb1  xf86dgaproto-2.1.tar.bz2
1d716d0dac3b664e5ee20c69d34bc10e  xf86driproto-2.1.1.tar.bz2
e793ecefeaecfeabd1aed6a01095174e  xf86vidmodeproto-2.3.1.tar.bz2
9959fe0bfb22a0e7260433b8d199590a  xineramaproto-1.2.1.tar.bz2
4dc2464bfeade23dab5de38da0f6b1b5  xproto-7.0.26.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-1.8.10p3 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.

```
      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 packages 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 -rf $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 Programs: None

Installed Libraries: None

Installed Directories: $XORG_PREFIX/include/GL, $XORG_PREFIX/include/X11, $XORG_PREFIX/share/doc/bigreqsproto, $XORG_PREFIX/share/doc/compositeproto, $XORG_PREFIX/share/doc/damageproto, $XORG_PREFIX/share/doc/dri2proto, $XORG_PREFIX/share/doc/dri3proto, $XORG_PREFIX/share/doc/fixesproto, $XORG_PREFIX/share/doc/fontsproto, $XORG_PREFIX/share/doc/kbproto, $XORG_PREFIX/share/doc/presentproto, $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/videoproto, $XORG_PREFIX/share/doc/xcmiscproto, $XORG_PREFIX/share/doc/xextproto and $XORG_PREFIX/share/doc/xproto

Last updated on 2014-09-10 06:19:10 -0700

libXau-1.0.8

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-7.6 platform.

Package Information

- Download (HTTP): **http://xorg.freedesktop.org/releases/individual/lib/libXau-1.0.8.tar.bz2**
- Download (FTP): **ftp://ftp.x.org/pub/individual/lib/libXau-1.0.8.tar.bz2**
- Download MD5 sum: 685f8abbffa6d145c0f930f00703b21b
- Download size: 289 KB
- Estimated disk space required: 2.6 MB

libXau Dependencies

Required

[Xorg Protocol Headers](#)

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/libXau

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

Installed Programs: None
Installed Library: libXau.so
Installed Directories: None

Short Descriptions

`libXau.so`   is the library of X authority database routines.

Last updated on 2014-09-10 06:19:10 -0700

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-7.6 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: b94af6cef211cf3ee256f7e81f70fcd9
- 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](#)

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/libXdmcp

Installation of libXdmcp

Install libXdmcp by running the following commands:

```
./configure $XORG_CONFIG &&
make
```

This package does not come with a test suite.

```
make install
```

Contents

Installed Programs: None
Installed Library: libXdmcp.so
Installed Directory: $XORG_PREFIX/share/doc/libXdmcp

Short Descriptions

`libXdmcp.so`   is the X Display Manager Control Protocol library.

Last updated on 2014-09-10 06:19:10 -0700

xcb-proto-1.11

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-7.6 platform.

Package Information

- Download (HTTP): **http://xcb.freedesktop.org/dist/xcb-proto-1.11.tar.bz2**
- Download MD5 sum: 6bf2797445dc6d43e9e4707c082eff9c
- Download size: 136 KB
- Estimated disk space required: 2.1 MB
- Estimated build time: 0.1 SBU

xcb-proto Dependencies

Required

Python-2.7.8 or Python-3.4.1, and Xorg build environment (should be set for the following instructions to work)

Optional (required to run the tests)

libxml2-2.9.1

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/xcb-proto

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 Programs: None
Installed Libraries: None
Installed Directory: $XORG_PREFIX/share/xcb and $XORG_PREFIX/lib/python2.7/site-packages/xcbgen or $XORG_PREFIX/lib/python3.4/site-packages/xcbgen

Last updated on 2014-09-10 06:19:10 -0700

libxcb-1.11

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-7.6 platform.

Package Information

- Download (HTTP): **http://xcb.freedesktop.org/dist/libxcb-1.11.tar.bz2**
- Download MD5 sum: 5a873ebd383d1a60612dd6ec6b42c781
- Download size: 506 KB
- Estimated disk space required: 41 MB (124 MB with doxygen generated documentation)
- Estimated build time: 0.2 SBU (additional 0.1 to generate API documentation)

libxcb Dependencies

Required

libXau-1.0.8 and xcb-proto-1.11

Recommended

libXdmcp-1.1.1

Optional

Doxygen-1.8.8 (to generate API documentation) Check-0.9.14 (to run tests) and libxslt-1.1.28

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/libxcb

Installation of libxcb

Install libxcb by running the following commands:

```
sed "s/pthread-stubs//" -i configure &&
./configure $XORG_CONFIG    \
            --enable-xinput \
            --docdir='${datadir}'/doc/libxcb-1.11 &&
make
```

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

Now, as the *root* user:

```
make install
```

Command Explanations

`sed "s/pthread-stubs//" -i configure`: 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-1.8.8 is installed.

Contents

Installed Programs: None
Installed Libraries: libxcb.so and libxcb-*.so
Installed Directories: $XORG_PREFIX/include/xcb and $XORG_PREFIX/share/doc/libxcb-1.11

Short Descriptions

libxcb.so   is an interface to the X Window System protocol.

Last updated on 2014-09-10 06:19:10 -0700

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-7.6 platform.

Package Information

- Download (HTTP): **http://xorg.freedesktop.org/releases/individual/lib/**
- Download (FTP): **ftp://ftp.x.org/pub/individual/lib/**
- Download size: 13 MB
- Estimated disk space required: 275 MB
- Estimated build time: 3.1 SBU

Xorg Libraries Dependencies

Required

Fontconfig-2.11.1 and libxcb-1.11

Optional

xmlto-0.0.26 with one or more of the following: fop-1.1, Links-2.8, Lynx-2.8.8rel.2, and w3m-0.5.3 (to generate additional PDF or text documentation for the libXfont package).

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/Xorg7Libraries

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"
a615e17d9fee6f097fc3b716eacb3dca  xtrans-1.3.4.tar.bz2
c35d6ad95b06635a524579e88622fdb5  libX11-1.6.2.tar.bz2
52df7c4c1f0badd9f82ab124fb32eb97  libXext-1.3.3.tar.bz2
a8a0dbd2299b2568d8c919883f5c8501  libFS-1.0.6.tar.bz2
addfb1e897ca8079531669c7c7711726  libICE-1.0.9.tar.bz2
499a7773c65aba513609fe651853c5f3  libSM-1.2.2.tar.bz2
7a773b16165e39e938650bcc9027c1d5  libXScrnSaver-1.2.2.tar.bz2
03149823ae57bb02d0cec90d5b97d56c  libXt-1.1.4.tar.bz2
41d92ab627dfa06568076043f3e089e4  libXmu-1.1.2.tar.bz2
769ee12a43611cdebd38094eaf83f3f0  libXpm-3.5.11.tar.bz2
7446f5fba888672aad068b29c0928ba3  libXaw-1.0.12.tar.bz2
b985b85f8b9386c85ddcfe1073906b4d  libXfixes-5.0.1.tar.bz2
f7a218dcbf6f0848599c6c36fc65c51a  libXcomposite-0.4.4.tar.bz2
2bd9a15fcf64d216e63b8d129e4f1f1c  libXrender-0.9.8.tar.bz2
1e7c17afbbce83e2215917047c57d1b3  libXcursor-1.1.14.tar.bz2
0cf292de2a9fa2e9a939aefde68fd34f  libXdamage-1.1.4.tar.bz2
ad2919764933e075bb0361ad5caa3d19  libfontenc-1.1.2.tar.bz2
664629bfa7cdf8b984155019fd395dcb  libXfont-1.5.0.tar.bz2
331b3a2a3a1a78b5b44cfbd43f86fcfe  libXft-2.3.2.tar.bz2
9c4a69c34b19ec1e4212e849549544cb  libXi-1.7.4.tar.bz2
9336dc46ae3bf5f81c247f7131461efd  libXinerama-1.1.3.tar.bz2
210ed9499a3d9c96e3a221629b7d39b0  libXrandr-1.4.2.tar.bz2
45ef29206a6b58254c81bea28ec6c95f  libXres-1.0.7.tar.bz2
25c6b366ac3dc7a12c5d79816ce96a59  libXtst-1.2.2.tar.bz2
e0af49d7d758b990e6fef629722d4aca  libXv-1.0.10.tar.bz2
2e4014e9d55c430e307999a6b3dd256d  libXvMC-1.0.8.tar.bz2
d7dd9b9df336b7dd4028b6b56542ff2c  libXxf86dga-1.1.4.tar.bz2
e46f6ee4f4567349a3189044fe1bb712  libXxf86vm-1.1.3.tar.bz2
ba983eba5a9f05d152a0725b8e863151  libdmx-1.1.3.tar.bz2
b7c0d3afce14eedca57312a3141ec13a  libpciaccess-0.13.2.tar.bz2
19e6533ae64abba0773816a23f2b9507  libxkbfile-1.0.8.tar.bz2
2dd10448c1166e71a176206a8dfabe6d  libxshmfence-1.1.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
```

> **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-1.8.10p3](#) 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 packages 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 -rf $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-0.0.26](#) 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:

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, libxshmfence.so, libXss.so, libXt.so, libXtst.so, libXvMC.so, libXvMCW.so, libXv.so, libXxf86dga.so and libXxf86vm.so

Installed Directories: $XORG_PREFIX/include/X11/fonts, $XORG_PREFIX/include/X11/Xtrans, $XORG_PREFIX/share/doc/libFS, $XORG_PREFIX/share/doc/libICE, $XORG_PREFIX/share/doc/libSM, $XORG_PREFIX/share/doc/libX11, $XORG_PREFIX/share/doc/libXaw, $XORG_PREFIX/share/doc/libXext, $XORG_PREFIX/share/doc/libXi, $XORG_PREFIX/share/doc/libXmu, $XORG_PREFIX/share/doc/libXrender, $XORG_PREFIX/share/doc/libXt, $XORG_PREFIX/share/doc/libXtst, $XORG_PREFIX/share/doc/libXvMC, $XORG_PREFIX/share/doc/xtrans and $XORG_PREFIX/share/X11/locale

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.
`libXmu.so`	is the X interface library for miscellaneous utilities not part of the Xlib standard.
`libXmuu.so`	is the Mini Xmu Library.
`libXpm.so`	is the X Pixmap Library.
`libXrandr.so`	is the X Resize, Rotate and Reflection extension library.
`libXrender.so`	is the X Render Library.
`libXRes.so`	is the X-Resource extension client library.
`libxshmfence.so`	exposes an event API on top of Linux futexes.
`libXss.so`	is the X11 Screen Saver extension client library.
`libXt.so`	is the X Toolkit Library.
`libXtst.so`	is the Xtst Library.
`libXvMC.so`	is the X-Video Motion Compensation Library.
`libXvMCW.so`	is the XvMC Wrapper including the Nonstandard VLD extension.
`libXv.so`	is the X Window System video extension library.
`libXxf86dga.so`	is the client library for the XFree86-DGA extension.
`libXxf86vm.so`	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-7.6 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-1.11

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/xcb-util

Installation of xcb-util

Install xcb-util 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 Programs: None
Installed Library: libxcb-util.so
Installed Directories: None

Short Descriptions

libxcb-util.so   Provides utility functions for other XCB utilities.

Last updated on 2014-09-10 06:19:10 -0700

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-7.6 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

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 Programs: None
Installed Library: libxcb-image.so
Installed Directories: None

Short Descriptions

`libxcb-image.so`   Is a port of Xlib's XImage and XShmImage functions.

Last updated on 2014-09-10 06:19:10 -0700

xcb-util-keysyms-0.3.9

Introduction to xcb-util-keysyms

The xcb-util-keysyms package contains a library for handling standard X key constants and conversion to/from keycodes.

This package is known to build and work properly using an LFS-7.6 platform.

Package Information

- Download (HTTP): **http://xcb.freedesktop.org/dist/xcb-util-keysyms-0.3.9.tar.bz2**
- Download MD5 sum: 64e4aad2d48cd4a92e2da13b9f35bfd2
- Download size: 280 KB
- Estimated disk space required: 2.2 MB
- Estimated build time: less than 0.1 SBU

xcb-util-keysyms Dependencies

Required

libxcb-1.11

Installation of xcb-util-keysyms

Install xcb-util-keysyms 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 Programs: None
Installed Library: libxcb-keysyms.so
Installed Directories: None

Short Descriptions

`libxcb-keysyms.so`   provides the standard X key constants and API functions for conversion to/from keycodes.

Last updated on 2014-09-11 15:53:52 -0700

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xcb-util-renderutil-0.3.9

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-7.6 platform.

Package Information

- Download (HTTP): **http://xcb.freedesktop.org/dist/xcb-util-renderutil-0.3.9.tar.bz2**
- Download MD5 sum: 468b119c94da910e1291f3ffab91019a
- Download size: 288 KB
- Estimated disk space required: 2.4 MB
- Estimated build time: less than 0.1 SBU

xcb-util-renderutil Dependencies

Required

libxcb-1.11

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/xcb-util-renderutil

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 Programs: None
Installed Library: libxcb-render-util.so
Installed Directories: None

Short Descriptions

`libxcb-render-util.so`   Provides convenience functions for the Render extension.

Last updated on 2014-09-11 15:53:52 -0700

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xcb-util-wm-0.4.1

Introduction to xcb-util-wm

The xcb-util-wm package contains libraries which provide client and window-manager helpers for EWMH and ICCCM.

- Download (HTTP): **http://xcb.freedesktop.org/dist/xcb-util-wm-0.4.1.tar.bz2**
- Download MD5 sum: 87b19a1cd7bfcb65a24e36c300e03129
- Download size: 316 KB
- Estimated disk space required: 3.3 MB
- Estimated build time: less than 0.1 SBU

xcb-util-wm Dependencies

Required

libxcb-1.11

Optional

Doxygen-1.8.8

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/xcb-util-wm

Installation of xcb-util-wm

Install xcb-util-wm 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 Programs: None
Installed Libraries: libxcb-ewmh.so and libxcb-icccm.so
Installed Directories: None

Short Descriptions

libxcb-ewmh.so   provides the client and window-manager helpers for EWMH.

libxcb-icccm.so   provides the client and window-manager helpers for ICCCM.

Last updated on 2014-09-11 15:53:52 -0700

MesaLib-10.2.7

Introduction to MesaLib

Mesa is an OpenGL compatible 3D graphics library.

This package is known to build and work properly using an LFS-7.6 platform.

Package Information

- Download (FTP): **ftp://ftp.freedesktop.org/pub/mesa/10.2.7/MesaLib-10.2.7.tar.bz2**
- Download MD5 sum: b54b793d5b60b9da31ba1f86a6f82bf8
- Download size: 6.8 MB
- Estimated disk space required: 297 MB (additional 2 MB for the docs)
- Estimated build time: 4.3 SBU

Additional Patch

- Recommended patch: **http://www.linuxfromscratch.org/patches/blfs/7.6/MesaLib-10.2.7-upstream_fixes-1.patch**

MesaLib Dependencies

Required

Xorg Libraries, libdrm-2.4.56, and Python-2.7.8

Recommended

elfutils-0.160 (required for radeon 3d drivers), libvdpau-0.8 (to build VDPAU drivers), LLVM-3.5.0 (required for radeon 3d drivers and also for llvmpipe which is intended to be the fastest of the three sw rasterizers, see **http://www.mesa3d.org/faq.html#part3**)

Optional

mesa-demos provides more than 300 extra demos to test MesaLib; two of them overwrites the ones included by `MesaLib-10.2.7-add_xdemos-1.patch`; to avoid that, install in a different prefix or add, e.g. `--program-prefix=md` to configure, and **Wayland**

> **Note**
>
> The instructions below assume that elfutils and LLVM are installed. You will need to modify the instructions if you choose not to install them. Please note that elfutils and LLVM are *required* for Radeon 3D drivers. For an explanation of gallium please see **https://en.wikipedia.org/wiki/Gallium3D**.

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/mesalib

Installation of MesaLib

> **Note**
>
> Unlike other packages, the `MesaLib-10.2.7.tar.bz2` archive will extract to the `Mesa-10.2.7` directory.

If you have downloaded the xdemos patch (needed if testing the Xorg installation per BLFS instructions), apply it by running the following command:

```
patch -Np1 -i ../MesaLib-10.2.7-add_xdemos-1.patch
```

Install MesaLib by running the following commands:

```
patch -Np1 -i ../MesaLib-10.2.7-upstream_fixes-1.patch &&

./autogen.sh CFLAGS="-O2" CXXFLAGS="-O2"   \
            --prefix=$XORG_PREFIX          \
            --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-egl-platforms="drm,x11" \
            --with-gallium-drivers="nouveau,r300,r600,radeonsi,svga,swrast" &&
    make
```

If you have applied the xdemos patch, build the demo programs by running the following command:

```
make -C xdemos DEMOS_PREFIX=$XORG_PREFIX
```

This package does not come with a test suite.

Now, as the *root* user:

```
make install
```

```
make -C xdemos DEMOS_PREFIX=$XORG_PREFIX install
```

If desired, install the optional documentation by running the following commands as the *root* user:

```
install -v -dm755 /usr/share/doc/MesaLib-10.2.7 &&
cp -rfv docs/* /usr/share/doc/MesaLib-10.2.7
```

Command Explanations

`patch -Np1...`: Fix various problems introduced with LLVM-3.5.0.

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-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, ilo, nouveau, r300, r600, radeonsi, svga and swrast. You will need to remove r300, r600 and radeonsi from the list if you did not install elfutils and LLVM.

--enable-r600-llvm-compiler: Use this switch to enable experimental R600 LLVM backend for graphics shaders which claims to speed up the driver.

Contents

Installed Programs: glxgears and glxinfo

Installed Libraries: libGL.so, libEGL.so, libGLESv1_CM.so, libGLESv2.so, libOSMesa.so, libOpenVG.so, libgbm.so, libglapi.so, and libxatracker.so

Installed Directories: $XORG_PREFIX/include/EGL, $XORG_PREFIX/include/GL, $XORG_PREFIX/include/GLES, $XORG_PREFIX/include/GLES2, $XORG_PREFIX/include/GLES3, $XORG_PREFIX/include/KHR, $XORG_PREFIX/include/VG, $XORG_PREFIX/lib/dri, $XORG_PREFIX/lib/egl, $XORG_PREFIX/lib/gallium-pipe, $XORG_PREFIX/lib/gbm, $XORG_PREFIX/lib/vdpau, and /usr/share/doc/MesaLib-10.2.7 (optional)

Short Descriptions

glxgears	is a GL demo useful for troubleshooting graphics problems.
glxinfo	is a diagnostic program that displays information about the graphics hardware and installed GL libraries.
libEGL.so	provides a native platform graphics interface as defined by the EGL-1.4 specification.
libgbm.so	is the Mesa Graphics Buffer Manager library.
libGLESv1_CM.so	is the Mesa OpenGL ES 1.1 library.
libGLES2.so	is the Mesa OpenGL ES 2.0 library.
libGL.so	is the main Mesa OpenGL library.
libOpenVG.so	is the Mesa OpenVG 1.0 library.
libOSMesa.so	is the Mesa Off-screen Rendering library.
libxatracker.so	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-7.6 platform.

Package Information

- Download (HTTP): **http://xorg.freedesktop.org/archive/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

xbitmaps Dependencies

Required

util-macros-1.19.0

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/xbitmaps

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 Programs: None
Installed Libraries: None
Installed Directory: $XORG_PREFIX/include/X11/bitmaps

Last updated on 2014-09-10 06:19:10 -0700

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-7.6 platform.

Package Information

- Download (HTTP): **http://xorg.freedesktop.org/releases/individual/app/**
- Download (FTP): **ftp://ftp.x.org/pub/individual/app/**
- Download size: 4.9 MB
- Estimated disk space required: 51 MB
- Estimated build time: 1.9 SBU

Xorg Applications Dependencies

Required

Optional

[Linux-PAM-1.1.8](#)

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/Xorg7Applications

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  bdftopcf-1.0.4.tar.bz2
2527344acc60741a709f4858564c5ae6  iceauth-1.0.6.tar.bz2
c4a3664e08e5a47c120ff9263ee2f20c  luit-1.1.1.tar.bz2
18c429148c96c2079edda922a2b67632  mkfontdir-1.0.7.tar.bz2
03de3f15db678e277f5ef9c013aca1ad  mkfontscale-1.1.1.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
7d6003f32838d5b688e2c8a131083271  xauth-1.0.9.tar.bz2
0066f23f69ca3ef62dcaeb74a87fdc48  xbacklight-1.2.1.tar.bz2
5812be48cbbec1068e7b718eec801766  xcmsdb-1.0.4.tar.bz2
b58a87e6cd7145c70346adad551dba48  xcursorgen-1.0.6.tar.bz2
cacc0733f16e4f2a97a5c430fcc4420e  xdpyinfo-1.3.1.tar.bz2
3d3cad4d754e10e325438193433d59fd  xdriinfo-1.0.4.tar.bz2
5b0a0b6f589441d546da21739fa75634  xev-1.2.1.tar.bz2
c06067f572bc4a5298f324f27340da95  xgamma-1.0.5.tar.bz2
f1669af1fe0554e876f03319c678e79d  xhost-1.0.6.tar.bz2
305980ac78a6954e306a14d80a54c441  xinput-1.6.1.tar.bz2
a0fc1ac3fc4fe479ade09674347c5aa0  xkbcomp-1.2.4.tar.bz2
37ed71525c63a9acd42e7cde211dcc5b  xkbevd-1.1.3.tar.bz2
502b14843f610af977dffc6cbf2102d5  xkbutils-1.0.4.tar.bz2
0ae6bc2a8d3af68e9c76b1a6ca5f7a78  xkill-1.0.4.tar.bz2
9d0e16d116d1c89e6b668c1b2672eb57  xlsatoms-1.1.1.tar.bz2
9fbf6b174a5138a61738a42e707ad8f5  xlsclients-1.1.3.tar.bz2
2dd5ae46fa18abc9331bc26250a25005  xmessage-1.0.4.tar.bz2
5511da3361eea4eaa21427652c559e1c  xmodmap-1.0.8.tar.bz2
6101f04731ffd40803df80eca274ec4b  xpr-1.0.4.tar.bz2
fae3d2fda07684027a643ca783d595cc  xprop-1.2.2.tar.bz2
441fdb98d2abc6051108b7075d948fc7  xrandr-1.4.3.tar.bz2
b54c7e3e53b4f332d41ed435433fbda0  xrdb-1.1.0.tar.bz2
a896382bc53ef3e149eaf9b13bc81d42  xrefresh-1.0.5.tar.bz2
dcd227388b57487d543cab2fd7a602d7  xset-1.2.3.tar.bz2
7211b31ec70631829ebae9460999aa0b  xsetroot-1.1.1.tar.bz2
1fbd65e81323a8c0a4b5e24db0058405  xvinfo-1.1.2.tar.bz2
6b5d48464c5f366e91efd08b62b12d94  xwd-1.0.6.tar.bz2
b777bafb674555e48fd8437618270931  xwininfo-1.1.3.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-1.8.10p3](#) package.
>
> 3.   Use `su -c "command arguments"` (quotes required) which will ask for the root password for every iteration of the loop.

```
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 packages 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
    luit-[0-9]* )
      line1="#ifdef _XOPEN_SOURCE"
      line2="#  undef _XOPEN_SOURCE"
      line3="#  define _XOPEN_SOURCE 600"
      line4="#endif"

      sed -i -e "s@#ifdef HAVE_CONFIG_H@$line1\n$line2\n$line3\n$line4\n\n&@" sys.c
      unset line1 line2 line3 line4
    ;;
  esac
  ./configure $XORG_CONFIG
  make
  as_root make install
  popd
  rm -rf $packagedir
done
```

Finally, exit the shell that was started earlier:

```
exit
```

Contents

Installed Programs: bdftopcf, iceauth, luit, mkfontdir, mkfontscale, sessreg, setxkbmap, smproxy, x11perf, x11perfcomp, xauth, xbacklight, xcmsdb, xcursorgen, xdpr, xdpyinfo, xdriinfo, xev, xgamma, xhost, xinput, xkbbell, xkbcomp, xkbevd, xkbvleds, xkbwatch, xkeystone, xkill, xlsatoms, xlsclients, xmessage, xmodmap, xpr, xprop, xrandr, xrdb, xrefresh, xset, xsetroot, xvinfo, xwd, xwininfo, and xwud

Installed Libraries: None

Installed Directories: None

Short Descriptions

bdftopcf	converts an X font from Bitmap Distribution Format to Portable Compiled Format.
iceauth	is the ICE authority file utility.
luit	provides locale and ISO 2022 support for Unicode terminals.
mkfontdir	creates an index of X font files in a directory.
mkfontscale	creates an index of scalable font files for X.
sessreg	manages utmp/wtmp entries for non-init clients.
setxkbmap	sets the keyboard using the X Keyboard Extension.
smproxy	is the Session Manager Proxy.
x11perf	is an X11 server performance test program.
x11perfcomp	is an X11 server performance comparison program.
xauth	is the X authority file utility.
xbacklight	adjusts backlight brightness using RandR extension.

xcursorgen	creates an X cursor file from a collection of PNG images.
xdpr	dumps an X window directly to a printer.
xdpyinfo	is a display information utility for X.
xdriinfo	queries configuration information of DRI drivers.
xev	prints contents of X events.
xgamma	alters a monitor's gamma correction through the X server.
xhost	is a server access control program for X.
xinput	is a utility to configure and test X input devices.
xkbbell	is an XKB utility program that raises a bell event.
xkbcomp	compiles an XKB keyboard description.
xkbevd	is the XKB event daemon.
xkbvleds	shows the XKB status of keyboard LEDs.
xkbwatch	monitors modifier keys and LEDs.
xkill	kills a client by its X resource.
xlsatoms	lists interned atoms defined on the server.
xlsclients	lists client applications running on a display.
xmessage	displays a message or query in a window.
xmodmap	is a utility for modifying keymaps and pointer button mappings in X.
xpr	prints an X window dump.
xprop	is a property displayer for X.
xrandr	is a primitive command line interface to RandR extension.
xrdb	is the X server resource database utility.
xrefresh	refreshes all or part of an X screen.
xset	is the user preference utility for X.
xsetroot	is the root window parameter setting utility for X.
xvinfo	prints out X-Video extension adaptor information.
xwd	dumps an image of an X window.
xwininfo	is a window information utility for X.
xwud	is an image displayer for X.

Last updated on 2014-09-11 15:53:52 -0700

xcursor-themes-1.0.4

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-7.6 platform.

Package Information

- Download (HTTP): **http://xorg.freedesktop.org/archive/individual/data/xcursor-themes-1.0.4.tar.bz2**
- Download (FTP): **ftp://ftp.x.org/pub/individual/data/xcursor-themes-1.0.4.tar.bz2**
- Download MD5 sum: fdfb0ad9cfceed60e3bfe9f18765aa0d
- Download size: 2.3 MB
- Estimated disk space required: 12.3 MB
- Estimated build time: less than 0.1 SBU

xcursor-themes Dependencies

Required

Xorg Applications

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/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 Programs: None
Installed Libraries: None
Installed Directories: $XORG_PREFIX/share/icons/handhelds, $XORG_PREFIX/share/icons/redglass and
$XORG_PREFIX/share/icons/whiteglass

Last updated on 2014-09-10 06:19:10 -0700

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-7.6 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

Xorg Fonts Dependencies

Required

xcursor-themes-1.0.4

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/Xorg7Fonts

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
e99276db3e7cef6dccc8a57bc68aeba7  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
e452b94b59b9cfd49110bb49b6267fba  font-cronyx-cyrillic-1.0.3.tar.bz2
3e0069d4f178a399cffe56daa95c2b63  font-cursor-misc-1.0.3.tar.bz2
```

```
b1b2595d21023853143dda960143cb5c4   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-1.8.10p3 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 packages 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
  as_root rm -rf $packagedir
done
```

Finally, exit the shell that was started earlier:

```
exit
```

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

Installed Programs: bdftruncate and ucs2any
Installed Libraries: None
Installed Directories: $XORG_PREFIX/share/fonts

Short Descriptions

bdftruncate	generates a truncated BDF font from an ISO 10646-1 encoded BDF font.
ucs2any	generates BDF fonts in any encoding from an ISO 10646-1 encoded BDF font.

Last updated on 2014-09-10 06:19:10 -0700

XKeyboardConfig-2.12

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-7.6 platform.

Package Information

- Download (HTTP): **http://xorg.freedesktop.org/archive/individual/data/xkeyboard-config/xkeyboard-config-2.12.tar.bz2**
- Download (FTP): **ftp://ftp.x.org/pub/individual/data/xkeyboard-config/xkeyboard-config-2.12.tar.bz2**
- Download MD5 sum: 1fd54ceb9092d1dbcaabaf03653092bc
- Download size: 916 KB
- Estimated disk space required: 19 MB
- Estimated build time: less than 0.1 SBU

XKeyboardConfig Dependencies

Required

Xorg Libraries

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/xkeyboard-config

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 Programs: None

Xorg-Server-1.16.0

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-7.6 platform.

Package Information

- Download (HTTP): **http://xorg.freedesktop.org/archive/individual/xserver/xorg-server-1.16.0.tar.bz2**
- Download (FTP): **ftp://ftp.x.org/pub/individual/xserver/xorg-server-1.16.0.tar.bz2**
- Download MD5 sum: 8a9ff6ee9907360f09b5bdabb8089502
- Download size: 5.6 MB
- Estimated disk space required: 434 MB
- Estimated build time: 1.6 SBU

Additional Downloads

- Recommended patch: **http://www.linuxfromscratch.org/patches/blfs/7.6/xorg-server-1.16.0-upstream_glamor_fix-1.patch**
- Optional patch: **http://www.linuxfromscratch.org/patches/blfs/7.6/xorg-server-1.16.0-add_prime_support-1.patch**

Xorg Server Dependencies

Required

OpenSSL-1.0.1i or Nettle-2.7.1 or libgcrypt-1.6.2, Pixman-0.32.6, Xorg Fonts, and xkeyboard-config-2.12

Recommended

libepoxy-1.2 (required for glamor, see command explanations below)

Optional

acpid-2.0.23 (runtime), Doxygen-1.8.8 (to build API documentation), fop-1.1, (to build documentation), ghostscript-9.14 (to build documentation), and xmlto-0.0.26, (to build documentation)

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/Xorg7Server

Installation of Xorg Server

If you are enabling glamor, apply the recommended patch by running the following command:

```
patch -Np1 -i ../xorg-server-1.16.0-upstream_glamor_fix-1.patch
```

If you have downloaded the optional patch, apply it by running the following command:

```
patch -Np1 -i ../xorg-server-1.16.0-add_prime_support-1.patch
```

Install the server by running the following commands:

```
sed -i "/scrnintstr/i #include <xorg-server.h>" exa/exa.h glamor/glamor.h &&

./configure $XORG_CONFIG                 \
        --with-xkb-output=/var/lib/xkb   \
        --enable-dmx                     \
        --enable-glamor                  \
        --enable-install-setuid          \
        --enable-suid-wrapper            &&
make
```

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

```
make install &&
mkdir -pv /etc/X11/xorg.conf.d &&
cat >> /etc/sysconfig/createfiles << "EOF"
/tmp/.ICE-unix dir 1777 root root
/tmp/.X11-unix dir 1777 root root
EOF
```

Command Explanations

sed -i ...: This sed fixes two header files that are broken with Glibc 2.20 so the drivers using them wouldn't fail to build.

--enable-dmx: Build DMX (Distributed Multihead X) server.

--enable-glamor: Build the Glamor DIX (Device Independent X) module which is currently required for Southern Islands and Sea Islands radeon video chipsets, optional for some other radeons, and also optional for the intel driver.

--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.

--enable-suid-wrapper: Build suid-root wrapper for legacy driver support on rootless xserver systems.

cat >> /etc/sysconfig/createfiles...: 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

Installed Programs: cvt, dmxaddinput, dmxaddscreen, dmxinfo, dmxreconfig, dmxresize, dmxrminput, dmxrmscreen, dmxtodmx, dmxwininfo, gtf, vdltodmx, X, Xdmx, xdmxconfig, Xnest, Xorg, and Xvfb
Installed Libraries: several under $XORG_PREFIX/lib/xorg/modules/{,extensions,multimedia}
Installed Directories: $XORG_PREFIX/include/xorg, $XORG_PREFIX/lib/xorg, $XORG_PREFIX/share/X11/xorg.conf.d, and /var/lib/xkb

Short Descriptions

cvt	calculates VESA CVT mode lines.
dmx*	are various tools used for manipulating the dmx server.
gtf	calculates VESA GTF mode lines.
vdltodmx	is a tool used to convert VDL config files to DMX config files.
X	is a symbolic link to Xorg.
Xnest	is a nested X server.
Xorg	is the X11R7 X Server.
Xvfb	is the virtual framebuffer X server for X Version 11.
xdmxconfig	is a graphical configuration utility for the dmx server.

Last updated on 2014-09-11 19:58:21 -0700

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-3.2.1 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 Input Drivers

- Libevdev-1.2.2
- Xorg Evdev Driver-2.9.0

- [Xorg Wacom Driver-0.25.0](#)

Xorg Video Drivers

- [Xorg ATI Driver-7.4.0](#)
- [Xorg Cirrus Driver-1.5.2](#)
- [Xorg Fbdev Driver-0.4.4](#)
- [Xorg Intel Driver-2.99.916](#)
- [Xorg Mach64 Driver-6.9.4](#)
- [Xorg MGA Driver-1.6.3](#)
- [Xorg Nouveau Driver-1.0.11](#)
- [Xorg OpenChrome Driver-0.3.3](#)
- [Xorg R128 Driver-6.9.2](#)
- [Xorg Savage Driver-2.3.7](#)
- [Xorg SiS Driver-0.10.7](#)
- [Xorg 3Dfx Driver-1.4.5](#)
- [Xorg VESA Driver-2.3.3](#)
- [Xorg VMware Driver-13.0.2](#)

Hardware Video Acceleration

- [libva-1.3.1](#)
- [libvdpau-0.8](#)

Libevdev 1.2.2

Introduction to Libevdev

The Libevdev package contains common functions for Xorg input drivers.

This package is known to build and work properly using an LFS-7.6 platform.

Package Information

- Download (HTTP): **http://www.freedesktop.org/software/libevdev/libevdev-1.2.2.tar.xz**
- Download MD5 sum: 7c1ee9c2069489b2a25dfde6f8e2ff6a
- Download size: 380 KB
- Estimated disk space required: 8.2 MB
- Estimated build time: 0.1 SBU (0.3 SBU with all tests)

Libevdev Dependencies

Required

[Python-2.7.8](#)

Optional

[Check-0.9.14](#), [Doxygen-1.8.8](#), and [Valgrind-3.10.0](#)

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/libevdev

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
    Miscellaneous devices  --->
```

Installation of Libevdev

If Valgrind-3.10.0 is installed and tests are going to be run, fix a testing problem:

```
cat >> test/valgrind.suppressions << "EOF"
{
    <timer_create@@GLIBC_2.3.3-2>
    Memcheck:Param
    timer_create(evp)
    fun:timer_create@@GLIBC_2.3.3
    fun:check_get_clockid
    fun:srunner_run
    fun:main
}
EOF
```

Install Libevdev by running the following commands:

```
./configure $XORG_CONFIG &&
make
```

If you have the optional Check-0.9.14 package installed, the regression tests can be run as the *root* user with **make check**.

Now, as the *root* user:

```
make install
```

Contents

Installed Xorg Program: touchpad-edge-detector
Installed Xorg Library: libevdev.so

Short Descriptions

`libevdev.so`   is a library of Xorg driver input functions.

Xorg Evdev Driver-2.9.0

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-7.6 platform.

Package Information

- Download (HTTP): **http://xorg.freedesktop.org/archive/individual/driver/xf86-input-evdev-2.9.0.tar.bz2**
- Download (FTP): **ftp://ftp.x.org/pub/individual/driver/xf86-input-evdev-2.9.0.tar.bz2**
- Download MD5 sum: 9076ae2646f7aeb30963056e0bbfccf0
- Download size: 364 KB
- Estimated disk space required: 3.8 MB
- Estimated build time: less than 0.1 SBU

Xorg Evdev Driver Dependencies

Required

Libevdev-1.2.2 and Xorg-Server-1.16.0

Recommended

mtdev-1.1.5

User Notes: *http://wiki.linuxfromscratch.org/blfs/wiki/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-1.8.0

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-7.6 platform.

Package Information

- Download (HTTP): **http://xorg.freedesktop.org/archive/individual/driver/xf86-input-synaptics-1.8.0.tar.bz2**
- Download (FTP): **ftp://ftp.x.org/pub/individual/driver/xf86-input-synaptics-1.8.0.tar.bz2**
- Download MD5 sum: 27a3f2b31606a13dd6b58d419978d64f
- Download size: 440 KB
- Estimated disk space required: 4.8 MB
- Estimated build time: less than 0.1 SBU

Xorg Synaptics Driver Dependencies

Required

Libevdev-1.2.2 and Xorg-Server-1.16.0

User Notes: *http://wiki.linuxfromscratch.org/blfs/wiki/xorg-synaptics-driver*

Installation of Xorg Synaptics Driver

Install Xorg Synaptics Driver by running the following commands:

```
sed -i '/_H_/ a#include <xorg-server.h>' src/{eventcomm,ps2comm,synproto}.h &&
./configure $XORG_CONFIG &&
make
```

This package does not come with a test suite.

Now, as the *root* user:

```
make install
```

Command Explanations

`sed -i ...`: This sed fixes building with the latest version of Glibc.

Contents

Installed Programs:synclient and syndaemon
Installed Xorg Driver:synaptics_drv.so

`synclient`	is a command line utility used to query and modify Synaptics driver options.
`syndaemon`	is a program that monitors keyboard activity and disables the touchpad when the keyboard is being used.
`synaptics_drv.so`	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 using an LFS 7.6 platform but has not been tested.

Package Information

- Download (HTTP): **http://xorg.freedesktop.org/archive/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

Additional Downloads

- Required patch: **http://www.linuxfromscratch.org/patches/blfs/7.6/xf86-input-vmmouse-13.0.0-build_fix-1.patch**

Xorg VMMouse Driver Dependencies

Required

Xorg-Server-1.16.0

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/xorg-vmmouse-driver

Installation of Xorg VMMouse Driver

Install Xorg VMMouse Driver by running the following commands:

```
patch -Np1 -i ../xf86-input-vmmouse-13.0.0-build_fix-1.patch &&
./configure $XORG_CONFIG            \
            --without-hal-fdi-dir      \
            --without-hal-callouts-dir \
            --with-udev-rules-dir=/lib/udev/rules.d &&
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

Xorg Wacom Driver-0.25.0

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 7.6 platform but has not been tested.

Package Information

- Download (HTTP): **http://downloads.sourceforge.net/linuxwacom/xf86-input-wacom-0.25.0.tar.bz2**
- Download MD5 sum: 2cf57400fbd9e35eb16b50ad9fe32de1
- Download size: 576 KB
- Estimated disk space required: 8.2 MB (additional 2 MB for the tests)
- Estimated build time: 0.1 SBU

Xorg Wacom Drivers Dependencies

Required

Xorg-Server-1.16.0

Optional

Doxygen-1.8.8 and Graphviz-2.38.0

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/xorg-wacom-driver

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 --with-systemd-unit-dir=no &&
make
```

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

Now, as the *root* user:

```
make install
```

Contents

Installed Programs:isdv4-serial-debugger, isdv4-serial-inputattach, and xsetwacom
Installed Xorg Driver:wacom_drv.so

Short Descriptions

`xsetwacom`   is a commandline utility used to query and modify wacom driver settings.

`wacom_drv.so`   is an Xorg input driver for Wacom devices.

Xorg ATI Driver-7.4.0

Introduction to Xorg ATI Driver

This package is known to build and work properly using an LFS-7.6 platform.

> **Note**
>
> For Direct Rendering to work with newer Radeon Cards (R300 and later chipsets), you need to enable the r300, r600 and radeonsi Gallium drivers at MesaLib-10.2.7 build time. Also, some cards require Firmware to be available when the kernel driver is loaded. Firmware can be obtained from **this** site. See "Kernel Configuration for additional firmware" below.

Package Information

- Download (HTTP): **http://xorg.freedesktop.org/archive/individual/driver/xf86-video-ati-7.4.0.tar.bz2**
- Download (FTP): **ftp://ftp.x.org/pub/individual/driver/xf86-video-ati-7.4.0.tar.bz2**
- Download MD5 sum: 8ee095009e927d61be522f392bdb843e
- Download size: 813 KB
- Estimated disk space required: 17 MB
- Estimated build time: 0.2 SBU

Xorg ATI Driver Dependencies

Required

Xorg-Server-1.16.0 (recommended to be built with glamor enabled)

> **Note**
>
> Glamor is *required for "Southern Islands" and later GPUs* but optional for R300 to R700, Evergreen and "Northern Islands" GPUs - see the link under "Glamor Acceleration" below.

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/xorg-ati-driver

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
```

Kernel Configuration for additional firmware

If you need to add firmware, install the file(s) and then point to them in the kernel configuration and recompile the kernel if necessary. To find out which firmware you need, consult the **Decoder ring for engineering vs marketing names**. Download any firmware for your card which is named like: *<ENGINEERING_NAME>*_rlc.bin, etc. Note that for R600 and R700 family, generic R600_rlc.bin and R700_rlc.bin are necessary in adition to the model specific firmware, while for later generations (Evergreen, "Northern Islands" and probably "Southern Islands") you need the BTC_rlc.bin in adition to the model specific firmware. Below is an example for Radeon HD6470, which is "Northern Islands" GPU with a network card that also requires the firmware:

```
CONFIG_EXTRA_FIRMWARE="radeon/BTC_rlc.bin radeon/CAICOS_mc.bin radeon/CAICOS_me.bin
radeon/CAICOS_pfp.bin radeon/CAICOS_smc.bin rtl_nic/rtl8168e-3.fw"
CONFIG_EXTRA_FIRMWARE_DIR="/lib/firmware"
```

> **Note**
>
> CONFIG_EXTRA_FIRMWARE should all be on one line. It is shown above as two lines for presentation only.

> **Tip**
>
> You can check `dmesg` output after boot to see which firmware is missing.

Install Xorg ATI Driver by running the following commands:

```
sed -i -e '/ac_cv_header_glamor/s/\$ac_includes_default/#include \\"xorg-server.h\\"/' \
       -e '/GLAMOR_NO_DRI3/s/\(#include \)/\1\\"xorg-server.h\\"\n\1/' configure &&
./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 '/ac_cv_header_glamor/s/\$ac_includes_default/#include \\"xorg-server.h\\"/' -e '/GLAMOR_NO_DRI3/s/\(#include \)/\1\\"xorg-server.h\\"\n\1/' configure: this fixes compilation with glamor (the default) from xorg-server with recent glibc.

Glamor Acceleration

Glamor is an acceleration library which uses cards' 3D capabilities to accelerate 2D rendering. Glamor acceleration is required for Radeon "Southern Islands" GPUs which use "radeonsi" Gallium3D driver from **MesaLib-10.2.7**. To see which cards fall under "Southern Islands" category, read the **Decoder ring for engineering vs marketing names**. Please note that Glamor acceleration can be used with other chips as well, from the R300 onwards, but it has not been tested recently.

Glamor acceleration is not enabled by default for chipsets that don't use "radeonsi" Gallium3D driver. You have to use a xorg.conf file to enable it. To enable Glamor for cards other than "Southern Islands" and later, 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

ati_drv.so	is a wrapper driver for ATI video cards that autodetects ATI video hardware and loads radeon, mach64 or r128 driver.
radeon_drv.so	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 and work properly using an LFS-7.6 platform.

Package Information

- Download (HTTP): **http://xorg.freedesktop.org/archive/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 build time: 0.1 SBU

Xorg Cirrus Driver Dependencies

Required

Xorg-Server-1.16.0

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 grahpics chipsets.

Xorg Fbdev Driver-0.4.4

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-7.6 platform.

Package Information

- Download (HTTP): **http://xorg.freedesktop.org/archive/individual/driver/xf86-video-fbdev-0.4.4.tar.bz2**
- Download (FTP): **ftp://ftp.x.org/pub/individual/driver/xf86-video-fbdev-0.4.4.tar.bz2**
- Download MD5 sum: 3931c0e19d441cc576dc088f9eb9fd73
- Download size: 287 KB
- Estimated disk space required: 2.5 MB
- Estimated build time: 0.1 SBU

Xorg Fbdev Driver Dependencies

Required

Xorg-Server-1.16.0

Installation of Xorg Fbdev Driver

```
./configure $XORG_CONFIG &&
make
```

This package does not come with a test suite.

Now, as the *root* user:

```
make install
```

Contents

Installed Xorg Driver: fbdev_drv.so

Short Descriptions

`fbdev_drv.so`   is an Xorg video driver for framebuffer devices.

Xorg Intel Driver-2.99.916

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-7.6 platform.

> ### Note
>
> This is a development version of the Intel driver which is needed to work properly with the latest hardware.

Package Information

- Download (HTTP): **http://xorg.freedesktop.org/archive/individual/driver/xf86-video-intel-2.99.916.tar.bz2**
- Download (FTP): **ftp://ftp.x.org/pub/individual/driver/xf86-video-intel-2.99.916.tar.bz2**
- Download MD5 sum: 7e24551eae0b952f4d795e791e88ebe5
- Download size: 2.1 MB
- Estimated disk space required: 71 MB
- Estimated build time: 0.6 SBU

Xorg Intel Driver Dependencies

Required

xcb-util-0.3.9 and Xorg-Server-1.16.0

User Notes: *http://wiki.linuxfromscratch.org/blfs/wiki/xorg-intel-driver*

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     \
            --enable-kms-only \
            --enable-uxa      \
            --enable-glamor   &&
```

This package does not come with a test suite.

Now, as the *root* user:

```
make install
```

Command Explanations

--enable-kms-only: This switch omits the UMS (User Mode Setting) code.

--enable-uxa: This switch enables Unified Acceleration Architecture (UXA) and is required for Glamor acceleration.

--enable-glamor: This switch enables new GL-based 2D acceleration. As well as specifying this in the build, it needs to be enabled at run time (see below).

Glamor Acceleration

Glamor is an acceleration library which uses cards' 3D capabilities to accelerate 2D rendering. 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 "intel"
        Driver "intel"
        Option "AccelMethod" "glamor"
EndSection
EOF
```

Contents

Installed Library: libIntelXvMC.so
Installed Xorg Driver: 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 using an LFS 7.6 platform but has not been tested.

Package Information

- Download (HTTP): **http://xorg.freedesktop.org/archive/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: d645197cbf238ac0427c3904eafdce2f
- Download size: 508 KB
- Estimated disk space required: 13 MB
- Estimated build time: 0.1 SBU

Xorg Mach64 Driver Dependencies

Required

Xorg-Server-1.16.0

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/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 grahpics chipsets.

Xorg MGA Driver-1.6.3

Introduction to Xorg MGA Driver

The Xorg MGA Driver package contains the X.Org Video Driver for Matrox video cards including Millennium G2xx, G4xx, G5xx, Millennium II and Mystique G200 chipsets.

This package is known to build using an LFS 7.6 platform but has not been tested.

Package Information

- Download (HTTP): **http://xorg.freedesktop.org/archive/individual/driver/xf86-video-mga-1.6.3.tar.bz2**
- Download (FTP): **ftp://ftp.x.org/pub/individual/driver/xf86-video-mga-1.6.3.tar.bz2**
- Download MD5 sum: a53b5ce166e31c181aaa4c3816d8babb
- Download size: 445 KB
- Estimated disk space required: 7.4 MB
- Estimated build time: 0.2 SBU

Xorg MGA Driver Dependencies

Required

Xorg-Server-1.16.0

User Notes: *http://wiki.linuxfromscratch.org/blfs/wiki/xorg-mga-driver*

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

`mga_drv.so` is an Xorg video driver for Matrox video cards.

Xorg Nouveau Driver-1.0.11

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-7.6 platform.

Package Information

- Download (HTTP): **http://xorg.freedesktop.org/archive/individual/driver/xf86-video-nouveau-1.0.11.tar.bz2**
- Download (FTP): **ftp://ftp.x.org/pub/individual/driver/xf86-video-nouveau-1.0.11.tar.bz2**
- Download MD5 sum: a0d2932d84ba10c4933c8332c9afe157
- Download size: 569 KB
- Estimated disk space required: 14 MB
- Estimated build time: 0.1 SBU

Xorg Nouveau Drivers Dependencies

Required

Xorg-Server-1.16.0 (recommended to be built with glamor enabled)

> **Note**
>
> The new "Maxwell" GPU requires Glamor to be built with the Xorg server. Note that the BLFS editors have not tested that hardware.

User Notes: *http://wiki.linuxfromscratch.org/blfs/wiki/xorg-nouveau-driver*

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
```

Glamor Acceleration

Glamor is an acceleration library which uses cards' 3D capabilities to accelerate 2D rendering. Glamor acceleration is enabled by default for the new "Maxwell" GPU's. According to the documentation, Glamor acceleration can be used with other chips as well, but that does not seem functional yet.

To enable Glamor for GPU's other than the new "Maxwell" ones, create the following file as the *root* user:

```
        Identifier "nvidia"
        Driver "nouveau"
        Option "AccelMethod" "glamor"
EndSection
EOF
```

Contents

Installed Xorg Driver:nouveau_drv.so

Short Descriptions

nouveau_drv.so   is an Xorg video driver for nVidia video cards.

Xorg OpenChrome Driver-0.3.3

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 using an LFS 7.6 platform but has not been tested.

Package Information

- Download (HTTP): **http://xorg.freedesktop.org/archive/individual/driver/xf86-video-openchrome-0.3.3.tar.bz2**
- Download (FTP): **ftp://ftp.x.org/pub/individual/driver/xf86-video-openchrome-0.3.3.tar.bz2**
- Download MD5 sum: f21abcdf87f73b5b547491281e894c87
- Download size: 507 KB
- Estimated disk space required: 14 MB
- Estimated build time: 0.1 SBU

Xorg OpenChrome Driver Dependencies

Required

Xorg-Server-1.16.0

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/xorg-openchrome-driver

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:

```
sed -i "/via_3d.h/i #include <xorg-server.h>" src/via_3d.c &&

./configure $XORG_CONFIG &&
make
```

This package does not come with a test suite.

Now, as the *root* user:

```
make install
```

Command Explanations

sed -i ...: This sed fixes building with the latest version of Glibc.

Installed Libraries: libchromeXvMCPro.so and libchromeXvMC.so
Installed Xorg Driver: openchrome_drv.so

Short Descriptions

openchrome_drv.so   is an Xorg video driver for VIA integrated graphics chipsets.

Xorg R128 Driver-6.9.2

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-7.6 platform.

Package Information

- Download (HTTP): **http://xorg.freedesktop.org/archive/individual/driver/xf86-video-r128-6.9.2.tar.bz2**
- Download (FTP): **ftp://ftp.x.org/pub/individual/driver/xf86-video-r128-6.9.2.tar.bz2**
- Download MD5 sum: 2e906d856a1c477bde000254b142445c
- Download size: 452 KB
- Estimated disk space required: 5.7 MB
- Estimated build time: 0.1 SBU

Xorg R128 Driver Dependencies

Required

Xorg-Server-1.16.0

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/xorg-r128-driver

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-2.3.7

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,

This package is known to build using an LFS 7.6 platform but has not been tested.

Package Information

- Download (HTTP): **http://xorg.freedesktop.org/archive/individual/driver/xf86-video-savage-2.3.7.tar.bz2**
- Download (FTP): **ftp://ftp.x.org/pub/individual/driver/xf86-video-savage-2.3.7.tar.bz2**
- Download MD5 sum: e813271ab43cc6a95ac0ab252b90a885
- Download size: 386 KB
- Estimated disk space required: 6.6 MB
- Estimated build time: 0.1 SBU

Xorg Savage Driver Dependencies

Required

Xorg-Server-1.16.0

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/xorg-savage-driver

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 using an LFS 7.6 platform but has not been tested.

Package Information

- Download (HTTP): **http://xorg.freedesktop.org/archive/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

- Required patch: **http://www.linuxfromscratch.org/patches/blfs/7.6/xf86-video-sis-0.10.7-upstream_fixes-1.patch**

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 -Np1 -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 using an LFS 7.6 platform but has not been tested.

Package Information

- Download (HTTP): **http://xorg.freedesktop.org/archive/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

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 -i -e "/mibstore.h/d" -e "/miInitializeBackingStore/d" 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 and later.

Contents

Installed Xorg Driver:tdfx_drv.so

Short Descriptions

`tdfx_drv.so`   is an Xorg video driver for 3Dfx video cards.

Xorg VESA Driver-2.3.3

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-7.6 platform.

Package Information

- Download (HTTP): **http://xorg.freedesktop.org/archive/individual/driver/xf86-video-vesa-2.3.3.tar.bz2**
- Download (FTP): **ftp://ftp.x.org/pub/individual/driver/xf86-video-vesa-2.3.3.tar.bz2**
- Download MD5 sum: 3690a5356ed121b1a7dfb59a6dcf4bf9
- Download size: 300 KB
- Estimated disk space required: 2.6 MB
- Estimated build time: less than 0.1 SBU

Xorg VESA Driver Dependencies

Required

Xorg-Server-1.16.0

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/xorg-vesa-driver

Kernel Configuration

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

```
Device Drivers  --->
  Graphics support --->
```

Installation of Xorg VESA Driver

Install Xorg VESA 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:vesa_drv.so

Short Descriptions

vesa_drv.so   is an Xorg video driver for generic VESA video cards.

Xorg VMware Driver-13.0.2

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-7.6 platform.

Package Information

- Download (HTTP): **http://xorg.freedesktop.org/archive/individual/driver/xf86-video-vmware-13.0.2.tar.bz2**
- Download (FTP): **ftp://ftp.x.org/pub/individual/driver/xf86-video-vmware-13.0.2.tar.bz2**
- Download MD5 sum: 91d1d7d33181766714405ab013d31244
- Download size: 432 KB
- Estimated disk space required: 9.1 MB
- Estimated build time: 0.1 SBU

Xorg VMware Driver Dependencies

Required

Xorg-Server-1.16.0

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/xorg-vmware-driver

Kernel Configuration

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

```
Device Drivers  --->
  Graphics support  --->
    Direct Rendering Manager  --->
      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:

```
sed -i "/xf86xv.h/i #include <xorg-server.h>" vmwgfx/vmwgfx_overlay.c &&

./configure $XORG_CONFIG &&
make
```

This package does not come with a test suite.

```
make install
```

Command Explanations

`sed -i ...`: This sed fixes building with the latest version of Glibc.

Contents

Installed Xorg Driver: vmware_drv.so

Short Descriptions

`vmware_drv.so`   is an Xorg video driver for VMware SVGA virtual video card.

libva-1.3.1

Introduction to libva

The libva package contains a library which provides access to hardware accelerated video processing, using hardware to accelerate video processing in order to offload the central processing unit (CPU) to decode and encode compressed digital video. VA API video decode/encode interface is platform and window system independent targeted at Direct Rendering Infrastructure (DRI) in the X Window System however it can potentially also be used with direct framebuffer and graphics sub-systems for video output. Accelerated processing includes support for video decoding, video encoding, subpicture blending, and rendering.

This package is known to build and work properly using an LFS-7.6 platform.

Package Information

- Download (HTTP): **http://www.freedesktop.org/software/vaapi/releases/libva/libva-1.3.1.tar.bz2**
- Download MD5 sum: eb4db967f068854444b597071c66b480
- Download size: 744 KB
- Estimated disk space required: 18 MB
- Estimated build time: 0.3 SBU

Additional Downloads

- Intel Driver Download (HTTP): **http://www.freedesktop.org/software/vaapi/releases/libva-intel-driver/libva-intel-driver-1.3.2.tar.bz2**
- Intel Driver Download MD5 sum: 3f4f08f1d42ee451b2fb9c239ee0b8d7
- Intel Driver Download size: 936 KB
- Estimated disk space required: 29 MB
- Estimated build time: 0.2 SBU

libva Dependencies

Required

MesaLib-10.2.7

Optional

Doxygen-1.8.8 and **Wayland**

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/libva

Installation of libva

Install libva by running the following commands:

```
mkdir -p m4            &&
autoreconf   -f        &&
./configure $XORG_CONFIG &&
make
```

```
make install
```

Installation of libva-intel-driver

The libva-intel-driver is designed specifically for video cards based on an Intel GPU. Install the driver by running the following commands:

```
mkdir -p m4              &&
autoreconf -f            &&
./configure $XORG_CONFIG &&
make
```

This package does not come with a test suite.

Now, as the *root* user:

```
make install
```

Command Explanations

`mkdir -p m4`: This command prevents an error that may occur when running autoreconf.

`autoreconf -f`: This command regenerates the configure script to prevent a mandatory test for wayland-scanner when configuring.

Contents

Installed Programs: avcenc, h264encode, loadjpeg, mpeg2vaenc, mpeg2vldemo, putsurface, putsurface_wayland, and vainfo
Installed Libraries: libva-drm.so, libva-egl.so, libva-glx.so, libva.so, libva-tpi.so, libva-wayland.so, and libva-x11.so
Installed Drivers: dummy_drv_video.so and i965_drv_video.so
Installed Directory: /usr/include/va

Short Descriptions

`libva.so`   contains API functions which provide access to hardware accelerated video processing.

libvdpau-0.8

Introduction to libvdpau

The libvdpau package contains a library which implements the VDPAU library.

VDPAU (Video Decode and Presentation API for Unix) is an open source library (libvdpau) and API originally designed by Nvidia for its GeForce 8 series and later GPU hardware targeted at the X Window System This VDPAU API allows video programs to offload portions of the video decoding process and video post-processing to the GPU video-hardware.

Currently, the portions capable of being offloaded by VDPAU onto the GPU are motion compensation (mo comp), inverse discrete cosine transform (iDCT), VLD (variable-length decoding) and deblocking for MPEG-1, MPEG-2, MPEG-4 ASP (MPEG-4 Part 2), H.264/MPEG-4 AVC and VC-1, WMV3/WMV9 encoded videos. Which specific codecs of these that can be offloaded to the GPU depends on the version of the GPU hardware; specifically, to also decode MPEG-4 ASP (MPEG-4 Part 2), Xvid/OpenDivX (DivX 4), and DivX 5 formats, a GeForce 200M (2xxM) Series (the eleventh generation of Nvidia's GeForce graphics processing units) or newer GPU hardware is required.

This package is known to build and work properly using an LFS-7.6 platform.

Package Information

- Download (HTTP): **http://people.freedesktop.org/~aplattner/vdpau/libvdpau-0.8.tar.gz**
- Download MD5 sum: acf68adc8b8ff4f72be6e8679abc284e
- Download size: 476 KB
- Estimated disk space required: 8.9 MB
- Estimated build time: 0.1 SBU

libvdpau Dependencies

Required

Doxygen-1.8.8, Graphviz-2.38.0, and texlive-20140525

Runtime Dependency

MesaLib-10.2.7

***User Notes:** http://wiki.linuxfromscratch.org/blfs/wiki/libvdpau*

Installation of libvdpau

Install libvdpau 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 Programs: None
Installed Library: libvdpau.so
Installed Directories: /usr/include/libvdpau and /usr/lib/libvdpau

Short Descriptions

`libvdpau.so`   contains functions to offload portions of the video decoding process and video post-processing to the GPU video-hardware.

libvdpau-va-gl-0.3.4

Introduction to libvdpau-va-gl

The libvdpau-va-gl package contains a library which implements the VDPAU library. Libvdpau_va_gl uses OpenGL under the hood to accelerate drawing and scaling and the VA-API (if available) to accelerate video decoding. For now VA-API is available on some Intel chips, and on some AMD video adapters with the help of the libvdpau driver.

This package is known to build and work properly using an LFS-7.6 platform.

Package Information

- Libvdpau-va-gl Driver Download (HTTP): **https://github.com/i-rinat/libvdpau-va-gl/archive/v0.3.4.tar.gz**
- Libvdpau-va-gl Driver Download MD5 sum: 09ceb2f75eafccc9b002d35ede0de6a5
- Libvdpau-va-gl Driver Download size: 100 KB
- Estimated disk space required: 4.0 MB
- Estimated build time: less than 0.1 SBU

> **Note**
>
> The tarball name for libvdpau-va-gl does not include the file name, although it does expand to libvdpau-va-gl-0.3.4. The file should be renamed after downloading:
>
> ```
> mv v0.3.4.tar.gz libvdpau-va-gl-0.3.4.tar.gz
> ```

libvdpau-va-gl Dependencies

Required

CMake-3.0.1, FFmpeg-2.3.3, GLU-9.0.0, libvdpau-0.8, and libva-1.3.1

Doxygen-1.8.8, Graphviz-2.38.0, and texlive-20140525

Runtime Dependency

MesaLib-10.2.7

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/libvdpau

Installation of libvdpau-va-gl

Install libvdpau-va-gl by running the following commands:

```
mkdir build &&
cd    build &&

cmake -DCMAKE_BUILD_TYPE=Release -DCMAKE_INSTALL_PREFIX=$XORG_PREFIX .. &&
make
```

To test the results, issue: `make check`. The tests must be run from an Xorg environment.

Now, as the *root* user:

```
make install
```

Configuration

To allow libvdpau to find libvdpau-va-gl, set an environment variable. As the *root* user:

```
echo "export VDPAU_DRIVER=va_gl" >> /etc/profile.d/xorg.sh
```

Contents

Installed Programs: None
Installed Library:libvdpau_va_gl.so
Installed Directories: None

Short Descriptions

libvdpau_va_gl.so   contains functions to implement the OpenGL backend to the VDPAU (Video Decode and Presentation API for Unix) API.

Last updated on 2014-08-19 09:58:12 -0700

twm-1.0.8

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-7.6 platform.

Package Information

- Download (HTTP): **http://xorg.freedesktop.org/releases/individual/app/twm-1.0.8.tar.bz2**
- Download (FTP): **ftp://ftp.x.org/pub/individual/app/twm-1.0.8.tar.bz2**
- Download MD5 sum: 4b28317d4a9f7ca61bef8462e132bd4c
- Download size: 269 KB
- Estimated disk space required: 4.6 MB
- Estimated build time: less than 0.1 SBU

twm Dependencies

Required

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

Installed Programs: twm
Installed Libraries: None
Installed Directory: /etc/X11/app-defaults

Short Descriptions

twm is the Tab Window Manager for the X Window System.

Last updated on 2014-09-10 06:19:10 -0700

xterm-310

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-7.6 platform.

Package Information

- Download (FTP): **ftp://invisible-island.net/xterm/xterm-310.tgz**
- Download MD5 sum: 6bada32548b66a805e9c4475a6736b43
- Download size: 1.2 MB
- Estimated disk space required: 12 MB
- Estimated build time: 0.2 SBU

xterm Dependencies

Required

Xorg Applications

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/Xterm

Installation of xterm

Install xterm by running the following commands:

```
sed -i '/v0/{n;s/new:/new:kb=^?:/}' termcap &&
printf '\tkbs=\\177,\n' >> terminfo &&

TERMINFO=/usr/share/terminfo \
./configure $XORG_CONFIG     \
```

```
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, printf ... >> 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.

`--with-app-defaults=...`: Sets the location for the `app-defaults` directory.

`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

Installed Programs: koi8rxterm, resize, uxterm, and xterm
Installed Libraries: None
Installed Directories: None

Short Descriptions

koi8rxterm   is a wrapper script to set up xterm with a KOI8-R locale.

resize   prints a shell command for setting the TERM and TERMCAP environment variables to indicate the current size of xterm window.

uxterm   is a wrapper script that modifies the current locale to use UTF-8 and starts xterm with the proper settings.

xterm   is a terminal emulator for the X Window System.

Last updated on 2014-09-10 06:19:10 -0700

xclock-1.0.7

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-7.6 platform.

Package Information

- Download (HTTP): **http://xorg.freedesktop.org/releases/individual/app/xclock-1.0.7.tar.bz2**
- Download (FTP): **ftp://ftp.x.org/pub/individual/app/xclock-1.0.7.tar.bz2**
- Download MD5 sum: 6f150d063b20d08030b98c45b9bee7af

- Estimated build time: less than 0.1 SBU

xclock Dependencies

Required

Xorg Libraries

User Notes: *http://wiki.linuxfromscratch.org/blfs/wiki/xclock*

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

Installed Programs: xclock
Installed Libraries: None
Installed Directory: None

Short Descriptions

xclock   is an analog/digital clock for X.

Last updated on 2014-09-10 06:19:10 -0700

xinit-1.3.3

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-7.6 platform.

Package Information

- Download (HTTP): **http://xorg.freedesktop.org/releases/individual/app/xinit-1.3.3.tar.bz2**
- Download (FTP): **ftp://ftp.x.org/pub/individual/app/xinit-1.3.3.tar.bz2**
- Download MD5 sum: 3b8da0e6237aee9828cc809c647510a7
- Download size: 161 KB
- Estimated disk space required: 1.6 MB
- Estimated build time: 0.1 SBU

xinit Dependencies

Required (runtime only)

twm-1.0.8, xclock-1.0.7, and xterm-310

User Notes: *http://wiki.linuxfromscratch.org/blfs/wiki/xinit*

Installation of xinit

Install xinit by running the following commands:

```
make
```

This package does not come with a test suite.

Now, as the *root* user:

```
make install
```

Contents

Installed Programs: xinit and startx
Installed Libraries: None
Installed Directories: None

Short Descriptions

startx   initializes an X session.

xinit   is the X Window System initializer.

Last updated on 2014-09-10 06:19:10 -0700

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-10.2.7. 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 `LIBGL_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 |`

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-3.5.0 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 ot 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 automaticaly. 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.

- **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
```

Last updated on 2013-05-05 11:02:40 -0700

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-7.6 platform.

Package Information

- Download (HTTP): **http://pkgs.fedoraproject.org/repo/pkgs/agg/agg-2.5.tar.gz/0229a488bc47be10a2fee6cf0b2febd6/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

SDL-1.2.15 and Xorg Libraries

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/agg

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 Programs: None
Installed Libraries: libagg.so, libaggfontfreetype.so, libaggplatformsdl.so, and libaggplatformX11.so
Installed Directory: /usr/include/agg2

Short Descriptions

`libagg.so`   contains the AGG API functions.

`libaggplatformsdl.so`	contains the AGG SDL API functions that.
`libaggplatformX11.so`	contains the AGG LibX11 API functions.

Last updated on 2014-09-21 12:24:38 –0700

ATK-2.12.0

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-7.6 platform.

Package Information

- Download (HTTP): **http://ftp.gnome.org/pub/gnome/sources/atk/2.12/atk-2.12.0.tar.xz**
- Download (FTP): **ftp://ftp.gnome.org/pub/gnome/sources/atk/2.12/atk-2.12.0.tar.xz**
- Download MD5 sum: 930238dec55fdbf8eda9975b44f07b76
- Download size: 676 KB
- Estimated disk space required: 15 MB
- Estimated build time: 0.1 SBU

ATK Dependencies

Required

GLib-2.40.0

Optional (Required if building GNOME)

gobject-introspection-1.40.0

Optional

GTK-Doc-1.20

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/atk

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 Programs: None
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-2.22.7

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-7.6 platform.

Package Information

- Download (HTTP): **http://ftp.gnome.org/pub/gnome/sources/atkmm/2.22/atkmm-2.22.7.tar.xz**
- Download (FTP): **ftp://ftp.gnome.org/pub/gnome/sources/atkmm/2.22/atkmm-2.22.7.tar.xz**
- Download MD5 sum: fec7db3fc47ba2e0c95d130ec865a236
- Download size: 388 KB
- Estimated disk space required: 17 MB
- Estimated build time: 0.2 SBU

Atkmm Dependencies

Required

ATK-2.12.0 and GLibmm-2.40.0

User Notes: *http://wiki.linuxfromscratch.org/blfs/wiki/atkmm*

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 Programs: None
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.

Last updated on 2014-09-14 13:18:45 -0700

at-spi2-core-2.12.0

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-7.6 platform.

Package Information

- Download (HTTP): **http://ftp.gnome.org/pub/gnome/sources/at-spi2-core/2.12/at-spi2-core-2.12.0.tar.xz**
- Download (FTP): **ftp://ftp.gnome.org/pub/gnome/sources/at-spi2-core/2.12/at-spi2-core-2.12.0.tar.xz**

- Estimated disk space required: 13 MB
- Estimated build time: 0.2 SBU

At-Spi2 Core Dependencies

Required

D-Bus-1.8.8, GLib-2.40.0, and Xorg Libraries

Optional (Required if building GNOME)

gobject-introspection-1.40.0

Optional

GTK-Doc-1.20

Installation of At-Spi2 Core

Install At-Spi2 Core by running the following commands:

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

A session bus address is necessary to run the tests. 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: libatspi.so
Installed Directories: /etc/at-spi2, /usr/include/at-spi-2.0, and /usr/share/gtk-doc/html/libatspi

Last updated on 2014-09-12 12:02:55 -0700

at-spi2-atk-2.12.1

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-7.6 platform.

Package Information

- Download (HTTP): **http://ftp.gnome.org/pub/gnome/sources/at-spi2-atk/2.12/at-spi2-atk-2.12.1.tar.xz**
- Download (FTP): **ftp://ftp.gnome.org/pub/gnome/sources/at-spi2-atk/2.12/at-spi2-atk-2.12.1.tar.xz**
- Download MD5 sum: ae11df528f1f038987797f39c8357f81
- Download size: 276 KB
- Estimated disk space required: 6.2 MB (additional 0.1 MB for the tests)
- Estimated build time: 0.1 SBU

At-Spi2 Atk Dependencies

Required

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`. An already active graphical session with bus address is necessary to run the tests.

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: libatk-bridge-2.0.so and /usr/lib/gtk-2.0/modules/libatk-bridge.so
Installed Directory: /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.

Last updated on 2014-09-12 12:02:55 -0700

Cairo-1.12.16

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-7.6 platform.

Package Information

- Download (HTTP): **http://cairographics.org/releases/cairo-1.12.16.tar.xz**
- Download MD5 sum: a1304edcdc99282f478b995ee5f8f854
- Download size: 35 MB
- Estimated disk space required: 158 MB
- Estimated build time: 1.0 SBU

Cairo Dependencies

Required

libpng-1.6.13, GLib-2.40.0 and Pixman-0.32.6

Recommended

Optional

Cogl-1.18.2, **DirectFB**, GTK-Doc-1.20, libdrm-2.4.56, LZO-2.08, MesaLib-10.2.7, Qt-4.8.6, **Skia**, and Valgrind-3.10.0

User Notes: *http://wiki.linuxfromscratch.org/blfs/wiki/cairo*

Installation of Cairo

Install Cairo by running the following commands:

```
CFLAGS="$CFLAGS -ffat-lto-objects" \
./configure --prefix=/usr    \
            --disable-static \
            --enable-tee &&
make
```

This package does not have a working testsuite.

Now, as the *root* user:

```
make install
```

Command Explanations

`CFLAGS="$CFLAGS -ffat-lto-objects"`: Fixes building with GCC 4.9.

--enable-tee: This switch enables experimental tee surface backend which is required if using system-installed Cairo with Mozilla applications.

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

`--enable-xlib-xcb`: This switch enables experimental Xlib/XCB functions used by some window managers.

`--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-2.40.0's GObject type system.
`libcairo-script-interpreter.so`	contains the script interpreter functions for executing and manipulating Cairo execution traces.

Last updated on 2014-09-10 09:45:01 -0700

Cairomm-1.10.0

Introduction to Cairomm

The Cairomm package provides a C++ interface to Cairo.

This package is known to build and work properly using an LFS-7.6 platform.

Package Information

- Download (HTTP): **http://cairographics.org/releases/cairomm-1.10.0.tar.gz**
- Download MD5 sum: 9c63fb1c04c8ecd3c5e6473075b8c39f
- Download size: 1.1 MB

Cairomm Dependencies

Required

Cairo-1.12.16 and libsigc++-2.3.2

Optional

Boost-1.56.0 and Doxygen-1.8.8

User Notes: *http://wiki.linuxfromscratch.org/blfs/wiki/cairomm*

Installation of Cairomm

Install Cairomm by running the following commands:

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

This package does not come with a test suite.

Now, as the *root* user:

```
make install
```

Contents

Installed Programs: None
Installed Library: libcairomm-1.0.so
Installed Directories: /usr/include/cairomm-1.0, /usr/lib/cairomm-1.0, /usr/share/devhelp/books/cairomm-1.0 and /usr/share/doc/cairomm-1.0

Short Descriptions

`libcairomm-1.0.so`   contains the Cairo API classes.

Last updated on 2014-09-14 13:18:45 -0700

Cogl-1.18.2

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-7.6 platform.

Package Information

- Download (HTTP): **http://ftp.gnome.org/pub/gnome/sources/cogl/1.18/cogl-1.18.2.tar.xz**
- Download (FTP): **ftp://ftp.gnome.org/pub/gnome/sources/cogl/1.18/cogl-1.18.2.tar.xz**
- Download MD5 sum: 952155d526d35f297737266408e842b5
- Download size: 1.6 MB
- Estimated disk space required: 50 MB
- Estimated build time: 0.7 SBU

Cogl Dependencies

Required

gdk-pixbuf-2.30.8, MesaLib-10.2.7, and Pango-1.36.7

Recommended

gobject-introspection-1.40.0

gst-plugins-base-1.4.1, GTK-Doc-1.20, SDL-1.2.15, **SDL2**, and **Wayland**

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/cogl

Installation of Cogl

Install Cogl by running the following commands:

```
./configure --prefix=/usr --enable-gles1 --enable-gles2 &&
make
```

To test the results, issue: `make check`. The tests should be run from an X terminal on the hardware accelerated Xorg Server.

Now, as the *root* user:

```
make install
```

Command Explanations

--enable-gles1: This switch enables support for OpenGL ES 1.1.

--enable-gles2: This switch enables support for OpenGL ES 2.0.

`--enable-cogl-gst`: This switch enables gstreamer support.

`--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: libcogl-gles2.so, libcogl-pango.so, libcogl-path.so, and libcogl.so, and optional libraries libcogl-gst.so and /usr/lib/gstreamer-1.0/libgstcogl.so
Installed Directories: /usr/include/cogl and /usr/share/cogl

Short Descriptions

`libcogl-gles2.so`	is the OpenGL ES 2.0 integration library for `Cogl`.
`libcogl-pango.so`	is the `Pango` integration library for `Cogl`.
`libcogl.so`	is an object oriented GL/GLES Abstraction/Utility Layer library.

Last updated on 2014-09-19 13:13:19 -0700

Clutter-1.18.4

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-7.6 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/1.18/clutter-1.18.4.tar.xz**
- Download (FTP): **ftp://ftp.gnome.org/pub/gnome/sources/clutter/1.18/clutter-1.18.4.tar.xz**
- Download MD5 sum: f4f37216a9278defb50b721c8f8ff583
- Download size: 5.0 MB
- Estimated disk space required: 85 MB (additional 7 MB for docs creation and 11 MB for tests)

Clutter Dependencies

Required

ATK-2.12.0, Cogl-1.18.2, and JSON-GLib-1.0.2

Recommended

gobject-introspection-1.40.0 and GTK+-3.12.2

Optional

GTK-Doc-1.20, udev-extras (from eudev) (for GUdev), **libevdev**, **libxkbcommon**, **Tslib**, and **Wayland**

User Notes: ***http://wiki.linuxfromscratch.org/blfs/wiki/clutter***

Installation of Clutter

Install Clutter by running the following commands:

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

To test the results, issue: `make check` (you must be in an xterm or similar to do this, because it launches some windows). Two tests have been observed to fail.

Now, as the `root` user:

```
make install
```

Command Explanations

`--enable-egl-backend`: This switch enables the experimental EGL windowing backend.

`--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: libclutter-1.0.so and libclutter-glx-1.0.so
Installed Directories:/usr/include/clutter-1.0 and /usr/share/gtk-doc/html/{cally,clutter}

Short Descriptions

`libclutter-1.0.so`   contains the Clutter API functions.

Last updated on 2014-09-22 15:13:35 -0700

clutter-gst-2.0.12

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-7.6 platform.

Package Information

- Download (HTTP): **http://ftp.gnome.org/pub/gnome/sources/clutter-gst/2.0/clutter-gst-2.0.12.tar.xz**
- Download (FTP): **ftp://ftp.gnome.org/pub/gnome/sources/clutter-gst/2.0/clutter-gst-2.0.12.tar.xz**
- Download MD5 sum: 3e845093843166001e65e1e4971c1588
- Download size: 348 KB
- Estimated disk space required: 6.4 MB
- Estimated build time: 0.2 SBU

Required

[Clutter-1.18.4](#) and [gst-plugins-base-1.4.1](#)

Recommended

[gobject-introspection-1.40.0](#) and [gst-plugins-bad-1.4.1](#)

Optional

[GTK-Doc-1.20](#)

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/clutter-gst2

Installation of Clutter Gst

Install Clutter Gst by running the following commands:

> ### Note
>
> This package fails to build over an ssh session.

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

This package does not come with a testsuite.

Now, as the *root* user:

```
make install
```

Contents

Installed Programs: None
Installed Library: libclutter-gst-2.0.so and /usr/lib/gstreamer-1.0/libgstclutter.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.

Last updated on 2014-09-19 13:49:16 -0700

---

clutter-gtk-1.4.4

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-7.6 platform.

Package Information

- Download (HTTP): **http://ftp.gnome.org/pub/gnome/sources/clutter-gtk/1.4/clutter-gtk-1.4.4.tar.xz**
- Download (FTP): **ftp://ftp.gnome.org/pub/gnome/sources/clutter-gtk/1.4/clutter-gtk-1.4.4.tar.xz**
- Download MD5 sum: ef50b52ffc2a18704eb62f13dd8d6198
- Download size: 304 KB
- Estimated disk space required: 7.0 MB
- Estimated build time: 0.2 SBU

Clutter Gtk Dependencies

Required

[Clutter-1.18.4](#) and [GTK+-3.12.2](#)

Optional

User Notes: *http://wiki.linuxfromscratch.org/blfs/wiki/clutter-gtk*

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 Programs: None
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.

Last updated on 2014-09-19 13:13:19 -0700

FLTK-1.3.2

Introduction to FLTK

FLTK (pronounced "fulltick") is a cross-platform C++ GUI toolkit. FLTK provides modern GUI functionality and supports 3D graphics via OpenGL and its built-in GLUT emulation libraries used for creating graphical user interfaces for applications.

This package is known to build and work properly using an LFS-7.6 platform.

Package Information

- Download (HTTP): **http://fltk.org/pub/fltk/1.3.2/fltk-1.3.2-source.tar.gz**
- Download MD5 sum: 9f7e707d4fb7a5a76f0f9b73ff70623d
- Download size: 4.1 MB
- Estimated disk space required: 75 MB
- Estimated build time: 1.0 SBU

Additional Downloads

- Required patch: **http://www.linuxfromscratch.org/patches/blfs/7.6/fltk-1.3.2-tigervnc-1.patch**
- Required patch: **http://www.linuxfromscratch.org/patches/blfs/7.6/fltk-1.3.2-dynamic_libs-1.patch**

FLTK Dependencies

Required

GLU-9.0.0 MesaLib-10.2.7, and Xorg Libraries,

desktop-file-utils-0.22, hicolor-icon-theme-0.13, and libjpeg-turbo-1.3.1,

Optional

alsa-lib-1.0.28, Doxygen-1.8.8, and texlive-20140525,

User Notes: *http://wiki.linuxfromscratch.org/blfs/wiki/fltk*

Installation of FLTK

> ### Note
>
> The tar extraction directory is fltk-1.3.2 and not fltk-1.3.2-source as indicated by the tarball name.

Install FLTK by running the following commands:

```
patch -Np1 -i ../fltk-1.3.2-tigervnc-1.patch      &&
patch -Np1 -i ../fltk-1.3.2-dynamic_libs-1.patch &&
sed -i -e '/FL_PATCH_VERSION=/ s/1/2/' configure &&
sed -i -e '/cat./d' documentation/Makefile        &&

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

If you wish to create the api documentation, issue:

```
make -C documentation html
```

The tests for the package are interactive. To execute the tests, run `test/unittests`. In addition, there are 70 other executable test programs in the `test` directory that can be run individually.

Now, as the `root` user:

```
make docdir=/usr/share/doc/fltk-1.3.2 install
```

If desired, install some example games built as a part of the tests, extra documentation and example programs. As the `root` user:

```
make -C test install-linux &&
make -C documentation install-linux
```

Command Explanations

`patch ...tigervnc-1.patch`: Install patches to make the libraries compatible with tigervnc.

`patch ...dynamic_libs-1.patch`: Allow building dynamic libraries.

`sed ... configure`: configure: Fix output of `fltk-config --version`.

`sed ... documentation/Makefile`: Avoid installing pages in `/usr/share/man/cat*`.

Contents

Installed Programs: blocks, checkers, fltk-config, fluid, and sudoku
Installed Libraries: libfltk.{a,so}, libfltk_forms.{a,so}, libfltk_gl.{a,so}, and libfltk_images.{a,so}
Installed Directories: /usr/include/FL and /usr/share/doc/fltk-1.3.2

Short Descriptions

`fltk-config`	is a utility script that can be used to get information about the current version of FLTK that is installed on the system.
`fluid`	is an interactive GUI designer for FLTK.
`libfltk.so`	contains functions that provide an API to implement graphical user interfaces.

Last updated on 2014-05-18 18:40:17 -0500

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-7.6 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

GLU-9.0.0

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/freeglut

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

Installed Programs: None
Installed Library: libglut.so
Installed Directories: None

Short Descriptions

libglut.so   contains functions that implement the OpenGL Utility Toolkit.

Last updated on 2014-09-16 10:29:57 -0700

gdk-pixbuf-2.30.8

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-7.6 platform.

Package Information

- Download (HTTP): **http://ftp.gnome.org/pub/gnome/sources/gdk-pixbuf/2.30/gdk-pixbuf-2.30.8.tar.xz**

- Download size: 1.3 MB
- Estimated disk space required: 25 MB (additional 1 MB for the tests and 1 MB to rebuild and install the API documentation)
- Estimated build time: 0.2 SBU (additional 0.2 SBU to run the test suite and less than 0.1 SBU to rebuild and install the API documentation)

Gdk Pixbuf Dependencies

Required

GLib-2.40.0, libjpeg-turbo-1.3.1, libpng-1.6.13 and LibTIFF-4.0.3

Recommended

Xorg Libraries (*Many* GTK+ applications *require* gdk-pixbuf-xlib).

Optional (Required if building GNOME)

gobject-introspection-1.40.0

Optional

JasPer-1.900.1 and GTK-Doc-1.20

User Notes: *http://wiki.linuxfromscratch.org/blfs/wiki/gdk-pixbuf*

Installation of Gdk Pixbuf

Install Gdk Pixbuf by running the following commands:

```
./configure --prefix=/usr --with-x11 &&
make
```

Now, as the *root* user:

```
make install
```

To test the results, issue: `make check`, after the package is installed.

> **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

`--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, libgdk_pixbuf_xlib-2.0.so, and several loaders for specific image formats under /usr/lib/gdk-pixbuf-2.0/2.10.0/loaders
Installed Directories: /usr/include/gdk-pixbuf-2.0, /usr/lib/gdk-pixbuf-2.0, and /usr/share/gtk-doc/html/gdk-pixbuf

Short Descriptions

`gdk-pixbuf-`   is a small utility that generates C code containing images, used for compiling images

loaders	cache file location, or to stdout.
libgdk_pixbuf-2.0.so	contains functions used to load and render images.
libgdk_pixbuf_xlib-2.0.so	contains functions used to manipulate images and interfaces with Xlib .

Last updated on 2014-09-10 09:45:01 -0700

GLU-9.0.0

Introduction to GLU

This package provides the Mesa OpenGL Utility library.

This package is known to build and work properly using an LFS-7.6 platform.

Package Information

- 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

GLU Dependencies

Required

MesaLib-10.2.7

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/glu

Installation of GLU

Install GLU by running the following commands:

```
./configure --prefix=$XORG_PREFIX --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: None
Installed Library: libGLU.so
Installed Directories: None

Short Descriptions

libGLU.so   is the Mesa OpenGL Utility library.

Last updated on 2014-09-15 18:44:41 -0700

GOffice-0.10.17

Introduction to GOffice

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-7.6 platform.

Package Information

- Download (HTTP): **http://ftp.gnome.org/pub/gnome/sources/goffice/0.10/goffice-0.10.17.tar.xz**
- Download (FTP): **ftp://ftp.gnome.org/pub/gnome/sources/goffice/0.10/goffice-0.10.17.tar.xz**
- Download MD5 sum: fd5635aeb808ebebaf87124440a9fbdb
- Download size: 2.2 MB
- Estimated disk space required: 83 MB (additional 1 MB for the tests)
- Estimated build time: 0.9 SBU (additional less than 0.1 SBU for the tests)

GOffice Dependencies

Required

GTK+-3.12.2, libgsf-1.14.30, librsvg-2.40.3, and Which-2.20

Optional

Lasem, **libspectre**, ghostscript-9.14, gobject-introspection-1.40.0, and GTK-Doc-1.20

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/goffice010

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

Installed Programs: None
Installed Libraries: libgoffice-0.10.so and several under /usr/lib/goffice/0.10.17/plugins/
Installed Directories: /usr/include/libgoffice-0.10, /usr/lib/goffice, /usr/share/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.

Last updated on 2014-09-21 14:28:22 -0700

GTK+-2.24.24

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-7.6 platform.

Package Information

- Download (HTTP): **http://ftp.gnome.org/pub/gnome/sources/gtk+/2.24/gtk+-2.24.24.tar.xz**

- Download size: 13 MB
- Estimated disk space required: 318 MB (additional 1 MB for the tests)
- Estimated build time: 3.2 SBU (additional 0.1 SBU for the tests)

GTK+ 2 Dependencies

Required

ATK-2.12.0, gdk-pixbuf-2.30.8 and Pango-1.36.7

Recommended

hicolor-icon-theme-0.13

Optional

Cups-1.7.5, DocBook-utils-0.6.14, gobject-introspection-1.40.0 and GTK-Doc-1.20

User Notes: *http://wiki.linuxfromscratch.org/blfs/wiki/gtk+2*

Installation of GTK+ 2

Install GTK+ 2 by running the following commands:

```
sed -i 's#l \(gtk-.*\).sgml#& -o \1#' docs/{faq,tutorial}/Makefile.in &&
sed -i 's#.*@man_#man_#' docs/reference/gtk/Makefile.in            &&
sed -i -e 's#pltcheck.sh#$(NULL)#g' 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 SBU.

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 --update-cache
> ```

Command Explanations

`sed -i 's#l \(gtk-.*\).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 `Makefile`s. This `sed` fixes the `Makefile`s.

`sed -i 's#.*@man_#man_#' docs/reference/gtk/Makefile.in`: This `sed` fixes one of the `Makefile`s so it installs the man pages for `gtk-builder-convert`, `gtk-query-immodules-2.0`, and `gtk-update-icon-cache`.

`sed -i -e 's#pltcheck.sh#$(NULL)#g' gtk/Makefile.in`: This `sed` disables one test known to fail. Not necessary, if not running the tests.

`--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`, `/etc/gtk-2.0/gtkrc`, and `/usr/share/gtk-2.0/gtkrc`

Configuration Information

GTK Engines-2.20.2)) or a GTK+ 2 icon theme (such as gnome-icon-theme-3.12.0), 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-0.5.6 is a GTK+ 2 application that can help you choose the themes you like.

Contents

Installed Programs: gtk-builder-convert, gtk-demo, gtk-query-immodules-2.0, and gtk-update-icon-cache
Installed Libraries: libgailutil.so, libgdk-x11-2.0.so, libgtk-x11-2.0.so, and several under /usr/lib/gtk-2.0 subdirectories
Installed Directories: /etc/gtk-2.0, /usr/include/{gail-1.0,gtk-2.0,gtk-unix-print-2.0}, /usr/lib/gtk-2.0, /usr/share/gtk-2.0, /usr/share/doc/gtk+-2.24.24, /usr/share/gtk-doc/html/{gail-libgail-util,gdk2,gtk2}, and /usr/share/themes/{Default,Emacs,Raleigh}

Short Descriptions

gtk-builder-convert	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. Starting with gtk+-2.24.24, add the flag " --include-image-data " to this command, if you wish previous behavior, with image data in the cache.
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.

Last updated on 2014-09-10 09:45:01 -0700

GTK+-3.12.2

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-7.6 platform.

Package Information

- Download (HTTP): **http://ftp.gnome.org/pub/gnome/sources/gtk+/3.12/gtk+-3.12.2.tar.xz**
- Download (FTP): **ftp://ftp.gnome.org/pub/gnome/sources/gtk+/3.12/gtk+-3.12.2.tar.xz**
- Download MD5 sum: 0d6d8f9f79132b3b47475d047b369b1c
- Download size: 15 MB
- Estimated disk space required: 368 MB (additional 4 MB for the test suite and 19 MB to rebuild the docs)
- Estimated build time: 4.6 SBU (additional 0.4 SBU for the test suite and 3.5 SBU to rebuild the docs)

Required

[at-spi2-atk-2.12.1](), [gdk-pixbuf-2.30.8](), and [Pango-1.36.7]()

Optional (Required if building GNOME)

[gobject-introspection-1.40.0]()

Optional

[Colord-1.2.3](), [Cups-1.7.5](), [DocBook-utils-0.6.14](), [GTK-Doc-1.20](), [JSON-GLib-1.0.2](), **[rest]()**, **[libxkbcommon]()**, and **[Wayland]()**

User Notes: [http://wiki.linuxfromscratch.org/blfs/wiki/gtk3]()

Installation of GTK+ 3

> **Note**
>
> GTK+ 3 will overwrite `gtk-update-icon-cache` from [GTK+-2.24.24]() 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        \
            --enable-broadway-backend \
            --enable-x11-backend     \
            --disable-wayland-backend &&
make
```

Some tests fail if `/usr/share/glib-2.0/schemas/gschemas.compiled` is not found. If you wish to run the test suite, create (or update) the file using the following command as the *root* user:

```
glib-compile-schemas /usr/share/glib-2.0/schemas
```

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:
>
> ```
> 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

`--enable-broadway-backend`: switch enables the HTML5 GTK backend.

`--enable-x11-backend`: switch enables the X11 GDK backend.

`--disable-wayland-backend`: switch disables the Wayland GDK backend because Wayland isn't available in BLFS.

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-3.12.0 or an icon theme (such as gnome-icon-theme-3.12.0) you can set your prefences 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: broadwayd, gtk-launch, gtk-query-immodules-3.0, gtk-update-icon-cache, gtk3-demo, gtk3-demo-application, and gtk3-widget-factory

Installed Libraries: libgailutil-3.so, libgdk-3.so, and libgtk-3.so, and several under /usr/lib/gtk-3.0/3.0.0/{immodules,printbackends}

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,gdk3,gtk3}, and /usr/share/themes/{Default,Emacs}/gtk-3.0

Short Descriptions

broadwayd	provides support for displaying GTK+ 3 applications in a web browser, using HTML5 and web sockets.
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.
gtk3-demo	is a simple program that demonstrates some of the things that can be done with GTK+ 3
gtk3-demo-application	is a simple GTK+ 3 application.
gtk3-widget-factory	is a program to view GTK+ 3 themes and widgets.
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.

Last updated on 2014-09-14 14:01:57 -0700

GTK Engines-2.20.2

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-7.6 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+-2.24.24

Optional

Lua-5.2.3 and Which-2.20 (required for test suite)

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/gtk-engines

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
```

Command Explanations

`--enable-lua --with-system-lua`: Use these switches if you installed Lua and want to build Lua theming engine.

Contents

Installed Programs: None

Installed Libraries: libclearlooks.so, libcrux-engine.so, libglide.so, libhcengine.so, libindustrial.so, libmist.so, libredmond95.so and libthinice.so (GTK-2 engines libraries)

Installed Directories: /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

Installed Themes: Clearlooks, Crux, Industrial, Mist, Redmond and ThinIce

Short Descriptions

engine libraries are manager systems for specific themes.

Last updated on 2014-09-21 14:28:22 -0700

Gtkmm-2.24.4

Introduction to Gtkmm

The Gtkmm package provides a C++ interface to GTK+ 2. It can be installed alongside Gtkmm-3.12.0 (the GTK+ 3 version) with no namespace conflicts.

This package is known to build and work properly using an LFS-7.6 platform.

- Download (HTTP): **http://ftp.gnome.org/pub/gnome/sources/gtkmm/2.24/gtkmm-2.24.4.tar.xz**
- Download (FTP): **ftp://ftp.gnome.org/pub/gnome/sources/gtkmm/2.24/gtkmm-2.24.4.tar.xz**
- Download MD5 sum: b9ac60c90959a71095f07f84dd39961d
- Download size: 10 MB
- Estimated disk space required: 296 MB
- Estimated build time: 3.6 SBU

Gtkmm Dependencies

Required

Atkmm-2.22.7, GTK+-2.24.24 and Pangomm-2.34.0

User Notes: *http://wiki.linuxfromscratch.org/blfs/wiki/gtkmm2*

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

Installed Programs: None
Installed Libraries: libgdkmm-2.4.so and libgtkmm-2.4.so
Installed Directories: /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.

Last updated on 2014-09-14 13:18:45 -0700

Gtkmm-3.12.0

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-7.6 platform.

Package Information

- Download (HTTP): **http://ftp.gnome.org/pub/gnome/sources/gtkmm/3.12/gtkmm-3.12.0.tar.xz**
- Download (FTP): **ftp://ftp.gnome.org/pub/gnome/sources/gtkmm/3.12/gtkmm-3.12.0.tar.xz**
- Download MD5 sum: 526bfbf8705468fa44b4c2a16cb0138e
- Download size: 9.7 MB
- Estimated disk space required: 388 MB (Additional 15 MB for tests)
- Estimated build time: 2.2 SBU (Additional 0.5 SBU for tests)

Gtkmm Dependencies

Required

Atkmm-2.22.7, GTK+-3.12.2, and Pangomm-2.34.0

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

Installed Programs: None
Installed Libraries: libgdkmm-3.0.so and libgtkmm-3.0.so
Installed Directories: /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.

Last updated on 2014-09-21 14:28:22 -0700

Imlib2-1.4.6

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-7.6 platform.

Package Information

- Download (HTTP): **http://downloads.sourceforge.net/enlightenment/imlib2-1.4.6.tar.bz2**
- Download MD5 sum: 5c7104121ec6db652b37f74a6d7048e2
- Download size: 853 KB
- Estimated disk space required: 15 MB
- Estimated build time: 0.2 SBU

Imlib2 Dependencies

Required

Xorg Libraries

Optional

libpng-1.6.13, libjpeg-turbo-1.3.1, LibTIFF-4.0.3, giflib-5.1.0, and **libid3tag**

User Notes: *http://wiki.linuxfromscratch.org/blfs/wiki/imlib2*

Installation of Imlib2

Install Imlib2 by running the following commands:

```
sed -e '/DGifOpen/s:fd:&, NULL:'           \
    -e '/DGifCloseFile/s:gif:&, NULL:'     \
    -i src/modules/loaders/loader_gif.c    &&
sed -i 's/@my_libs@//' imlib2-config.in    &&

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

```
make install &&
install -v -m755 -d /usr/share/doc/imlib2-1.4.6 &&
install -v -m644   doc/{*.gif,index.html} \
                   /usr/share/doc/imlib2-1.4.6
```

Command Explanations

sed ...: The first command fix building with recent versions of Giflib and the second one corrects linker flags for libImlib2 usage.

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

Contents

Installed Programs: imlib2_bumpmap, imlib2_colorspace, imlib2-config, imlib2_conv, imlib2_grab, imlib2_poly, imlib2_show, imlib2_test, and imlib2_view

Installed Libraries: libImlib2.so and various filters and image loader modules.

Installed Directories: /usr/lib/imlib2, /usr/share/doc/imlib2-1.4.6, and /usr/share/imlib2

Short Descriptions

libImlib2.so   provides the functions for programs to deal with various image data formats.

Last updated on 2014-09-14 14:01:57 -0700

libdrm-2.4.56

Introduction to libdrm

libdrm provides a user space library for accessing the DRM, direct rendering manager, on operating systems that support the ioctl interface. libdrm is a low-level library, typically used by graphics drivers such as the Mesa DRI drivers, the X drivers, libva and similar projects.

This package is known to build and work properly using an LFS-7.6 platform.

Package Information

- Download (HTTP): **http://dri.freedesktop.org/libdrm/libdrm-2.4.56.tar.bz2**
- Download MD5 sum: 93fdb76d392ce27b23561afb8f70db81
- Download size: 577 KB
- Estimated disk space required: 10 MB (additional 1 MB for the tests)
- Estimated build time: 0.2 SBU (additional less than 0.1 SBU for the tests)

libdrm Dependencies

Recommended

Xorg Libraries (for Intel KMS API support required by Mesa)

Optional

docbook-xml-4.5, docbook-xsl-1.78.1 and libxslt-1.1.28 (to build manual pages), and Valgrind-3.10.0

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/libdrm

Installation of libdrm

Install libdrm by running the following commands:

```
sed -e "/pthread-stubs/d" -i configure.ac &&
autoreconf -fiv &&
./configure --prefix=/usr --enable-udev &&
make
```

To check the results, issue make check.

```
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.

`--enable-udev`: This parameter enables support for using Udev instead of `mknod`.

Contents

Installed Programs: None
Installed Libraries: libdrm.so, libdrm_intel.so, libdrm_nouveau.so, libdrm_radeon.so and libkms.so
Installed Directories: /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 for kernel mode setting abstraction.

Last updated on 2014-09-10 06:21:43 -0700

libepoxy-1.2

Introduction to libepoxy

libepoxy is a library for handling OpenGL function pointer management.

This package is known to build and work properly using an LFS-7.6 platform.

Package Information

- Download (HTTP): **http://crux.nu/files/libepoxy-1.2.tar.gz**
- Download MD5 sum: 12d6b7621f086c0c928887c27d90bc30
- Download size: 264 KB
- Estimated disk space required: 21 MB
- Estimated build time: 0.2 SBU

libepoxy Dependencies

Required

MesaLib-10.2.7

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/libepoxy

Installation of libepoxy

Install libepoxy by running the following commands:

```
./autogen.sh --prefix=/usr &&
make
```

To test the results, issue: `make -k check`. Some test may fail for unknown reasons.

Now, as the *root* user:

```
make install
```

Contents

Installed Programs: None

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-7.6 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+-2.24.24

Optional

Python-2.7.8 and GTK-Doc-1.20

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/libglade

Installation of libglade

Install libglade by running the following commands:

```
sed -i '/DG_DISABLE_DEPRECATED/d' glade/Makefile.in &&
./configure --prefix=/usr --disable-static &&
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

`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`: 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: libglade-convert (requires `python`)
Installed Library: libglade-2.0.so
Installed Directories: /usr/{include/libglade-2.0/glade,share/{gtk-doc/html/libglade, xml/libglade}}

Short Descriptions

libnotify-0.7.6

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-7.6 platform.

Package Information

- Download (HTTP): **http://ftp.gnome.org/pub/gnome/sources/libnotify/0.7/libnotify-0.7.6.tar.xz**
- Download (FTP): **ftp://ftp.gnome.org/pub/gnome/sources/libnotify/0.7/libnotify-0.7.6.tar.xz**
- Download MD5 sum: a4997019d08f46f3bf57b78e6f795a59
- Download size: 276 KB
- Estimated disk space required: 4,9 MB
- Estimated build time: 0.2 SBU

libnotify Dependencies

Required

GTK+-3.12.2

Optional (Required if building GNOME)

gobject-introspection-1.40.0

Optional

GTK-Doc-1.20

Required (runtime)

notification-daemon-0.7.6 or xfce4-notifyd-0.2.4

Note

GNOME Shell and KDE KWin provide their own notification daemons.

---

*User Notes: **http://wiki.linuxfromscratch.org/blfs/wiki/libnotify***

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.

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.

Last updated on 2014-09-19 13:13:19 -0700

---

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-7.6 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-2.40.0, ISO Codes-3.56, libxml2-2.9.1 and Xorg Libraries

Recommended

gobject-introspection-1.40.0

Optional

GTK-Doc-1.20

User Notes: *http://wiki.linuxfromscratch.org/blfs/wiki/libxklavier*

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 swithc 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 Directories: /usr/include/libxklavier and /usr/share/gtk-doc/html/libxklavier

Short Descriptions

`libxklavier.so`   contains XKB utility functions.

Last updated on 2014-09-21 12:24:38 -0700

Pango-1.36.7

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-7.6 platform.

Package Information

- Download (HTTP): **http://ftp.gnome.org/pub/gnome/sources/pango/1.36/pango-1.36.7.tar.xz**
- Download (FTP): **ftp://ftp.gnome.org/pub/gnome/sources/pango/1.36/pango-1.36.7.tar.xz**
- Download MD5 sum: 5e8057da0e9e1ed0484f50887ac0ae0f
- Download size: 1012 KB
- Estimated disk space required: 24 MB (additional 2 MB to rebuild and install the API documentation)
- Estimated build time: 0.3 SBU (additional 0.1 SBU to rebuild and install the API documentation)

Pango Dependencies

Required

Cairo-1.12.16, Harfbuzz-0.9.35 and Xorg Libraries

Optional (Required if building GNOME)

gobject-introspection-1.40.0

Optional

GTK-Doc-1.20

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/pango

Installation of Pango

Install Pango by running the following commands:

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

To test the results, issue: `make -k check`. One test fails for unknown reasons.

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
> ```

Command Explanations

Configuring Pango

Config Files

/etc/pango/pangorc, ~/.pangorc and the file specified in the environment variable PANGO_RC_FILE

Configuration Information

The Pango module path is specified by the key *Pango/ModulesPath* in the Pango config database, which is read from the config files listed above.

Contents

Installed Programs: pango-querymodules and pango-view
Installed Libraries: libpango-1.0.so, libpangocairo-1.0.so, libpangoft2-1.0.so, and libpangoxft-1.0.so
Installed Directories: /etc/pango, /usr/include/pango-1.0, /usr/lib/pango, and /usr/share/gtk-doc/html/pango

Short Descriptions

pango-querymodules	is a module registration utility that collects information about Pango loadable modules.
pango-view	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.

Last updated on 2014-09-10 09:45:01 -0700

Pangomm-2.34.0

Introduction to Pangomm

The Pangomm package provides a C++ interface to Pango.

This package is known to build and work properly using an LFS-7.6 platform.

Package Information

- Download (HTTP): **http://ftp.gnome.org/pub/gnome/sources/pangomm/2.34/pangomm-2.34.0.tar.xz**
- Download (FTP): **ftp://ftp.gnome.org/pub/gnome/sources/pangomm/2.34/pangomm-2.34.0.tar.xz**
- Download MD5 sum: 2c702caede167323c9ed9eed2b933098
- Download size: 508 KB
- Estimated disk space required: 21 MB
- Estimated build time: 0.2 SBU

Pangomm Dependencies

Required

Cairomm-1.10.0, GLibmm-2.40.0 and Pango-1.36.7

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/pangomm

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
```

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.

Last updated on 2014-09-14 13:18:45 -0700

Qt-4.8.6

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-7.6 platform.

Package Information

- Download (HTTP): **http://download.qt-project.org/official_releases/qt/4.8/4.8.6/qt-everywhere-opensource-src-4.8.6.tar.gz**
- Download MD5 sum: 2edbe4d6c2eff33ef91732602f3518eb
- Download size: 231 MB
- Estimated disk space required: 2.0 GB
- Estimated build time: 37 SBU

Qt Dependencies

Required

Xorg Libraries

Recommended

alsa-lib-1.0.28, MesaLib-10.2.7, Certificate Authority Certificates, D-Bus-1.8.8, GLib-2.40.0, ICU-53.1 (unicode support), libjpeg-turbo-1.3.1, libmng-2.0.2, libpng-1.6.13, LibTIFF-4.0.3, OpenSSL-1.0.1i, and SQLite-3.8.6

Optional

Cups-1.7.5, GTK+-2.24.24 (GTK+ 2 theme support), gst-plugins-base-0.10.36 (For QtWebKit HTML5 Video), MariaDB-10.0.13 or MySQL, PostgreSQL-9.3.5, PulseAudio-5.0, and unixODBC-2.3.2

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/qt4

Qt Installation Alternatives

The installation of Qt presents several challenges and choices. Complicating the Qt installation is the fact that there are two versions, Qt4 and Qt5, that have executable programs with identical names. If both packages are installed on one system, the only methods to manage which set of programs is used is to either control the users' PATH or to rename files either directly or via symbolic links. Both packages cannot be installed in the same directory.

If you are only going to install one of the Qt versions, the choice of installation methods is easier. You can either install the components in the several directories of the /usr hierarchy or install the entire package in a separate directory of your choice. We refer to these options below as "Method 1: Installing in /usr" and "Method 2: Installing in /opt".

If both versions of Qt are to be installed, one or both versions need to be installed in a separate directory. For the purposes here we use the /opt directory. The selection of which version is being used by individual users on a system is controlled by the PATH variable. Other systems can be designed, but the BLFS editors find the PATH method easiest.

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. The disadvantage for BLFS users is that this Qt instance cannot be upgraded while it is in use. For instance, it cannot be upgraded from a running KDE environment. It also precludes having multiple versions of Qt on your system and does not allow reverting to an existing, known working instance of Qt.

The advantage of installing Qt in a custom directory such as /opt/qt-4.8.6 or /opt/qt-5.3.1 or is that it keeps all the

Installation of Qt

> ### Caution
>
> If you did not install some of the recommended dependencies, examine `./configure --help` output to check how to disable them or use internal versions bundled in the source tarball.

> ### Warning
>
> If Qt4 is being reinstalled into the same directory as an existing instance, run the commands done by *root*, such as `make install`, from a console or non-Qt4 based window manager. It overwrites Qt4 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.

Fix DoS vulnerability in the GIF image handler:

```
sed -i -e '631a if (image->isNull()) { state = Error; return -1; }' \
    src/gui/image/qgifhandler.cpp
```

Method 1: Installing in /usr

Install Qt4 into the `/usr` hierarchy by running the following commands:

```
export QT4LINK=/usr

sed -i -e "/#if/d" -e "/#error/d" -e "/#endif/d" \
     config.tests/unix/libmng/libmng.cpp &&

sed -i '/CONFIG -/ a\isEmpty(OUTPUT_DIR): OUTPUT_DIR = ../..' \
     src/3rdparty/webkit/Source/WebKit2/DerivedSources.pro &&

./configure -prefix         /usr                  \
            -bindir         /usr/bin               \
            -plugindir      /usr/lib/qt4/plugins \
            -importdir      /usr/lib/qt4/imports \
            -headerdir      /usr/include/qt4       \
            -datadir        /usr/share/qt4         \
            -sysconfdir     /etc/xdg               \
            -docdir         /usr/share/doc/qt4   \
            -demosdir       /usr/share/doc/qt4/demos     \
            -examplesdir    /usr/share/doc/qt4/examples \
            -translationdir /usr/share/qt4/translations \
            -confirm-license   \
            -opensource        \
            -release           \
            -dbus-linked       \
            -openssl-linked    \
            -system-sqlite     \
            -no-phonon         \
            -no-phonon-backend \
            -no-nis            \
            -no-openvg         \
            -nomake demos      \
            -nomake examples   \
            -optimized-qmake   &&

make
```

This package does not come with a test suite.

Remove references to the build directory from the `.pc` files by running the following command:

Now as the *root* user:

```
make install &&
rm -rf /usr/tests
```

Remove references to the build directory from installed files by running the following command as the *root* user:

```
for file in 3Support CLucene Core DBus Declarative DesignerComponents \
            Designer Gui Help Multimedia Network OpenGL Script \
            ScriptTools Sql Svg Test UiTools WebKit XmlPatterns Xml phonon; do

    [ -e /usr/lib/libQt${file}.prl ] &&
    sed -r '/^QMAKE_PRL_BUILD_DIR/d;s/(QMAKE_PRL_LIBS =).*/\1/' \
        -i /usr/lib/libQt${file}.prl
done
unset file
```

Method 2: Installing in /opt/qt-4.8.6

This section provides for installing Qt4 almost all of the files in the /opt directory.

```
export QT4DIR=/opt/qt-4.8.6 &&
export QT4LINK=/opt/qt4 &&

sed -i -e "/#if/d" -e "/#error/d" -e "/#endif/d" \
    config.tests/unix/libmng/libmng.cpp &&

sed -i '/CONFIG -/ a\isEmpty(OUTPUT_DIR): OUTPUT_DIR = ../..' \
    src/3rdparty/webkit/Source/WebKit2/DerivedSources.pro &&

./configure -prefix      $QT4DIR  \
            -sysconfdir /etc/xdg \
            -confirm-license     \
            -opensource          \
            -release             \
            -dbus-linked         \
            -openssl-linked      \
            -system-sqlite       \
            -plugin-sql-sqlite   \
            -no-phonon           \
            -no-phonon-backend   \
            -no-nis              \
            -no-openvg           \
            -nomake demos        \
            -nomake examples     \
            -optimized-qmake     &&

make
```

Now, as the *root* user:

```
make install
ln -svfn $QT4DIR /opt/qt4
```

Remove references to the build directory from installed files by running the following command as the *root* user:

```
for file in `basename -a -s .prl $QT4DIR/lib/lib*.prl`; do
    sed -r -e '/^QMAKE_PRL_BUILD_DIR/d'    \
           -e 's/(QMAKE_PRL_LIBS =).*/\1/' \
           -i $QT4DIR/lib/${file}.prl

   perl -pi -e "s, -L$PWD/?\S+,,g" $QT4DIR/lib/pkgconfig/${file##lib}.pc
done

unset file
```

Continuing for Both Methods

For all methods, install images and create the menu entries for installed applications. Be sure that the QT4LINK variable is defined in root's environment and as the *root* user:

```
install -v -Dm644 src/gui/dialogs/images/qtlogo-64.png \
                  /usr/share/pixmaps/qt4logo.png       &&
```

```
install -v -Dm644 tools/designer/src/designer/images/designer.png \
                /usr/share/pixmaps/designer-qt4.png  &&

install -v -Dm644 tools/linguist/linguist/images/icons/linguist-128-32.png \
                /usr/share/pixmaps/linguist-qt4.png  &&

install -v -Dm644 tools/qdbus/qdbusviewer/images/qdbusviewer-128.png \
                /usr/share/pixmaps/qdbusviewer-qt4.png &&

install -dm755 /usr/share/applications &&

cat > /usr/share/applications/assistant-qt4.desktop << EOF
[Desktop Entry]
Name=Qt4 Assistant
Comment=Shows Qt4 documentation and examples
Exec=$QT4LINK/bin/assistant
Icon=assistant-qt4.png
Terminal=false
Encoding=UTF-8
Type=Application
Categories=Qt;Development;Documentation;
EOF

cat > /usr/share/applications/designer-qt4.desktop << EOF
[Desktop Entry]
Name=Qt4 Designer
Comment=Design GUIs for Qt4 applications
Exec=$QT4LINK/bin/designer
Icon=designer-qt4.png
MimeType=application/x-designer;
Terminal=false
Encoding=UTF-8
Type=Application
Categories=Qt;Development;
EOF

cat > /usr/share/applications/linguist-qt4.desktop << EOF
[Desktop Entry]
Name=Qt4 Linguist
Comment=Add translations to Qt4 applications
Exec=$QT4LINK/bin/linguist
Icon=linguist-qt4.png
MimeType=text/vnd.trolltech.linguist;application/x-linguist;
Terminal=false
Encoding=UTF-8
Type=Application
Categories=Qt;Development;
EOF

cat > /usr/share/applications/qdbusviewer-qt4.desktop << EOF
[Desktop Entry]
Name=Qt4 QDbusViewer
GenericName=D-Bus Debugger
Comment=Debug D-Bus applications
Exec=$QT4LINK/bin/qdbusviewer
Icon=qdbusviewer-qt4.png
Terminal=false
Encoding=UTF-8
Type=Application
Categories=Qt;Development;Debugger;
EOF

cat > /usr/share/applications/qtconfig-qt4.desktop << EOF
[Desktop Entry]
Name=Qt4 Config
Comment=Configure Qt4 behavior, styles, fonts
Exec=$QT4LINK/bin/qtconfig
Icon=qt4logo.png
Terminal=false
Encoding=UTF-8
Type=Application
Categories=Qt;Settings;
EOF
```

Command Explanations

sed -i ...: First command fixes detection of libmng 2.0 and second one prevents configure script from writing to the

-opensource: Install the opensource version of Qt.

-release: This switch disables building with debugging symbols.

-nomake examples -nomake demos: These switches disable building programs that are only of interest to a developer using Qt.

-system-sqlite: This switch enables use the system version of SQLite.

-no-nis: This switch disables support for Network Information Service (NIS) which has been deprecated in recent versions of Glibc.

-no-phonon -no-phonon-backend: These switches disable building of the bundled Phonon library. Better version is provided by [phonon-4.8.0](#) package.

-dbus-linked -openssl-linked: These switches enable explicit linking of the D-Bus and OpenSSL libraries into Qt libraries instead of `dlopen()`-ing them.

-no-openvg: This switch disables OpenVG support in Qt.

-optimized-qmake: This switch enables building of the optimized `qmake` program.

-no-dbus: Use this switch if you don't have D-Bus installed.

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/qt4.sh << EOF
# Begin /etc/profile.d/qt4.sh

QT4DIR=/usr
export QT4DIR

# End /etc/profile.d/qt4.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/qt4/lib

# End Qt addition
EOF

ldconfig
```

As the *root* user, create the `/etc/profile.d/qt4.sh` file:

```
cat > /etc/profile.d/qt4.sh << EOF
# Begin /etc/profile.d/qt4.sh

QT4DIR=/opt/qt4

pathappend /opt/qt4/bin            PATH
pathappend /opt/qt4/lib/pkgconfig PKG_CONFIG_PATH

export QT4DIR

# End /etc/profile.d/qt4.sh
EOF
```

Choosing Qt Program Versions

If you install both Qt4 and Qt5, you can use some simple scripts to select the currently active set of Qt programs. As the *root* user, create the following scripts:

```
if [ "x$QT4DIR" != "x/usr" ]; then pathprepend $QT4DIR/bin; fi
echo $PATH
EOF
```

```
cat > /usr/bin/setqt5 << 'EOF'
if [ "x$QT4DIR" != "x/usr" ]; then pathremove  $QT4DIR/bin; fi
if [ "x$QT5DIR" != "x/usr" ]; then pathprepend $QT5DIR/bin; fi
echo $PATH
EOF
```

You should now be able to use the appropriate Qt version by running `source setqt4` or `source setqt5` as desired. (Setting the PATH wont work in a subshell.) Another technique that can be used is to create appropriate alias additions to your ~/.bashrc like `alias setqt4='source setqt4'`.

Contents

Installed Programs: assistant, designer, lconvert, linguist, lrelease, lupdate, moc, pixeltool, qcollectiongenerator, qdbuscpp2xml, qdbus, qdbusviewer, qdbusxml2cpp, qdoc3, qhelpconverter, qhelpgenerator, qmake, qmlplugindump, qmlviewer, qt3to4, qtconfig, qttracereplay, rcc, uic3, uic, xmlpatterns, and xmlpatternsvalidator

Installed Libraries: libQtUiTools.a, libQt3Support.so, libQtCLucene.so, libQtCore.so, libQtDBus.so, libQtDeclarative.so, libQtDesignerComponents.so, libQtDesigner.so, libQtGui.so, libQtHelp.so, libQtMultimedia.so, libQtNetwork.so, libQtOpenGL.so, libQtScript.so, libQtScriptTools.so, libQtSql.so, libQtSvg.so, libQtTest.so, libQtWebKit.so, libQtXmlPatterns.so, and libQtXml.so, and several plugins under /opt/qt4/imports and /opt/qt4/plugins

Installed Directories: /usr/include/qt4, /usr/lib/qt4, /usr/share/doc/qt4, and /usr/share/qt4 OR /opt/qt4 and /opt/qt-4.8.6

Short Descriptions

assistant	is a tool for presenting on-line documentation.
designer	is a full-fledged GUI builder. It includes powerful features such as preview mode, automatic widget layout, support for custom widgets, and an advanced property editor.
linguist	provides support for translating applications into local languages.
lrelease	is a simple command line tool. It reads a Qt project file and produces message files used by the application.
lupdate	reads a Qt project file, finds the translatable strings in the specified source, header and Qt Designer interface files, and produces or updates the translation files listed in the project file.
moc	generates Qt meta object support code.
pixeltool	is a desktop magnifier and as you move your mouse around the screen it will show the magnified contents in its window.
qmake	uses information stored in project files to determine what should go in the makefiles it generates.
qt3to4	qt3to4 is a tool to help update Qt3 code to Qt4.
qtconfig	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.

Last updated on 2014-09-15 22:13:43 -0700

Qt-5.3.1

Introduction to Qt5

Qt5 is a cross-platform application framework that is widely used for developing application software with a graphical user interface (GUI) (in which cases Qt5 is classified as a widget toolkit), and also used for developing non-GUI programs such as command-line tools and consoles for servers.

This package is known to build and work properly using an LFS-7.6 platform.

Package Information

- Download (HTTP): **http://download.qt-project.org/official_releases/qt/5.3/5.3.1/single/qt-everywhere-opensource-src-5.3.1.tar.xz**
- Download MD5 sum: f9a24a0d5645efa0715b6ff0fa13d60f

- Estimated build time: 105 SBU

Qt5 Dependencies

Required

alsa-lib-1.0.28, MesaLib-10.2.7, xcb-util-image-0.3.9, xcb-util-keysyms-0.3.9, xcb-util-renderutil-0.3.9, and xcb-util-wm-0.4.1

Recommended

Certificate Authority Certificates, Cups-1.7.5, D-Bus-1.8.8, GLib-2.40.0, gst-plugins-base-0.10.36, ICU-53.1 (required for QtWebKit), libjpeg-turbo-1.3.1, libmng-2.0.2, libpng-1.6.13, LibTIFF-4.0.3, mtdev-1.1.5, OpenSSL-1.0.1i, PCRE-8.35, SQLite-3.8.6 and Ruby-2.1.2 (required for QtWebKit)

Optional

GeoClue-0.12.0, gst-plugins-base-1.4.1 (QtWebKit HTML5 Video Support), GTK+-2.24.24 (GTK+ Theme Support), IBus, libxkbcommon, MariaDB-10.0.13 or MySQL, PostgreSQL-9.3.5, PulseAudio-5.0, and unixODBC-2.3.2

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/qt5

Qt Installation Alternatives

The installation of Qt presents several challenges and choices. Complicating the Qt installation is the fact that there are two versions, Qt4 and Qt5, that have executable programs with identical names. If both packages are installed on one system, the only methods to manage which set of programs is used is to either control the users' PATH or to rename files either directly or via symbolic links. Both packages cannot be installed in the same directory.

If you are only going to install one of the Qt versions, the choice of installation methods is easier. You can either install the components in the several directories of the /usr hierarchy or install the entire package in a separate directory of your choice. We refer to these options below as "Method 1: Installing in /usr" and "Method 2: Installing in /opt".

If both versions of Qt are to be installed, one or both versions need to be installed in a separate directory. For the purposes here we use the /opt directory. The selection of which version is being used by individual users on a system is controlled by the PATH variable. Other systems can be designed, but the BLFS editors find the PATH method easiest.

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. The disadvantage for BLFS users is that this Qt instance cannot be upgraded while it is in use. For instance, it cannot be upgraded from a running KDE environment. It also precludes having multiple versions of Qt on your system and does not allow reverting to an existing, known working instance of Qt.

The advantage of installing Qt in a custom directory such as /opt/qt-4.8.6 or /opt/qt-5.3.1 or is that it keeps 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 or merely changing the PATH variable. It also allows a developer to maintain multiple versions of Qt4 or Qt5 for testing.

Installation of Qt5

> **Caution**
>
> If you did not install some of the recommended dependencies, examine `./configure --help` output to check how to disable them or use internal versions bundled in the source tarball.

> **Warning**
>
> If Qt5 is being reinstalled into the same directory as an existing instance, run the commands done by *root*, such as `make install`, from a console or non-Qt5 based window manager. It overwrites Qt5 libraries that should not be in use during the install process.

Method 1: Installing in /usr

Install Qt5 by running the following commands:

```
export QT5LINK=/usr

./configure -prefix        /usr              \
```

```
            -archdatadir    /usr/lib/qt5          \
            -datadir        /usr/share/qt5        \
            -docdir         /usr/share/doc/qt5 \
            -translationdir /usr/share/qt5/translations \
            -examplesdir    /usr/share/doc/qt5/examples \
            -confirm-license   \
            -opensource        \
            -dbus-linked       \
            -openssl-linked    \
            -system-sqlite     \
            -no-nis            \
            -nomake examples   \
            -optimized-qmake   &&
    make
```

This package does not come with a test suite.

Remove references to the build directory from the .pc files by running the following command:

```
find . -name "*.pc" -exec perl -pi -e "s, -L$PWD/?\S+,,g" {} \;
```

Now, as the *root* user:

```
make install
```

Remove references to the build directory from installed files by running the following commands as the *root* user:

```
sed -e "s:$PWD/qtbase:/usr/lib/qt5:g" \
    -i /usr/lib/qt5/mkspecs/modules/qt_lib_bootstrap_private.pri &&

find /usr/lib/lib{qgsttools_p,Qt5*}.prl -exec sed -i -r \
     '/^QMAKE_PRL_BUILD_DIR/d;s/(QMAKE_PRL_LIBS =).*/\1/' {} \;
```

Method 2: Installing in /opt/qt-5.3.1

This section provides instructions for installing Qt5 in the /opt directory.

```
export QT5DIR=/opt/qt-5.3.1 &&
export QT5LINK=/opt/qt5 &&

./configure -prefix     $QT5DIR  \
            -sysconfdir /etc/xdg \
            -confirm-license    \
            -opensource         \
            -dbus-linked        \
            -openssl-linked     \
            -system-sqlite      \
            -no-nis             \
            -nomake examples    \
            -optimized-qmake       &&
    make
```

Now, as the *root* user:

```
make install &&
ln -svfn $QT5DIR /opt/qt5
```

Remove references to the build directory from installed files by running the following commands as the *root* user:

```
find $QT5DIR -name qt_lib_bootstrap_private.pri \
   -exec sed -i -e "s:$PWD/qtbase:/$QT5DIR/lib/:g" {} \; &&

find $QT5DIR -name \*.prl \
   -exec sed -i -e '/^QMAKE_PRL_BUILD_DIR/d' {} \;
```

Continuing for Both Methods

For all methods, install images and create the menu entries for installed applications. Be sure that the QT5LINK variable is defined in root's environment and as the *root* user:

```
install -v -dm755 /usr/share/pixmaps/                   &&

install -v -Dm644 qttools/src/assistant/assistant/images/assistant-128.png \
```

```
                                                       /usr/share/pixmaps/designer-qt5.png  &&

install -v -Dm644 qttools/src/linguist/linguist/images/icons/linguist-128-32.png \
                  /usr/share/pixmaps/linguist-qt5.png  &&

install -v -Dm644 qttools/src/qdbus/qdbusviewer/images/qdbusviewer-128.png \
                  /usr/share/pixmaps/qdbusviewer-qt5.png &&

install -dm755 /usr/share/applications &&

cat > /usr/share/applications/assistant-qt5.desktop << EOF
[Desktop Entry]
Name=Qt5 Assistant
Comment=Shows Qt5 documentation and examples
Exec=$QT5LINK/bin/assistant
Icon=assistant-qt5.png
Terminal=false
Encoding=UTF-8
Type=Application
Categories=Qt;Development;Documentation;
EOF

cat > /usr/share/applications/designer-qt5.desktop << EOF
[Desktop Entry]
Name=Qt5 Designer
GenericName=Interface Designer
Comment=Design GUIs for Qt5 applications
Exec=$QT5LINK/bin/designer
Icon=designer-qt5.png
MimeType=application/x-designer;
Terminal=false
Encoding=UTF-8
Type=Application
Categories=Qt;Development;
EOF

cat > /usr/share/applications/linguist-qt5.desktop << EOF
[Desktop Entry]
Name=Qt5 Linguist
Comment=Add translations to Qt5 applications
Exec=$QT5LINK/bin/linguist
Icon=linguist-qt5.png
MimeType=text/vnd.trolltech.linguist;application/x-linguist;
Terminal=false
Encoding=UTF-8
Type=Application
Categories=Qt;Development;
EOF

cat > /usr/share/applications/qdbusviewer-qt5.desktop << EOF
[Desktop Entry]
Name=Qt5 QDbusViewer
GenericName=D-Bus Debugger
Comment=Debug D-Bus applications
Exec=$QT5LINK/bin/qdbusviewer
Icon=qdbusviewer-qt5.png
Terminal=false
Encoding=UTF-8
Type=Application
Categories=Qt;Development;Debugger;
EOF
```

Command Explanations

sed -e "..." -e "..." -i ...: This command fixes detection of libmng 2.0.

-confirm-license: Accept license without prompting user during configuration.

-opensource: Install the opensource version of Qt.

-release: This switch disables building with debugging symbols.

-nomake examples: This switch disables building of the example programs included in the source tarball. Remove it if you want to build them.

-system-harfbuzz: This switch enables use of the system version of Harfbuzz which fixes some font rendering issues in Qt5 applications.

versions of Glibc.

-dbus-linked -openssl-linked: These switches enable explicit linking of the D-Bus and OpenSSL libraries into Qt5 libraries instead of `dlopen()`-ing them.

-optimized-qmake: This switch enables building of the optimized `qmake` program.

Configuring Qt5

Configuration Information

Create the menu entries for installed applications by running the following commands *root* user:

If you installed Qt5 in */usr*, create an environment variable needed by certain packages. As the *root* user:

```
cat > /etc/profile.d/qt5.sh << EOF
# Begin /etc/profile.d/qt5.sh

QT5DIR=/usr
export QT5DIR

# End /etc/profile.d/qt5.sh
EOF
```

If you installed Qt5 in a location other than */usr*, you need to update the following configuration files so that Qt5 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/qt5/lib

# End Qt addition
EOF

ldconfig
```

As the *root* user, create the */etc/profile.d/qt5.sh* file:

```
cat > /etc/profile.d/qt5.sh << EOF
# Begin /etc/profile.d/qt5.sh

QT5DIR=/opt/qt5

pathappend /opt/qt5/bin            PATH
pathappend /opt/qt5/lib/pkgconfig PKG_CONFIG_PATH

export QT5DIR

# End /etc/profile.d/qt5.sh
EOF
```

Choosing Qt Program Versions

If you install both Qt4 and Qt5, you can use some simple scripts to select the currently active set of Qt programs. As the *root* user, create the following scripts:

```
cat > /usr/bin/setqt4 << 'EOF'
if [ "x$QT5DIR" != "x/usr" ]; then pathremove  $QT5DIR/bin; fi
if [ "x$QT4DIR" != "x/usr" ]; then pathprepend $QT4DIR/bin; fi
echo $PATH
EOF
```

```
cat > /usr/bin/setqt5 << 'EOF'
if [ "x$QT4DIR" != "x/usr" ]; then pathremove  $QT4DIR/bin; fi
if [ "x$QT5DIR" != "x/usr" ]; then pathprepend $QT5DIR/bin; fi
echo $PATH
EOF
```

You should now be able to use the appropriate Qt version by running `source setqt4` or `source setqt5` as desired. (Setting the PATH wont work in a subshell.) Another technique that can be used is to create appropriate alias additions

Contents

Installed Programs: assistant, designer, lconvert, linguist, lrelease, lupdate, moc, pixeltool, qcollectiongenerator, qdbuscpp2xml, qdbus, qdbusviewer, qdbusxml2cpp, qdoc, qhelpconverter, qhelpgenerator, qlalr, qmake, qml1plugindump, qmlbundle, qmlimportscanner, qmlmin, qmlplugindump, qmlprofiler, qml, qmlscene, qmltestrunner, qmlviewer, qtdiag, qtpaths, rcc, syncqt.pl, uic, xmlpatterns, and xmlpatternsvalidator

Installed Libraries: libEnginio.so, libqgsttools_p.so, libQt5Bluetooth.so, libQt5Bootstrap.a, libQt5CLucene.so, libQt5Concurrent.so, libQt5Core.so, libQt5DBus.so, libQt5Declarative.so, libQt5DesignerComponents.so, libQt5Designer.so, libQt5Gui.so, libQt5Help.so, libQt5MultimediaQuick_p.so, libQt5Multimedia.so, libQt5MultimediaWidgets.so, libQt5Network.so, libQt5Nfc.so, libQt5OpenGLExtensions.a, libQt5OpenGL.so, libQt5PlatformSupport.a, libQt5Positioning.so, libQt5PrintSupport.so, libQt5QmlDevTools.a, libQt5Qml.so, libQt5QuickParticles.so, libQt5QuickWidgets.so, libQt5Quick.so, libQt5QuickTest.so, libQt5Script.so, libQt5ScriptTools.so, libQt5Sensors.so, libQt5SerialPort.so, libQt5Sql.so, libQt5Svg.so, libQt5Test.so, libQt5UiTools.a, libQt5WebKit.so, libQt5WebKitWidgets.so, libQt5WebSockets.so, libQt5Widgets.so, libQt5X11Extras.so, libQt5XmlPatterns.so, libQt5Xml.so, and several plugins under /opt/qt5/{imports,plugins,qml}

Installed Directories: /usr/include/qt5, /usr/lib/qt5, /usr/share/doc/qt5, and /usr/share/qt5 OR /opt/qt5 and /opt/qt-5.3.1

Short Descriptions

assistant	is a tool for presenting on-line documentation.
designer	is a full-fledged GUI builder. It includes powerful features such as preview mode, automatic widget layout, support for custom widgets, and an advanced property editor.
linguist	provides support for translating applications into local languages.
lrelease	is a simple command line tool. It reads a Qt project file and produces message files used by the application.
lupdate	reads a Qt project file, finds the translatable strings in the specified source, header and Qt Designer interface files, and produces or updates the translation files listed in the project file.
moc	generates Qt meta object support code.
pixeltool	is a desktop magnifier and as you move your mouse around the screen it will show the magnified contents in its window.
qmake	uses information stored in project files to determine what should go in the makefiles it generates.
rcc	is a resource compiler used in conjunction with designer.
uic	is a Qt user interface compiler.

Last updated on 2014-09-21 14:28:22 -0700

---

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-7.6 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

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/startup-notification

Install startup-notification 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 doc/startup-notification.txt \
    /usr/share/doc/startup-notification-0.12/startup-notification.txt
```

Command Explanations

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

Contents

Installed Programs: None
Installed Library: libstartup-notification-1.so
Installed Directories: /usr/include/startup-notification-1.0 and /usr/share/doc/startup-notification-0.12

Short Descriptions

libstartup-notification-1.so	provides the functions to assist applications in communicating with the cursor system to provide feedback to the user that the application is loading.

Last updated on 2014-09-10 09:45:01 -0700

WebKitGTK+-2.4.5

Introduction to WebKitGTK+

The WebKitGTK+ is the port of the portable web rendering engine WebKit to the GTK+ 3 and/or GTK+ 2 platforms.

This package is known to build and work properly using an LFS-7.6 platform.

Package Information

- Download (HTTP): **http://webkitgtk.org/releases/webkitgtk-2.4.5.tar.xz**
- Download MD5 sum: c2e1687bb0314a0948fbf78e2d1e931f
- Download size: 9.4 MB
- Estimated disk space required: 1.5 GB (both built)
- Estimated build time: 138 SBU (both built, webkitgtk-3.0 takes a little longer than webkitgtk-1.0)

WebKitGTK+ Dependencies

Required

gst-plugins-base-1.4.1, GTK+-2.24.24 or GTK+-3.12.2, ICU-53.1, libsecret-0.18, libsoup-2.46.0, libwebp-0.4.1, MesaLib-10.2.7, Ruby-2.1.2, SQLite-3.8.6, udev-extras (from eudev) (for GUdev) and Which-2.20

> **Note**
>
> WebKit2 links againstGTK+ 2 (even if GTK+ 3 is being used), in order to be able to use NPAPI plugins such as Adobe Flash.

Recommended

enchant-1.6.0, GeoClue-0.12.0, gobject-introspection-1.40.0, hicolor-icon-theme-0.13

Optional

Installation of WebKitGTK+

If you have not installed [GTK-Doc-1.20](#), fix a bug that will cause `make install` to fail:

```
sed -i '/generate-gtkdoc --rebase/s:^:# :' \
                        GNUmakefile.in
```

Upstream standard now is to link this package against GTK+ 3. However, for backward compatibility, manu users need also another instance, linked to GTK+ 2. Both can be installed in the same system, without problem. However, some packages can alternatively be linked to either one. Here, both build methods are presented and recommended to be built, but if you know which one you need, just jump to the respective part.

Build and install WebKitGTK+ against GTK+ 3

Install WebKitGTK+ by running the following commands:

```
mkdir -vp build-3            &&
cp -a Documentation build-3 &&
cd build-3                  &&

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

This package does not have a working testsuite. However, there are two useable basic graphical web browsers in the build directory, Programs/GtkLauncher and Programs/MiniBrowser. If launching any one fails, there is a problem with the build.

> ### Note
>
> When installing, the Makefile does some additional compiling and linking. If you do not have Xorg in /usr, the LIBRARY_PATH and PKG_CONFIG_PATH variables need to be defined for the root user. If using sudo to assume root, use the -E option to pass your current environment variables for the install process.

Now, as the *root* user:

```
make install
```

Finally, leave the buid directory:

```
cd ..
```

Build and install WebKitGTK+ against GTK+ 2

Install WebKitGTK+ by running the following commands:

```
mkdir -vp build-1
```

If you have built and installed the package against GTK+ 3. skip the following command, because the previous docummentation also applies here:

```
cp -a Documentation build-1
```

Now, change into the build directory and effectively start the build and install:

```
cd build-1 &&

../configure --prefix=/usr --with-gtk=2.0 --disable-webkit2 &&
make
```

This package does not have a working testsuite. However, there is one useable basic graphical web browser in the build directory, Programs/GtkLauncher. If launching it fails, there is a problem with the build.

> ### Note
>
> When installing, the Makefile does some additional compiling and linking. If you do not have Xorg in /usr, the LIBRARY_PATH and PKG_CONFIG_PATH variables need to be defined for the root user. If using sudo

Now, as the *root* user:

```
make install
```

Finally, leave the buid directory:

```
cd ..
```

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.

`--disable-geolocation`: Use this option if you did not install [GeoClue-0.12.0](#) or `configure` will fail.

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

Contents

Installed Programs: jsc-1, and jsc-3

Installed Libraries: libjavascriptcoregtk-1.0.so, libjavascriptcoregtk-3.0.so, libwebkit2gtk-3.0.so, libwebkitgtk-1.0.so, libwebkitgtk-3.0.so, and webkit2gtk-3.0/injected-bundle/libwebkit2gtkinjectedbundle.so

Installed Directories: /usr/include/webkitgtk-1.0, /usr/include/webkitgtk-3.0, /usr/lib/webkit2gtk-3.0, /usr/share/gtk-doc/html/webkit2gtk, /usr/share/gtk-doc/html/webkitdomgtk, /usr/share/gtk-doc/html/webkitgtk, /usr/share/webkitgtk-1.0, and /usr/share/webkitgtk-3.0

Short Descriptions

`jsc-1`	is a command-line utility that allows you to run JavaScript programs outside of the context of a web browser.
`jsc-3`	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 `jsc-1` and `libwebkitgtk-1.0.so`.
`libjavascriptcoregtk-3.0.so`	contains core JavaScript API functions used by `jsc-3` and `libwebkitgtk-3.0.so`.
`libwebkitgtk-1.0.so`	contains the WebKitGTK+ API functions for GTK+ 2.
`libwebkitgtk-3.0.so`	contains the WebKitGTK+ API functions for GTK+ 3.
`libwebkit2gtk-3.0.so`	contains the WebKit2 API functions.

Last updated on 2014-09-16 13:49:04 -0700

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.

Last updated on 2013-03-08 15:46:06 -0800

Fluxbox-1.3.5

The Fluxbox package contains a window manager.

This package is known to build and work properly using an LFS-7.6 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/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

D-Bus-1.8.8 (runtime), FriBidi-0.19.6, and Imlib2-1.4.6 (if you wish to use other image formats in addition to XPM)

User Notes: *http://wiki.linuxfromscratch.org/blfs/wiki/fluxbox*

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 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 or KDM in `/usr`, then change that command to fit the prefix you chose.

Now create the Fluxbox configuration files:

```
mkdir -v ~/.fluxbox &&
```

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

Installed Programs: fluxbox, fbsetbg, fbsetroot, fluxbox-generate_menu, startfluxbox, fbrun, fluxbox-remote, and fluxbox-update_configs

Installed Libraries: None

Installed Directories: /usr/share/fluxbox and ~/.fluxbox

Short Descriptions

`fluxbox`	is a window manager for X11 based on Blackbox 0.61.0.
`fbsetbg`	is a utility that sets the background image. It requires one of: `display`, `Esetroot`, `wmsetbg`, `xv`, `qiv` or `xsri`. It also requires `which` if `Esetroot` is found.
`fbsetroot`	is a utility to change root window appearance based on the Blackbox application bsetroot.
`fluxbox-generate_menu`	is a utility that generates a menu by scanning your PATH.
`startfluxbox`	is a session startup script that allows for command executions prior to `fluxbox` starting.
`fbrun`	displays a run dialog window.
`fluxbox-remote`	provides command line access to key commands for Fluxbox.

Last updated on 2014-09-10 09:45:01 -0700

IceWM-1.3.8

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-7.6 platform.

Package Information

- Download (HTTP): **http://downloads.sourceforge.net/icewm/icewm-1.3.8.tar.gz**
- Download MD5 sum: 6d61aced3bd20b9e7caeb7e8380368c8
- Download size: 888 KB
- Estimated disk space required: 33 MB
- Estimated build time: 0.3 SBU

IceWM Dependencies

Required

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 &&
./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.

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 specifiy 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

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 tty$N$.
>
> - 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

Installed Programs: icehelp, icesh, icewm, icewm-session, icewm-set-gnomewm, icewmbg, icewmhint, icewmtray

Installed Libraries: None

Installed Directories: /usr/share/doc/icewm-1.3.8, /usr/share/icewm and ~/.icewm

Short Descriptions

icehelp	is used to display the html manual.
icesh	is a command-line window manager which can be used in ~/.icewm/startup.
icewm	is the window manager.
icewm-session	runs icewmbg, icewm, icewmtray, startup, shutdown (i.e. startup and shutdown scripts are run if installed).
icewm-set-gnomewm	is a script to set the GNOME to icewm using gconftool .
icewmbg	is used to set the background, according to the various DesktopBackground settings in the preferences.
icewmhint	is used internally.

openbox-3.5.2

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-7.6 platform.

Package Information

- Download (HTTP): **http://openbox.org/dist/openbox/openbox-3.5.2.tar.gz**
- Download MD5 sum: 93df606606053b7e8578a5c116afb8ec
- Download size: 956 KB
- Estimated disk space required: 19 MB
- Estimated build time: 0.3 SBU

Openbox Dependencies

Required

X Window System and Pango-1.36.7 (compiled with support for libXft)

Optional

D-Bus-1.8.8 (runtime), Imlib2-1.4.6 (to enable icons in the right click menu), PyXDG-0.25, startup-notification-0.12, and librsvg-2.40.3

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/openbox

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-3.5.2 &&
make
```

This package does not come with a test suite.

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.

`--docdir=/usr/share/doc/openbox-3.5.2`: this puts a few files in a versioned directory in `/usr/share/doc`.

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

Configuring Openbox

Config Files

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 Imlib2-1.4.6 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#.*es/##;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 << "EOF"
display -backdrop -window root /path/to/beautiful/picture.jpeg
exec openbox
EOF
```

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 << "EOF"
# 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
EOF
```

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-1.8.8:

```
cat > ~/.xinitrc << "EOF"
. /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
EOF
```

Contents

Installed Programs: gdm-control, gnome-panel-control, obxprop, openbox, openbox-autostart, openbox-gnome-session, openbox-kde-session, openbox-session and openbox-xdg-autostart

Installed Libraries: libobrender.so and libobt.so

Installed Directories: /etc/xdg/openbox, /usr/include/openbox, /usr/share/doc/openbox-3.5.2 and /usr/share/themes.

gdm-control	is a command line tool to send signals to GDM.
gnome-panel-control	is a command line utility to invoke the Gnome Panel run dialog/menu.
obxprop	is a tool for displaying the properties on an x window. It has a similar functionality to `xprop`, but allows you to see UTF-8 strings as text.
openbox	is a standards compliant, highly configurable, window manager.
openbox-autostart	is a script that runs commands and applications at Openbox startup.
openbox-xdg-autostart	is a script that runs xdg autostart .desktop files.
openbox-gnome-session	is a script to launch an Gnome session with Openbox as your window manager from your `~/.xinitrc`.
openbox-kde-session	is a script to launch an KDE session with Openbox as your window manager from your `~/.xinitrc`.
openbox-session	is a script to launch an Openbox session from your `~/.xinitrc`.
libobrender.so	contains the functions used by Openbox for theme rendering.
libobt.so	is the Openbox toolkit library.

Last updated on 2014-09-14 14:01:57 -0700

sawfish-1.10

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-7.6 platform.

Package Information

- Download (HTTP): **http://download.tuxfamily.org/sawfish/sawfish-1.10.tar.xz**
- Download MD5 sum: 562814495cc991f29eb4b8e2d8dea05a
- Download size: 2.6 MB
- Estimated disk space required: 35 MB
- Estimated build time: 0.6 SBU

sawfish Dependencies

Required

rep-gtk-0.90.8.1 and Which-2.20

Recommended

GTK+-2.24.24 and Pango-1.36.7

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/sawfish

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

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.

Last updated on 2014-09-20 21:51:52 -0700

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**.

Last updated on 2012-05-06 08:26:39 -0700

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.

Last updated on 2013-02-11 10:51:17 -0800

KDE Pre-installation Configuration

> **Note**
>
> If you did not install Xorg in /usr, some of the CMake modules in KDE look for packages at hard coded locations. To accommodate this issue, create the following symbolic link (as the root user):
>
> ```
> ln -sv $XORG_PREFIX /usr/X11R6
> ```

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.

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
```

> **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-4.14.1`. After installing KDE, you may rename the directory and create a symlink:
>
> ```
> mv /opt/kde{,-4.14.1} &&
> ln -svf kde-4.14.1 /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.

Last updated on 2014-04-30 06:13:07 -0700

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.

- Download (HTTP): **http://download.kde.org/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-3.0.1 and Qt-4.8.6

***User Notes:** http://wiki.linuxfromscratch.org/blfs/wiki/automoc4*

Installation of Automoc4

Install automoc4 by running the following commands:

```
mkdir build &&
cd    build &&

cmake -DCMAKE_INSTALL_PREFIX=$KDE_PREFIX -Wno-dev .. &&
make
```

Now, as the *root* user:

```
make install
```

Command Explanations

`-Wno-dev`: Suppress warnings that are meant for the author of the CMakeLists.txt files.

Contents

Installed Programs: automoc4
Installed Libraries: none
Installed Directories: none

Short Descriptions

`automoc4`   is a utility generating Qt moc files.

Last updated on 2014-09-17 11:48:47 -0700

Phonon-4.8.0

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-7.6 platform.

Package Information

- Download (HTTP): **http://download.kde.org/stable/phonon/4.8.0/phonon-4.8.0.tar.xz**
- Download (FTP): **ftp://ftp.kde.org/pub/kde/stable/phonon/4.8.0/phonon-4.8.0.tar.xz**
- Download MD5 sum: 30af25af0bf28f3ce462f39b0a6e4081
- Download size: 314 KB
- Estimated disk space required: 10.5 MB
- Estimated build time: 0.5 SBU

Required

automoc4-0.9.88 and GLib-2.40.0

Optional

PulseAudio-5.0 and **QZeitgeist**

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/phonon

Installation of Phonon

Make sure that Qt-4.8.6 is compiled without the bundled Phonon library. This package provides a better implementation.

> **Note**
>
> If you have both Qt4 and Qt5 installed, be sure to run `source setqt4` before installing Phonon.

Install Phonon by running the following commands:

```
mkdir build &&
cd    build &&

cmake -DCMAKE_INSTALL_PREFIX=$KDE_PREFIX \
      -DCMAKE_BUILD_TYPE=Release \
      -DCMAKE_INSTALL_LIBDIR=lib \
      -DPHONON_INSTALL_QT_EXTENSIONS_INTO_SYSTEM_QT=FALSE \
      -DDBUS_INTERFACES_INSTALL_DIR=/usr/share/dbus-1/interfaces \
      -Wno-dev .. &&
make
```

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.

-DPHONON_INSTALL_QT_EXTENSIONS_INTO_SYSTEM_QT=FALSE: This switch ensures that the plugins and mkspecs files get installed in the correct location.

-DDBUS_INTERFACES_INSTALL_DIR=/usr/share/dbus-1/interfaces: This switch sets the correct installation path for the D-Bus interfaces file.

Contents

Installed Programs: None
Installed Libraries: libphonon.so and libphononexperimental.so
Installed Directories: $KDE_PREFIX/include/KDE/Phonon, $KDE_PREFIX/include/phonon, and $KDE_PREFIX/share/phonon

Last updated on 2014-09-10 12:10:00 -0700

Phonon-backend-gstreamer-4.8.0

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-7.6 platform.

Package Information

- Download (HTTP): **http://download.kde.org/stable/phonon/phonon-backend-gstreamer/4.8.0/phonon-backend-gstreamer-4.8.0.tar.xz**
- Download (FTP): **ftp://ftp.kde.org/pub/kde/stable/phonon/phonon-backend-gstreamer/4.8.0/phonon-**

- Download size: 74 KB
- Estimated disk space required: 3.5 MB
- Estimated build time: 0.3 SBU

Phonon-backend-gstreamer Dependencies

Required

phonon-4.8.0 and GStreamer-1.4.1

Recommended

gst-plugins-base-1.4.1 (needed for output to ALSA), gst-plugins-good-1.4.1 (needed for output to PulseAudio), gst-plugins-bad-1.4.1 (needed for AAC/M4A support) and gst-plugins-ugly-1.4.1 (needed for MP3 support)

User Notes: ***http://wiki.linuxfromscratch.org/blfs/wiki/phonon-backend-gstreamer***

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_INSTALL_LIBDIR=lib          \
      -DCMAKE_BUILD_TYPE=Release          \
      -Wno-dev .. &&
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

Installed Programs: none
Installed Libraries: phonon_gstreamer.so
Installed Directories: $KDE_PREFIX/lib/kde4/plugins/phonon_backend and $KDE_PREFIX/share/kde4/services/phononbackends

Last updated on 2014-09-11 08:36:11 -0700

Phonon-backend-vlc-0.8.0

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-7.6 platform.

Package Information

- Download (HTTP): **http://download.kde.org/stable/phonon/phonon-backend-vlc/0.8.0/phonon-backend-vlc-0.8.0.tar.xz**
- Download (FTP): **ftp://ftp.kde.org/pub/kde/stable/phonon/phonon-backend-vlc/0.8.0/phonon-backend-vlc-0.8.0.tar.xz**
- Download MD5 sum: f4c1f5c75d15931f02508cccef107e3d
- Download size: 58 KB
- Estimated disk space required: 2.9 MB
- Estimated build time: 0.2 SBU

[phonon-4.8.0](#) and [VLC-2.1.5](#)

User Notes: *[http://wiki.linuxfromscratch.org/blfs/wiki/phonon-backend-vlc](#)*

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_INSTALL_LIBDIR=lib         \
      -DCMAKE_BUILD_TYPE=Release         \
      -Wno-dev .. &&
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

Installed Program: none
Installed Libraries: phonon_vlc.so
Installed Directory: $KDE_PREFIX/lib/kde4/plugins/phonon_backend and
$KDE_PREFIX/share/kde4/services/phononbackends

Last updated on 2014-09-11 08:36:11 -0700

Akonadi-1.13.0

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-7.6 platform.

Package Information

- Download (HTTP): **[http://download.kde.org/stable/akonadi/src/akonadi-1.13.0.tar.bz2](#)**
- Download (FTP): **[ftp://ftp.kde.org/pub/kde/stable/akonadi/src/akonadi-1.13.0.tar.bz2](#)**
- Download MD5 sum: 84eb2e471bd6bdfe54a2a2f1d858c07d
- Download size: 287 KB
- Estimated disk space required: 82 MB
- Estimated build time: 1.9 SBU

Akonadi Dependencies

Required

[shared-mime-info-1.3](#), [Boost-1.56.0](#), and one of: [SQLite-3.8.6](#), [MariaDB-10.0.13](#), **[MySQL](#)**, or [PostgreSQL-9.3.5](#)

Optional

[soprano](#)

User Notes: *[http://wiki.linuxfromscratch.org/blfs/wiki/akonadi](#)*

Installation of Akonadi

```
        cd    build &&

  cmake -DCMAKE_INSTALL_PREFIX=$KDE_PREFIX  \
        -DCMAKE_BUILD_TYPE=Release            \
        -DINSTALL_QSQLITE_IN_QT_PREFIX=TRUE  \
        -Wno-dev .. &&
  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 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

Installed Programs: akonadi_agent_launcher, akonadi_agent_server, akonadi_control, akonadi_rds, akonadictl, akonadiserver and asapcat

Installed Libraries: libakonadiprotocolinternals.so and libqsqlite3.so

Installed Directories: $KDE_PREFIX/include/akonadi, $KDE_PREFIX/lib/cmake/Akonadi and $KDE_PREFIX/share/config/akonadi

Last updated on 2014-09-17 11:48:47 -0700

Attica-0.4.2

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-7.6 platform.

Package Information

- Download (HTTP): **http://download.kde.org/stable/attica/attica-0.4.2.tar.bz2**
- Download (FTP): **ftp://ftp.kde.org/pub/kde/stable/attica/attica-0.4.2.tar.bz2**
- Download MD5 sum: d62c5c9489a68432e8d990dde7680c24
- Download size: 59 KB
- Estimated disk space required: 7.5 MB
- Estimated build time: 0.5 SBU

Attica Dependencies

Required

CMake-3.0.1 and Qt-4.8.6

Optional

Qt-5.3.1 (requires **extra-cmake-modules**)

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/attica

Installation of Attica

Install Attica by running the following commands:

```
  mkdir build &&
  cd    build &&
```

```
      -Wno-dev .. &&
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 a higher level of compiler the optimizations.

-DQT4_BUILD=ON: This switch forces the package to build against Qt4 even if Qt5 is present on the system. Remove it if you want to build the package against Qt5.

Contents

Installed Programs: none
Installed Libraries: libattica.so
Installed Directories: $KDE_PREFIX/include/attica

Last updated on 2014-09-17 11:48:47 -0700

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-7.6 platform.

Package Information

- Download (HTTP): **http://download.kde.org/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-4.8.6 and CMake-3.0.1

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/qimageblitz

Installation of QImageblitz

Install QImageblitz by running the following commands:

```
mkdir build &&
cd    build &&

cmake -DCMAKE_INSTALL_PREFIX=$KDE_PREFIX -Wno-dev .. &&
make
```

This package does not come with a test suite.

Now, as the *root* user:

```
make install
```

Contents

Installed Directories: $KDE_PREFIX/include/qimageblitz

Short Descriptions

blitztest   is a testing utility for qimageblitz.

Last updated on 2014-09-17 11:48:47 -0700

Polkit-Qt-0.112.0

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-7.6 platform.

Package Information

- Download (HTTP): **http://download.kde.org/stable/apps/KDE4.x/admin/polkit-qt-1-0.112.0.tar.bz2**
- Download (FTP): **ftp://ftp.kde.org/pub/kde/stable/apps/KDE4.x/admin/polkit-qt-1-0.112.0.tar.bz2**
- Download MD5 sum: bee71b71c12797e6fc498540a06c829b
- Download size: 68 KB
- Estimated disk space required: 4.2 MB
- Estimated build time: 0.1 SBU

Polkit-Qt Dependencies

Required

automoc4-0.9.88 and Polkit-0.112

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/polkit-qt

Installation of Polkit-Qt

Install Polkit-Qt by running the following commands:

```
mkdir build &&
cd    build &&

cmake -DCMAKE_INSTALL_PREFIX=$KDE_PREFIX \
      -DCMAKE_BUILD_TYPE=Release        \
      -DCMAKE_INSTALL_LIBDIR=lib        \
      -DUSE_QT4=TRUE                    \
      -Wno-dev .. &&
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.

-DCMAKE_INSTALL_LIBDIR=lib: This switch is used to get libraries to install to $KDE_PREFIX/lib instead of $KDE_PREFIX/lib64 on a 64 bit system.

-DUSE_QT4=TRUE: This switch is used to ensure that Qt4 version of the library is built even if Qt5 is present.

Contents

Installed Programs: none
Installed Libraries: libpolkit-qt-agent-1.so, libpolkit-qt-core-1.so and libpolkit-qt-gui-1.so
Installed Directories: $KDE_PREFIX/include/polkit-qt-1

Oxygen-icons-4.14.1

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-7.6 platform.

Package Information

- Download (HTTP): **http://download.kde.org/stable/4.14.1/src/oxygen-icons-4.14.1.tar.xz**
- Download MD5 sum: 7eec6b9fa8be5040550f3441715c1c1c
- Download size: 219 MB
- Estimated disk space required: 516 MB
- Estimated build time: less than 0.1 SBU

Oxygen-icons Dependencies

Required

CMake-3.0.1

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/oxygen-icons

Installation of Oxygen-icons

Install Oxygen-icons by running the following commands:

```
mkdir build &&
cd    build &&

cmake -DCMAKE_INSTALL_PREFIX=$KDE_PREFIX -Wno-dev ..
```

This package does not come with a test suite.

Now, as the *root* user:

```
make install
```

Contents

Installed Programs: none
Installed Libraries: none
Installed Directory: $KDE_PREFIX/share/icons/oxygen

Last updated on 2014-09-17 21:56:07 -0700

Kdelibs-4.14.1

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-7.6 platform.

Package Information

- Download (HTTP): **http://download.kde.org/stable/4.14.1/src/kdelibs-4.14.1.tar.xz**
- Download MD5 sum: 678acc5880ba5da96ae66d383e19a52b
- Download size: 11.1 MB
- Estimated disk space required: 463 MB
- Estimated build time: 17 SBU

Kdelibs Dependencies

Required

Recommended

polkit-qt-0.112.0, OpenSSL-1.0.1i, qca-2.0.3, UPower-0.9.23, and UDisks-1.0.5 or UDisks-2.1.3

Optional

JasPer-1.900.1, PCRE-8.35, Avahi-0.6.31, Aspell-0.60.6.1, enchant-1.6.0, grantlee-0.4.0, MIT Kerberos V5-1.12.2, **soprano**, **shared-desktop-ontologies**, **Hspell**, **FAM**, **HUPnP**, **OpenEXR**, and **media-player-info**

User Notes: *http://wiki.linuxfromscratch.org/blfs/wiki/kdelibs*

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 \
      -Wno-dev .. &&
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.

`-DWITH_SOLID_UDISKS2=TRUE`: Use this switch if you have UDisks2.

Contents

Installed Programs: checkXML, kbuildsycoca4, kconfig_compiler, kcookiejar4, kde4-config, kded4, kdeinit4, kdeinit4_shutdown, kdeinit4_wrapper, kfilemetadatareader, kjs, kjscmd, kmailservice, kross, kshell4, ktelnetservice, kunittestmodrunner, kwrapper4, makekdewidgets, meinproc4, meinproc4_simple, nepomuk-rcgen and preparetips

Installed Libraries: several in $KDE_PREFIX/lib

Installed Directories: several in $KDE_PREFIX/include, $KDE_PREFIX/lib and $KDE_PREFIX/share

Short Descriptions

`checkXML`	is a tool used to check for syntax errors in KDE DocBook XML files.
`kbuildsycoca4`	is used to rebuild the system configuration cache.
`kconfig_compiler`	is the KDE configuration compiler.
`kcookiejar4`	is the KDE HTTP cookie daemon.
`kde4-config`	is used to print the KDE installation paths.
`kded4`	is the KDE daemon.

`kjscmd`	is a tool used for launching KJSEmbed scripts from the command line.
`kross`	is the KDE application used to run kross scripts.
`makekdewidgets`	is used to build Qt widget plugins from an ini style description file.
`meinproc4`	is used to convert DocBook files to HTML.
`preparetips`	is a script used to extract the text from a tips file.

Last updated on 2014-09-18 22:41:15 -0700

Kfilemetadata-4.14.1

Introduction to Kfilemetadata

Kfilemetadata is a framework for searching and managing metadata.

This package is known to build and work properly using an LFS-7.6 platform.

Package Information

- Download (HTTP): **http://download.kde.org/stable/4.14.1/src/kfilemetadata-4.14.1.tar.xz**
- Download MD5 sum: 0faa1b90189c77731c62e63e57f5ba00
- Download size: 36 KB
- Estimated disk space required: 4.5 MB
- Estimated build time: 0.2 SBU

Kfilemetadata Dependencies

Required

kdelibs-4.14.1

Optional

taglib-1.9.1, Poppler-0.26.4, Exiv2-0.24, FFmpeg-2.3.3, **libepub** and **Mobipocket**

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/kfilemetadata

Installation of Kfilemetadata

Install kfilemetadata by running the following commands:

```
mkdir build &&
cd    build &&

cmake -DCMAKE_INSTALL_PREFIX=$KDE_PREFIX \
      -DCMAKE_BUILD_TYPE=Release         \
      -Wno-dev .. &&
make
```

To run the test suite, issue: `make test`.

Now, as the *root* user:

```
make install
```

Contents

Installed Programs: none
Installed Libraries: libkfilemetadata.so and several in $KDE_PREFIX/lib/kde4
Installed Directories: $KDE_PREFIX/include/kfilemetadata and $KDE_PREFIX/lib/cmake/KFileMetaData

Last updated on 2014-09-17 21:56:07 -0700

Kdepimlibs-4.14.1

This package is known to build and work properly using an LFS-7.6 platform.

Package Information

- Download (HTTP): **http://download.kde.org/stable/4.14.1/src/kdepimlibs-4.14.1.tar.xz**
- Download MD5 sum: 6e27f79c82a7ca3335a716f4fe66a578
- Download size: 2.7 MB
- Estimated disk space required: 215 MB
- Estimated build time: 8.1 SBU

Kdepimlibs Dependencies

Required

kdelibs-4.14.1, libxslt-1.1.28, GPGME-1.5.1, libical-1.0, Akonadi-1.13.0, Cyrus SASL-2.1.26, Boost-1.56.0, and QJson-0.8.1

Recommended

OpenLDAP-2.4.39

Optional

OpenSSL-1.0.1i and **prison**

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/kdepimlibs

Installation of Kdepimlibs

Install kdepimlibs by running the following commands:

```
mkdir build &&
cd    build &&

cmake -DCMAKE_INSTALL_PREFIX=$KDE_PREFIX \
      -DCMAKE_BUILD_TYPE=Release        \
      -Wno-dev .. &&
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

Installed Programs: akonadi_benchmarker and akonaditest
Installed Libraries: several in $KDE_PREFIX/lib
Installed Directories: several in $KDE_PREFIX/include, $KDE_PREFIX/lib and $KDE_PREFIX/share

Last updated on 2014-09-17 21:56:07 -0700

Baloo-4.14.1

Introduction to Baloo

Baloo is a framework for searching and managing metadata.

This package is known to build and work properly using an LFS-7.6 platform.

Package Information

- Download (HTTP): **http://download.kde.org/stable/4.14.1/src/baloo-4.14.1.tar.xz**
- Download MD5 sum: 20202ce57cf24ef27b70c63fe3419602
- Download size: 144 KB

Baloo Dependencies

Required

kdepimlibs-4.14.1, kfilemetadata-4.14.1, and xapian-1.2.17

Optional

OpenSSL-1.0.1i

User Notes: *http://wiki.linuxfromscratch.org/blfs/wiki/baloo*

Installation of Baloo

Install baloo by running the following commands:

```
mkdir build &&
cd    build &&

cmake -DCMAKE_INSTALL_PREFIX=$KDE_PREFIX \
      -DCMAKE_BUILD_TYPE=Release         \
      -Wno-dev .. &&
make
```

This package does not come with a working test suite.

Now, as the *root* user:

```
make install
```

Contents

Installed Programs: akonadi_baloo_indexer, baloo_file, baloo_file_cleaner, baloo_file_extractor, baloosearch and balooshow

Installed Libraries: libbaloocore.so, libbaloofiles.so, libbaloopim.so, libbalooxapian.so and several in $KDE_PREFIX/lib/kde4

Installed Directories: $KDE_PREFIX/include/baloo

Last updated on 2014-09-17 21:56:07 -0700

Baloo-widgets-4.14.1

Introduction to Baloo-widgets

Baloo-widgets contains widgets for the baloo search framework.

This package is known to build and work properly using an LFS-7.6 platform.

Package Information

- Download (HTTP): **http://download.kde.org/stable/4.14.1/src/baloo-widgets-4.14.1.tar.xz**
- Download MD5 sum: a8b8b96d51b5a6de16f23cda46998a08
- Download size: 40 KB
- Estimated disk space required: 3.5 MB
- Estimated build time: 0.1 SBU

Baloo-widgets Dependencies

Required

baloo-4.14.1

User Notes: *http://wiki.linuxfromscratch.org/blfs/wiki/baloo-widgets*

Installation of Baloo-widgets

```
          cd      build &&

          cmake -DCMAKE_INSTALL_PREFIX=$KDE_PREFIX \
                  -DCMAKE_BUILD_TYPE=Release         \
                  -Wno-dev .. &&
          make
```

This package does not come with a working test suite.

Now, as the *root* user:

```
          make install
```

Contents

Installed Programs: none
Installed Libraries: libbaloowidgets.so
Installed Directories: $KDE_PREFIX/include/baloo

Last updated on 2014-09-17 21:56:07 -0700

Polkit-kde-agent-0.99.0

Introduction to Polkit-kde-agent

Polkit-kde-agent provides a graphical authentication prompt so non-priviledged users can authenticate themselves for performing administrative tasks in KDE.

This package is known to build and work properly using an LFS-7.6 platform.

Package Information

- Download (HTTP): **http://download.kde.org/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/7.6/polkit-kde-agent-1-0.99.0-remember_password-1.patch**

Polkit-kde-agent Dependencies

Required

polkit-qt-0.112.0 and kdelibs-4.14.1

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/polkit-kde-agent

Installation of Polkit-kde-agent

Install polkit-kde-agent by running the following commands:

```
          patch -Np1 -i ../polkit-kde-agent-1-0.99.0-remember_password-1.patch &&

          mkdir build &&
          cd      build &&

          cmake -DCMAKE_INSTALL_PREFIX=$KDE_PREFIX -Wno-dev .. &&
          make
```

This package does not come with a test suite.

Now, as the *root* user:

Contents

Installed Programs: polkit-kde-authentication-agent-1
Installed Libraries: none
Installed Directories: $KDE_PREFIX/share/apps/policykit1-kde

Last updated on 2014-09-17 21:56:07 -0700

Kactivities-4.13.3

Introduction to Kactivities

This package provides the activitymanager for KDE.

This package is known to build and work properly using an LFS-7.6 platform.

Package Information

- Download (HTTP): **http://download.kde.org/stable/4.13.3/src/kactivities-4.13.3.tar.xz**
- Download (FTP): **ftp://ftp.kde.org/pub/kde/stable/4.13.3/src/kactivities-4.13.3.tar.xz**
- Download MD5 sum: e56a3aead6f418d973c0acd9c889deb8
- Download size: 88 KB
- Estimated disk space required: 9.2 MB
- Estimated build time: 0.8 SBU

Kactivities Dependencies

Required

kdelibs-4.14.1

Optional

nepomuk-core

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/kactivities

Installation of Kactivities

Install Kactivities by running the following commands:

```
mkdir build &&
cd    build &&

cmake -DCMAKE_INSTALL_PREFIX=$KDE_PREFIX \
      -DCMAKE_BUILD_TYPE=Release         \
      -Wno-dev .. &&
make
```

This package does not ship a default test suite.

Now, as the *root* user:

```
make install
```

Contents

Installed Programs: kactivitymanagerd
Installed Libraries: libkactivities.so, libkactivities-models.so and several in $KDE_PREFIX/lib/kde4
Installed Directories: $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

Last updated on 2014-09-17 21:56:07 -0700

Kde-runtime-4.14.1

Kde-runtime contains runtime applications and libraries essential for KDE.

This package is known to build and work properly using an LFS-7.6 platform.

Package Information

- Download (HTTP): **http://download.kde.org/stable/4.14.1/src/kde-runtime-4.14.1.tar.xz**
- Download MD5 sum: 8748f518157cc9f9b086347730763d4d
- Download size: 7.5 MB
- Estimated disk space required: 145 MB
- Estimated build time: 4.2 SBU

Kde-runtime Dependencies

Required

kdelibs-4.14.1

Recommended

kactivities-4.13.3, kdepimlibs-4.14.1, alsa-lib-1.0.28, libjpeg-turbo-1.3.1, and Exiv2-0.24

Optional

PulseAudio-5.0, xine-lib-1.2.6, libcanberra-0.30, Samba-4.1.11, NetworkManager-0.9.10.0, **nepomuk-core**, **OpenSLP**, **QNtrack**, **LibSSH**, and **OpenEXR**

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/kde-runtime

Installation of Kde-runtime

Install kde-runtime by running the following commands:

```
mkdir build &&
cd    build &&

cmake -DCMAKE_INSTALL_PREFIX=$KDE_PREFIX          \
      -DSYSCONF_INSTALL_DIR=/etc                  \
      -DCMAKE_BUILD_TYPE=Release                  \
      -DSAMBA_INCLUDE_DIR=/usr/include/samba-4.0 \
      -Wno-dev .. &&
make
```

To test the results, issue `make test`.

Now as the *root* user:

```
make install &&
ln -sfv ../lib/kde4/libexec/kdesu $KDE_PREFIX/bin/kdesu
```

Command Explanations

-DSAMBA_INCLUDE_DIR=/usr/include/samba-4.0: This switch is used so that CMake can properly find Samba headers which got moved in version 4.

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.

Installed Libraries: several in $KDE_PREFIX/lib

Installed Directories: several in $KDE_PREFIX/lib and $KDE_PREFIX/share

Last updated on 2014-09-17 21:56:07 -0700

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-7.6 platform.

Package Information

- Download (HTTP): **http://download.kde.org/stable/4.14.1/src/kde-baseapps-4.14.1.tar.xz**
- Download MD5 sum: 1b0005c625e6aaecadea022714a9e8e5
- Download size: 2.4 MB
- Estimated disk space required: 104 MB
- Estimated build time: 4.0 SBU

Kde-baseapps Dependencies

Required

kdelibs-4.14.1

Recommended

kactivities-4.13.3, kfilemetadata-4.14.1, baloo-4.14.1, and baloo-widgets-4.14.1

Optional

HTML Tidy-cvs_20101110 and GLib-2.40.0

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/kde-baseapps

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         \
      -Wno-dev .. &&
make
```

To test the results, issue `make test`.

Now as the *root* user:

```
make install
```

Contents

Installed Programs: dolphin, fsview, kbookmarkmerger, kdepasswd, kdialog, keditbookmarks, kfind, kfmclient, konqueror, nspluginscan, nspluginviewer, servicemenudeinstallation and servicemenuinstallation

Installed Libraries: 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

Installed Directories: several in $KDE_PREFIX/share

Short Descriptions

kbookmarkmerger   is a program for merging a given set of bookmarks into the user's set of bookmarks.

kfind   is the file find utility for KDE.

Last updated on 2014-09-17 21:56:07 -0700

Kde-base-artwork-4.14.1

This package provides the default splash screen for KDE.

This package is known to build and work properly using an LFS-7.6 platform.

Package Information

- Download (HTTP): **http://download.kde.org/stable/4.14.1/src/kde-base-artwork-4.14.1.tar.xz**
- Download MD5 sum: da4aa24c5b74bd48fb315e650510c46d
- Download size: 7.1 MB
- Estimated disk space required: 15 MB
- Estimated build time: less than 0.1 SBU

Kde-base-artwork Dependencies

Required

kdelibs-4.14.1

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/kde-base-artwork

Installation of Kde-base-artwork

Install Kde-base-artwork by running the following commands:

```
mkdir build &&
cd    build &&

cmake -DCMAKE_INSTALL_PREFIX=$KDE_PREFIX -Wno-dev ..
```

Now, as the *root* user:

```
make install
```

Contents

Installed Programs: none
Installed Libraries: none
Installed Directory: $KDE_PREFIX/share/apps/ksplash/Themes/Default

Last updated on 2014-09-17 21:56:07 -0700

Kde-workspace-4.11.12

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-7.6 platform.

Package Information

- Download (HTTP): **http://download.kde.org/stable/4.14.1/src/kde-workspace-4.11.12.tar.xz**
- Download (FTP): **ftp://ftp.kde.org/pub/kde/stable/4.14.1/src/kde-workspace-4.11.12.tar.xz**
- Download MD5 sum: 9968e4388fb4e99596e55982d823aa96
- Download size: 12.9 MB
- Estimated disk space required: 391 MB
- Estimated build time: 12.8 SBU

Kde-workspace Dependencies

Required

kactivities-4.13.3, qimageblitz-0.0.6, xcb-util-image-0.3.9, xcb-util-renderutil-0.3.9, xcb-util-keysyms-0.3.9, and xcb-util-wm-0.4.1

Optional

Linux-PAM-1.1.8, libusb-1.0.19, NetworkManager-0.9.10.0, lm_sensors-3.3.5, QJson-0.8.1, **PyKDE4**, **GoogleGadgets**, **Prison**, **libraw1394**, **gpsd**, **XMMS**, **libqalculate** (wants **CLN**), and **Wayland**

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**.

User Notes: *http://wiki.linuxfromscratch.org/blfs/wiki/kde-workspace*

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  \
      -Wno-dev .. &&
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" &&
```

```
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, kdmctl, kdostartupconfig4, kfontinst, kfontview, kinfocenter, klipper, kmenuedit, 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

Installed Libraries: several in $KDE_PREFIX/lib

Installed Directories: several in $KDE_PREFIX/include, $KDE_PREFIX/lib and $KDE_PREFIX/share

Last updated on 2014-09-18 13:07:49 -0700

Starting KDE

KDE Startup Dependencies

Optional

[D-Bus-1.8.8](#) (runtime)

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):

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 $QT4DIR set.

Last updated on 2014-05-22 11:06:16 -0700

Chapter 29. KDE Additional Packages

Konsole-4.14.1

Introduction to Konsole

This package provides a terminal emulator for KDE.

This package is known to build and work properly using an LFS-7.6 platform.

Package Information

- Download (HTTP): **http://download.kde.org/stable/4.14.1/src/konsole-4.14.1.tar.xz**
- Download MD5 sum: 3ca6bc837854fe0a660b559dbe400de6
- Download size: 448 KB
- Estimated disk space required: 18 MB
- Estimated build time: 0.6 SBU

Konsole Dependencies

Required

kdelibs-4.14.1

Recommended

kde-baseapps-4.14.1

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/konsole

Installation of Konsole

Install Konsole by running the following commands:

```
mkdir build &&
cd    build &&

cmake -DCMAKE_INSTALL_PREFIX=$KDE_PREFIX \
      -DCMAKE_BUILD_TYPE=Release          \
      -Wno-dev .. &&
make
```

Now, as the *root* user:

```
make install
```

Contents

Installed Programs: konsole and konsoleprofile
Installed Libraries: libkdeinit4_konsole.so, libkonsolepart.so and libkonsoleprivate.so

> `konsole`   is the KDE terminal emulator.

Last updated on 2014-09-17 21:56:07 -0700

Kate-4.14.1

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-7.6 platform.

Package Information

- Download (HTTP): **http://download.kde.org/stable/4.14.1/src/kate-4.14.1.tar.xz**
- Download MD5 sum: f64b74c6cd0b4ce8b35bd6cec8456100
- Download size: 2.6 MB
- Estimated disk space required: 108 MB
- Estimated build time: 2.9 SBU

Kate Dependencies

Required

kdelibs-4.14.1

Recommended

kactivities-4.13.3

Optional

QJson-0.8.1 and **PyKDE4**

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/kate

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 \
      -Wno-dev .. &&
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_kwrite.so and several in $KDE_PREFIX/lib/kde4

Installed Directories: $KDE_PREFIX/include/kate and several in $KDE_PREFIX/share

Kate   is the KDE text editor.

Ark-4.14.1

Introduction to Ark

This package provides an archiving utility for KDE.

This package is known to build and work properly using an LFS-7.6 platform.

Package Information

- Download (HTTP): **http://download.kde.org/stable/4.14.1/src/ark-4.14.1.tar.xz**
- Download MD5 sum: 55fcc756e600e18cdc8bfc5c562657a8
- Download size: 232 KB
- Estimated disk space required: 12.2 MB
- Estimated build time: 0.3 SBU

Ark Dependencies

Required

kde-baseapps-4.14.1 and libarchive-3.1.2

Optional

QJson-0.8.1

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/ark

Installation of Ark

Install Ark by running the following commands:

```
mkdir build &&
cd    build &&

cmake -DCMAKE_INSTALL_PREFIX=$KDE_PREFIX \
      -DCMAKE_BUILD_TYPE=Release         \
      -Wno-dev .. &&
make
```

Now, as the *root* user:

```
make install
```

Contents

Installed Program: ark
Installed Libraries: libkerfuffle.so and several in $KDE_PREFIX/lib/kde4
Installed Directories: several in $KDE_PREFIX/share

Short Descriptions

ark   is the KDE archiving utility.

Kmix-4.14.1

Introduction to Kmix

This packages provides an audio mixer application for KDE.

- Download (HTTP): **http://download.kde.org/stable/4.14.1/src/kmix-4.14.1.tar.xz**
- Download MD5 sum: 605fddd898bab343207191aff03c2383
- Download size: 372 KB
- Estimated disk space required: 14 MB
- Estimated build time: 0.9 SBU

Kmix Dependencies

Required

kdelibs-4.14.1

Optional

PulseAudio-5.0 and libcanberra-0.30

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/kmix

Installation of Kmix

Install Kmix by running the following commands:

```
mkdir build &&
cd    build &&

cmake -DCMAKE_INSTALL_PREFIX=$KDE_PREFIX \
      -DCMAKE_BUILD_TYPE=Release         \
      -Wno-dev .. &&
make
```

Now, as the *root* user:

```
make install
```

Contents

Installed Programs: kmix and kmixctrl
Installed Libraries: 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.

Last updated on 2014-09-17 21:56:07 -0700

libkcddb-4.14.1

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-7.6 platform.

Package Information

- Download (HTTP): **http://download.kde.org/stable/4.14.1/src/libkcddb-4.14.1.tar.xz**
- Download MD5 sum: 39f3f03cff9b712381ec4e582ec3e907
- Download size: 156 KB
- Estimated disk space required: 10.2 MB
- Estimated build time: 0.4 SBU

libkcddb Dependencies

Installation of libkcddb

Install libkcddb by running the following commands:

```
mkdir build &&
cd    build &&

cmake -DCMAKE_INSTALL_PREFIX=$KDE_PREFIX \
      -DCMAKE_BUILD_TYPE=Release         \
      -Wno-dev .. &&
make
```

Now, as the *root* user:

```
make install
```

Contents

Installed Programs: None

Installed Libraries: libkcddb.so and kcm_cddb.so in $KDE_PREFIX/lib/kde4

Installed Directories: $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.

Last updated on 2014-09-17 21:56:07 -0700

Kdepim-runtime-4.14.1

Introduction to Kdepim-runtime

This package provides additional resources for Akonadi.

This package is known to build and work properly using an LFS-7.6 platform.

Package Information

- Download (HTTP): **http://download.kde.org/stable/4.14.1/src/kdepim-runtime-4.14.1.tar.xz**
- Download MD5 sum: 2c5c0ad7091f2a86a0aa94d9c77e875a
- Download size: 1.1 MB
- Estimated disk space required: 141 MB
- Estimated build time: 6.3 SBU

Kdepim-runtime Dependencies

Required

kdepimlibs-4.14.1

Optional

KolabLibraries (for Kolab Groupware Resource), **libKGAPI** (to access Google services), and **libKFbAPI** (to access Facebook services)

Installation of Kdepim-runtime

Install Kdepim-runtime by running the following commands:

```
mkdir build &&
cd    build &&
```

```
        -Wno-dev .. &&
make
```

Now, as the *root* user:

```
make install
```

Contents

Installed Programs:	accountwizard, akonadi2xml, akonadi_nepomuk_feeder, akonadi_*_agent, akonadi_*_resource, akonaditray, kaddressbookmigrator, kjotsmigrator, kmail-migrator, kres-migrator and nepomukpimindexerutility
Installed Libraries:	libakonadi-filestore.so, libakonadi-xml.so, libkdepim-copy.so, libkmindexreader.so, libmaildir.so, libnepomukfeederpluginlib.a and several in $KDE_PREFIX/lib/kde4
Installed Directories:	several in $KDE_PREFIX/share

Last updated on 2014-09-17 21:56:07 -0700

Kdepim-4.14.1

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-7.6 platform.

Package Information

- Download (HTTP): **http://download.kde.org/stable/4.14.1/src/kdepim-4.14.1.tar.xz**
- Download MD5 sum: 133abfa1f06e095a21d60cd4b2066eec
- Download size: 13.8 MB
- Estimated disk space required: 489 MB
- Estimated build time: 20 SBU

Kdepim Dependencies

Required

grantlee-0.4.0 and kdepim-runtime-4.14.1

Recommended

Boost-1.56.0, and Libassuan-2.1.2

Optional

nepomuk-widgets, **Prison**, **dblatex**, and **LinkGrammar**

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/kdepim

Installation of Kdepim

Install Kdepim by running the following commands:

```
mkdir build &&
cd    build &&

cmake -DCMAKE_INSTALL_PREFIX=$KDE_PREFIX \
      -DSYSCONF_INSTALL_DIR=/etc          \
      -DCMAKE_BUILD_TYPE=Release          \
      -Wno-dev .. &&
make
```

Now, as the *root* user:

```
make install
```

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, kontact, korgac, korganizer, korganizer-mobile, ksendemail, ktimetracker, ktnef, kwatchgnupg, notes-mobile, pimsettingexporter and tasks-mobile

Installed Libraries: several in $KDE_PREFIX/lib
Installed Directories: several in $KDE_PREFIX/share

Last updated on 2014-09-17 21:56:07 -0700

libkexiv2-4.14.1

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-7.6 platform.

Package Information

- Download (HTTP): **http://download.kde.org/stable/4.14.1/src/libkexiv2-4.14.1.tar.xz**
- Download MD5 sum: 69ec5c37992a3530e648bee944b47481
- Download size: 136 KB
- Estimated disk space required: 12.5 MB
- Estimated build time: 0.3 SBU

libkexiv2 Dependencies

Required

kdelibs-4.14.1 and Exiv2-0.24

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/libkexiv2

Installation of libkexiv2

Install libkexiv2 by running the following commands:

```
mkdir build &&
cd    build &&

cmake -DCMAKE_INSTALL_PREFIX=$KDE_PREFIX \
      -DCMAKE_BUILD_TYPE=Release          \
      -Wno-dev .. &&
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

Last updated on 2014-09-17 21:56:07 -0700

Kdeplasma-addons-4.14.1

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-7.6 platform.

- Download (HTTP): http://download.kde.org/stable/4.14.1/src/kdeplasma-addons-4.14.1.tar.xz
- Download MD5 sum: 6edf192ec28a2464636f1edfdabe1752
- Download size: 1.7 MB
- Estimated disk space required: 90 MB
- Estimated build time: 3.0 SBU

Kdeplasma-addons Dependencies

Required

kde-workspace-4.11.12 and kdepimlibs-4.14.1

Optional

libkexiv2-4.14.1, QJson-0.8.1, **Eigen** (for the Mandelbrot wallpaper plugin), **IBus**, **Nepomuk**, **Marble** (for the desktop globe wallpaper),and **QOAuth** (needed for the Plasma microblog dataengine)

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/kdeplasma-addons

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         \
      -Wno-dev .. &&
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

Last updated on 2014-09-17 21:56:07 -0700

Okular-4.14.1

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-7.6 platform.

Package Information

- Download (HTTP): **http://download.kde.org/stable/4.14.1/src/okular-4.14.1.tar.xz**
- Download MD5 sum: 3cc19ac6210cdea3debed8db052b3bea
- Download size: 1.5 MB
- Estimated disk space required: 50 MB
- Estimated build time: 1.3 SBU

Okular Dependencies

Required

kactivities-4.13.3, FreeType-2.5.3, qimageblitz-0.0.6, LibTIFF-4.0.3, libjpeg-turbo-1.3.1, and Poppler-0.26.4 (required for PDF support)

> **Note**
>
> For PDF support in Okular you need to configure Poppler using `--enable-xpdf-headers` .

Optional

libkexiv2-4.14.1, **ActiveApp** (for developing applications for Plasma Active), **libspectre** (for PostScript support), **libchm**, **DjVuLibre**, **libepub**, and **Mobipocket**

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/okular

Installation of Okular

Install Okular by running the following commands:

```
mkdir build &&
cd    build &&

cmake -DCMAKE_INSTALL_PREFIX=$KDE_PREFIX \
      -DCMAKE_BUILD_TYPE=Release         \
      -Wno-dev .. &&
make
```

Now, as the *root* user:

```
make install
```

Contents

Installed Programs: okular
Installed Libraries: libokularcore.so and several in $KDE_PREFIX/lib/kde4
Installed Directories: $KDE_PREFIX/include/okular and several in $KDE_PREFIX/lib and $KDE_PREFIX/share

Short Descriptions

okular   is the KDE document viewer.

Last updated on 2014-09-17 21:56:07 -0700

libkdcraw-4.14.1

Introduction to libkdcraw

Libkdcraw is a C++ interface around the LibRaw library used to decode RAW picture files.

This package is known to build and work properly using an LFS-7.6 platform.

Package Information

- Download (HTTP): **http://download.kde.org/stable/4.14.1/src/libkdcraw-4.14.1.tar.xz**
- Download MD5 sum: d5497ccf5d8ffe89842317bed460b5dd
- Download size: 100 KB
- Estimated disk space required: 5.7 MB
- Estimated build time: 0.1 SBU

Libkdcraw Dependencies

Required

kdelibs-4.14.1 and libraw-0.16.0

Installation of libkdcraw

Install libkdcraw by running the following commands:

```
mkdir build &&
cd    build &&

cmake -DCMAKE_INSTALL_PREFIX=$KDE_PREFIX \
      -DCMAKE_BUILD_TYPE=Release         \
      -Wno-dev .. &&
make
```

Now, as the *root* user:

```
make install
```

Contents

Installed Programs: None
Installed Library: libkdcraw.so
Installed Directories: $KDE_PREFIX/include/libkdcraw and $KDE_PREFIX/share/apps/libkdcraw

Last updated on 2014-04-17 04:42:57 -0500

Gwenview-4.14.1

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-7.6 platform.

Package Information

- Download (HTTP): **http://download.kde.org/stable/4.14.1/src/gwenview-4.14.1.tar.xz**
- Download MD5 sum: fcdcbced6691d42a4480b3fe118bc1d6
- Download size: 2.8 MB
- Estimated disk space required: 35 MB
- Estimated build time: 1.2 SBU

Gwenview Dependencies

Required

libkdcraw-4.14.1 and kdelibs-4.14.1

Recommended

kactivities-4.13.3, kde-baseapps-4.14.1, libkexiv2-4.14.1, and libjpeg-turbo-1.3.1

Optional

Little CMS-2.6 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 \
```

Now, as the *root* user:

```
make install
```

Contents

Installed Programs: gwenview and gwenview_importer
Installed Libraries: libgwenviewlib.so and gvpart.so
Installed Directories: several in $KDE_PREFIX/share

Short Descriptions

`gwenview`   is the KDE image viewer.

Last updated on 2014-09-17 21:56:07 -0700

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.

- Kaccessible: Accessibility utilities.

- Kwalletmanager: Credentials management application.

- Marble: A global map program.

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          \
      -Wno-dev .. &&
make
```

And as the *root* user:

```
make install
```

Last updated on 2014-04-17 02:42:57 -0700

Part VIII. Selected GNOME Applications

Chapter 30. GNOME Libraries and Utilities

The objective of this section is not to build a GNOME desktop, because it depends on Systemd, which BLFS doesn't support. Rather, it provides packages required for some platform independent GNOME applications to build and run properly under any Window Manager (e.g. Fluxbox, Icewm, Openbox, Sawfish), or Desktop Environment (e.g. KDE, XFCE, LXDE).

gsettings-desktop-schemas-3.12.2

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-7.6 platform.

Package Information

- Download (HTTP): **http://ftp.gnome.org/pub/gnome/sources/gsettings-desktop-schemas/3.12/gsettings-desktop-schemas-3.12.2.tar.xz**
- Download (FTP): **ftp://ftp.gnome.org/pub/gnome/sources/gsettings-desktop-schemas/3.12/gsettings-desktop-schemas-3.12.2.tar.xz**
- Download MD5 sum: 9f68571f20369a008d14b42a648568b5
- Download size: 472 KB
- Estimated disk space required: 13 MB
- Estimated build time: less than 0.1 SBU

GSettings Desktop Schemas Dependencies

Required

GLib-2.40.0

Recommended

gobject-introspection-1.40.0

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/gsettings-desktop-schemas

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

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-7.6 platform.

Package Information

- Download (HTTP): **http://ftp.gnome.org/pub/gnome/sources/yelp-xsl/3.12/yelp-xsl-3.12.0.tar.xz**
- Download (FTP): **ftp://ftp.gnome.org/pub/gnome/sources/yelp-xsl/3.12/yelp-xsl-3.12.0.tar.xz**
- Download MD5 sum: 662317dc4f6aeafce0d4ffb2b3766115
- Download size: 552 KB
- Estimated disk space required: 9.5 MB
- Estimated build time: less than 0.1 SBU

Yelp XSL Dependencies

Required

libxslt-1.1.28 and Itstool-2.0.2

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/yelp-xsl

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

Installed Programs: None
Installed Libraries: None
Installed Directory: /usr/share/yelp-xsl

Last updated on 2014-09-17 21:56:07 -0700

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-7.6 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

Recommended

[gobject-introspection-1.40.0](), [GTK+-3.12.2]() and [Polkit-0.112]()

Optional

[GTK-Doc-1.20]() and [OpenLDAP-2.4.39]()

User Notes: *http://wiki.linuxfromscratch.org/blfs/wiki/gconf*

Installation of GConf

Install GConf by running the following commands:

```
./configure --prefix=/usr \
            --sysconfdir=/etc \
            --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

Installed Programs: gconf-merge-tree, gconftool-2, gsettings-data-convert and gsettings-schema-convert
Installed Libraries: libgconf-2.so
Installed Directories: /etc/gconf, /usr/include/gconf, /usr/lib/GConf, /usr/share/gtk-doc/html/gconf and /usr/share/sgml/gconf

Short Descriptions

`gconf-merge-tree`	merges an XML filesystem hierarchy.
`gconftool-2`	is a command line tool used for manipulating the GConf database.
`gsettings-data-convert`	reads values out of the users GConf database and stores them in GSettings.
`gsettings-schemas-convert`	converts between GConf and GSettings schema file formats.
`libgconf-2.so`	provides the functions necessary to maintain the configuration database.

Last updated on 2014-09-16 10:29:57 -0700

libsecret-0.18

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-7.6 platform.

Package Information

- Download (HTTP): **http://ftp.gnome.org/pub/gnome/sources/libsecret/0.18/libsecret-0.18.tar.xz**
- Download (FTP): **ftp://ftp.gnome.org/pub/gnome/sources/libsecret/0.18/libsecret-0.18.tar.xz**
- Download MD5 sum: 279d723cd005e80d1d304f74a3488acc
- Download size: 472 KB

libsecret Dependencies

Required

[GLib-2.40.0](#)

Recommended

[gobject-introspection-1.40.0](#), [libgcrypt-1.6.2](#), and [Vala-0.24.0](#)

Optional

[GTK-Doc-1.20](#) and [docbook-xml-4.5](#), [docbook-xsl-1.78.1](#), and [libxslt-1.1.28](#) (to build manual pages)

Optional (Required for the testsuite)

[D-Bus Python-1.2.0](#), [Gjs-1.40.1](#), and [PyGObject-2.28.6](#)

Runtime Dependency

[gnome-keyring-3.12.2](#)

> **Note**
>
> Any package requiring libsecret, expect GNOME Keyring to be present at runtime.

User Notes: [***http://wiki.linuxfromscratch.org/blfs/wiki/libsecret***](http://wiki.linuxfromscratch.org/blfs/wiki/libsecret)

Installation of libsecret

Install libsecret by running the following commands:

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

Now, as the *root* user:

```
make install
```

To test the results, issue: `make -k check`, after the package is installed. Test suite should be run from a local GUI session started with dbus-launch. Some tests might still fail and hang, for unknown reasons.

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-1.6.2](#).

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.

Last updated on 2014-09-16 13:49:04 -0700

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-7.6 platform.

Package Information

- Download (HTTP): **http://ftp.gnome.org/pub/gnome/sources/gcr/3.12/gcr-3.12.2.tar.xz**
- Download (FTP): **ftp://ftp.gnome.org/pub/gnome/sources/gcr/3.12/gcr-3.12.2.tar.xz**
- Download MD5 sum: 8d4564abbbd6c4aa03a68a016c692d96
- Download size: 1.3 MB
- Estimated disk space required: 58 MB (additional 4 MB for tests)
- Estimated build time: 0.8 SBU (additional 0.1 SBU for tests)

Gcr Dependencies

Required

GLib-2.40.0, libgcrypt-1.6.2, libtasn1-4.1, and p11-kit-0.20.6

Recommended

GnuPG-2.0.26, gobject-introspection-1.40.0, GTK+-3.12.2, libxslt-1.1.28, and Vala-0.24.0

Optional

GTK-Doc-1.20 and Valgrind-3.10.0

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/gcr

Installation of Gcr

Install Gcr by running the following commands:

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

A session bus address is necessary to run the tests. To test the results, issue: `make check`.

Now, as the *root* user:

```
make install
```

Command Explanations

`--without-gtk`: Use this switch if you haven't installed GTK+-3.12.2.

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

Contents

Installed Program: gcr-viewer and gcr-prompter
Installed Libraries: libgck-1.so, libgcr-3.so, libgcr-base-3.so and libgcr-ui-3.so
Installed Directories: /usr/include/gck-1, /usr/include/gcr-3, /usr/share/gcr-3, /usr/share/gtk-doc/html/gck, and /usr/share/gtk-doc/html/gcr-3

Short Descriptions

`gcr-prompter`	provides the prompt dialog needed by libgcr.
`gcr-viewer`	is used to view certificate and key files.
`libgck-1.so`	contains GObject bindings for PKCS#11.
`libgcr-3.so`	contains functions for high level crypto parsing.

gnome-keyring-3.12.2

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-7.6 platform.

Package Information

- Download (HTTP): **http://ftp.gnome.org/pub/gnome/sources/gnome-keyring/3.12/gnome-keyring-3.12.2.tar.xz**
- Download (FTP): **ftp://ftp.gnome.org/pub/gnome/sources/gnome-keyring/3.12/gnome-keyring-3.12.2.tar.xz**
- Download MD5 sum: 63db70619f58e9cbd70c0b7d2285f26f
- Download size: 1.2 MB
- Estimated disk space required: 92 MB
- Estimated build time: 0.7 SBU (additional 0.2 SBU for tests)

GNOME Keyring Dependencies

Required

D-Bus-1.8.8 and Gcr-3.12.2

Recommended

Linux-PAM-1.1.8 and libxslt-1.1.28

Optional

libcap-ng, GnuPG-2.0.26, OpenSSH-6.6p1 and Valgrind-3.10.0

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/gnome-keyring

Installation of GNOME Keyring

Install GNOME Keyring by running the following commands:

```
./configure --prefix=/usr      \
            --sysconfdir=/etc \
            --with-pam-dir=/lib/security &&
make
```

A session bus address is necessary to run the tests. To test the results, issue: `make -k check`. Some tests fail for unknown reasons.

Now, as the *root* user:

```
make install
```

Command Explanations

`--with-pam-dir=/lib/security`: This switch specifies where the PAM module will be installed.

Contents

Installed Programs: gnome-keyring (symlink), gnome-keyring-3, and gnome-keyring-daemon
Installed Libraries: gnome-keyring-pkcs11.so, pam_gnome_keyring.so, and several under /usr/lib/gnome-keyring/devel
Installed Directory: /usr/lib/gnome-keyring/devel

Short Descriptions

gnome-keyring-daemon is a session daemon that keeps passwords for users.

Last updated on 2014-09-19 13:13:19 -0700

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-7.6 platform.

Package Information

- Download (HTTP): **http://ftp.gnome.org/pub/gnome/sources/gvfs/1.20/gvfs-1.20.3.tar.xz**
- Download (FTP): **ftp://ftp.gnome.org/pub/gnome/sources/gvfs/1.20/gvfs-1.20.3.tar.xz**
- Download MD5 sum: 710f68730d6ad6708f0f1d47976bff58
- Download size: 1.5 MB
- Estimated disk space required: 56 MB (additional 1 MB for the tests)
- Estimated build time: 0.7 SBU (additional 0.1 SBU for the tests)

Gvfs Dependencies

Required

D-Bus-1.8.8 and GLib-2.40.0

Recommended

GTK+-3.12.2, libsecret-0.18, libsoup-2.46.0, udev-extras (from eudev) (for GUdev), and UDisks-2.1.3

Optional

Apache-2.4.10, Avahi-0.6.31, BlueZ-5.23, dbus-glib-0.102, Fuse-2.9.3, GTK-Doc-1.20, libarchive-3.1.2, libgcrypt-1.6.2, libxml2-2.9.1, libxslt-1.1.28, OpenSSH-6.6p1, Samba-4.1.11, **GNOME Online Accounts**, **libbluray**, **libcdio-paranoia**, **libgphoto2**, **libimobiledevice**, **libmtp**, and **Twisted**,

Optional (Runtime)

obex-data-server-0.4.6

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/gvfs

Installation of Gvfs

Install Gvfs by running the following commands:

```
./configure --prefix=/usr \
            --sysconfdir=/etc \
            --disable-gphoto2 &&
make
```

To test the results, issue: `make -k check`. Some tests may fail, normally for a missing optional dependency.

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.

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

Installed Programs:	gvfs-cat, gvfs-copy, gvfs-goa-volume-monitor, 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, gvfs-udisks2-volume-monitor, gvfsd, gvfsd-afp, gvfsd-afp-browse, gvfsd-archive, gvfsd-burn, gvfsd-computer, gvfsd-dav, gvfsd-dnssd, gvfsd-ftp, gvfsd-fuse, gvfsd-http, gvfsd-localtest, gvfsd-metadata, gvfsd-network, gvfsd-obexftp, gvfsd-recent, gvfsd-sftp, gvfsd-smb, gvfsd-smb-browse, and gvfsd-trash
Installed Library:	libgvfscommon.so, libgvfsdaemon.so, and two under /usr/lib/gio/modules/
Installed Directories:	/usr/include/gvfs-client, /usr/lib/gvfs, and /usr/share/gvfs

Short Descriptions

gvfs-cat	concatenates the given files and prints them to the standard output.
gvfs-copy	copies a file from one URI location to another.
gvfs-info	shows information about the given locations.
gvfs-less	executes `less` using the VFS as input preprocesor, so less can access any resource accessible by any of the Gvfs backends.
gvfs-ls	lists information about the given locations.
gvfs-mime	is used to query information about applications that are registered to handle a mime-type, or set the default handler for a mime-type.
gvfs-mkdir	creates a directory specified by an URI.
gvfs-monitor-dir	prints information about file creation, deletion, file content and attribute changes and mount and unmount operations inside the specified directories.
gvfs-monitor-file	prints information about creation, deletion, content and attribute changes and mount and unmount operations affecting the monitored files.
gvfs-mount	provides commandline access to various aspects of GIOs mounting functionality.
gvfs-move	moves a file from one URI location to another.
gvfs-open	opens files with the default application that is registered to handle files of that type.
gvfs-rename	changes the name of a file or directory.
gvfs-rm	removes a file.
gvfs-save	reads from the standard input and saves the data to the given location.
gvfs-set-attribute	allows to set a file attribute on a file.
gvfs-trash	sends files or directories to the "Trashcan".
gvfs-tree	lists the contents of the given directories recursively, in a tree-like format.
gvfsd	is the main daemon for the Gvfs virtual filesystem.
gvfsd-fuse	maintains a FUSE mount to make Gvfs backends available to POSIX applications.
gvfsd-metadata	is a daemon acting as a write serialiser to the internal Gvfs metadata storage.
libgvfscommon.so	contains the common API functions used in Gvfs programs.

Last updated on 2014-09-17 04:20:33 -0700

Gjs-1.40.1

Introduction to Gjs

Gjs is a Javascript binding for GNOME.

This package is known to build and work properly using an LFS-7.6 platform.

Package Information

- Download (HTTP): **http://ftp.gnome.org/pub/gnome/sources/gjs/1.40/gjs-1.40.1.tar.xz**
- Download (FTP): **ftp://ftp.gnome.org/pub/gnome/sources/gjs/1.40/gjs-1.40.1.tar.xz**
- Download MD5 sum: 150580858bc40d0dbc9df43741eb2ad3
- Download size: 440 KB
- Estimated disk space required: 24 MB (additional 1 MB for the tests)
- Estimated build time: 0.3 SBU (additional 0.1 SBU for the tests)

Gjs Dependencies

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/gjs

Installation of Gjs

Install Gjs by running the following commands:

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

To test the results, issue: `make -k check`. Testsuite fails, for unknown reasons.

Now, as the *root* user:

```
make install
```

Command Explanations

`--libexecdir=/usr/lib`: This option will put the package's private programs into `/usr/lib/gjs` instead of `/usr/libexec/gjs` in accordance with the old version of the FHS used before LFS-7.5..

Contents

Installed Programs: gjs (symlink) and gjs-console
Installed Library: libgjs.so
Installed Directories: /usr/include/gjs-1.0, /usr/lib/gjs, and /usr/libexec/gjs

Short Descriptions

`libgjs.so`   contains the GNOME JavaScript bindings.

Last updated on 2014-09-19 13:13:19 -0700

---

gnome-desktop-3.12.2

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-7.6 platform.

Package Information

- Download (HTTP): **http://ftp.gnome.org/pub/gnome/sources/gnome-desktop/3.12/gnome-desktop-3.12.2.tar.xz**
- Download (FTP): **ftp://ftp.gnome.org/pub/gnome/sources/gnome-desktop/3.12/gnome-desktop-3.12.2.tar.xz**
- Download MD5 sum: 9f1dd733a19e0bc4e5b923771f826509
- Download size: 1.1 MB
- Estimated disk space required: 24 MB
- Estimated build time: 0.3 SBU

GNOME Desktop Dependencies

Required

gsettings-desktop-schemas-3.12.2, GTK+-3.12.2, ISO Codes-3.56, xkeyboard-config-2.12, and yelp-xsl-3.12.0

Recommended

gobject-introspection-1.40.0

Optional

Installation of GNOME Desktop

Install GNOME Desktop 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-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

Installed Programs: None

Installed Library: libgnome-desktop-3.so

Installed Directories: /usr/include/gnome-desktop-3.0, /usr/share/gnome, /usr/share/gtk-doc/html/gnome-desktop3, /usr/share/help/*/gpl, /usr/share/help/*/lgpl, /usr/share/help/*/fdl, and /usr/share/libgnome-desktop-3.0

Short Descriptions

`libgnome-desktop-3.so`   contains functions shared by several GNOME applications.

Last updated on 2014-09-17 21:56:07 -0700

---

gnome-video-effects-0.4.1

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-7.6 platform.

Package Information

- Download (HTTP): **http://ftp.gnome.org/pub/gnome/sources/gnome-video-effects/0.4/gnome-video-effects-0.4.1.tar.xz**
- Download (FTP): **ftp://ftp.gnome.org/pub/gnome/sources/gnome-video-effects/0.4/gnome-video-effects-0.4.1.tar.xz**
- Download MD5 sum: aa0838f5be12f524ba5622e1b61d21b1
- Download size: 144 KB
- Estimated disk space required: 1.9 MB
- Estimated build time: less than 0.1 SBU

GNOME Video Effects Dependencies

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/gnome-video-effects

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.

Contents

Installed Programs: None
Installed Libraries: None
Installed Directory: /usr/share/gnome-video-effects

Last updated on 2014-09-19 13:13:19 -0700

gtksourceview-3.12.3

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-7.6 platform.

Package Information

- Download (HTTP): **http://ftp.gnome.org/pub/gnome/sources/gtksourceview/3.12/gtksourceview-3.12.3.tar.xz**
- Download (FTP): **ftp://ftp.gnome.org/pub/gnome/sources/gtksourceview/3.12/gtksourceview-3.12.3.tar.xz**
- Download MD5 sum: 6d9aa2cf925751bf708feaf74d3317b0
- Download size: 1.2 MB
- Estimated disk space required: 38 MB (additional 1 MB for the tests and 2 MB to rebuild and install the API documentation)
- Estimated build time: 0.4 SBU (additional less than 0.1 SBU for the tests and less than 0.1 SBU to rebuild and install the API documentation)

GtkSourceView Dependencies

Required

GTK+-3.12.2

Recommended

gobject-introspection-1.40.0

Optional

Glade and GTK-Doc-1.20

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/gtksourceview

Installation of GtkSourceView

Install GtkSourceView by running the following commands:

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

If the test suite is run before this package is installed, one test may fail.

Now, as the *root* user:

```
make install
```

To test the results, issue `make check`. The tests need to be run in a graphical environment.

Command Explanations

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

Installed Library: libgtksourceview-3.0.so

Installed Directories: /usr/include/gtksourceview-3.0, /usr/share/gtk-doc/html/gtksourceview-3.0, and
/usr/share/gtksourceview-3.0

Short Descriptions

`libgtksourceview-3.0.so`   contains function extensions for the GtkTextView widget.

Last updated on 2014-09-19 13:13:19 -0700

libgtop-2.30.0

Introduction to libgtop

The libgtop package contains the GNOME top libraries.

This package is known to build and work properly using an LFS-7.6 platform.

Package Information

- Download (HTTP): **http://ftp.gnome.org/pub/gnome/sources/libgtop/2.30/libgtop-2.30.0.tar.xz**
- Download (FTP): **ftp://ftp.gnome.org/pub/gnome/sources/libgtop/2.30/libgtop-2.30.0.tar.xz**
- Download MD5 sum: ee29a9ef60659ebf4b075ac281f71cb2
- Download size: 652 KB
- Estimated disk space required: 16 MB
- Estimated build time: 0.2 SBU

libgtop Dependencies

Required

GLib-2.40.0 and Xorg Libraries

Recommended

gobject-introspection-1.40.0

Optional

GTK-Doc-1.20

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/libgtop

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

Short Descriptions

`libgtop-2.0.so`   contains the functions that allow access to system performance data.

Last updated on 2014-09-19 13:13:19 -0700

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libpeas-1.10.1

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-7.6 platform.

Package Information

- Download (HTTP): **http://ftp.gnome.org/pub/gnome/sources/libpeas/1.10/libpeas-1.10.1.tar.xz**
- Download (FTP): **ftp://ftp.gnome.org/pub/gnome/sources/libpeas/1.10/libpeas-1.10.1.tar.xz**
- Download MD5 sum: 62cda826762dd0ec9380f7af6637516a
- Download size: 504 KB
- Estimated disk space required: 16 MB (additional 6 MB for the tests)
- Estimated build time: 0.3 SBU

libpeas Dependencies

Required

gobject-introspection-1.40.0 and GTK+-3.12.2

Recommended

PyGObject-3.12.2 (Python 2 and Python 3 modules)

Optional

GDB-7.8, GTK-Doc-1.20, Valgrind-3.10.0, **Glade**, and **Seed**

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/libpeas

Installation of libpeas

Install libpeas by running the following commands:

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

To test the results, issue: `make check 2>&1 | tee ../libpeas-make-check.log`. Check the results with `egrep '(FAIL|PASS)' ../libpeas-make-check.log`. An active graphical session with bus address is necessary to run the tests.

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: peas-demo

Installed Libraries: libpeas-1.0.so and libpeas-gtk-1.0.so and several libraries under /usr/lib/{libpeas-1.0,peas-demo}

Installed Directories:/usr/include/libpeas-1.0, /usr/lib/libpeas-1.0, /usr/lib/peas-demo and /usr/share/gtk-doc/html/libpeas

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+ widgets.

Last updated on 2014-09-19 13:13:19 -0700

---

libwnck-3.4.9

Introduction to libwnck

The libwnck package contains the Window Navigator Construction Kit.

This package is known to build and work properly using an LFS-7.6 platform.

Package Information

- Download (HTTP): **http://ftp.gnome.org/pub/gnome/sources/libwnck/3.4/libwnck-3.4.9.tar.xz**
- Download (FTP): **ftp://ftp.gnome.org/pub/gnome/sources/libwnck/3.4/libwnck-3.4.9.tar.xz**
- Download MD5 sum: 5cb080285e8d5d6a70424cfb43bbf440
- Download size: 660 KB
- Estimated disk space required: 18 MB
- Estimated build time: 0.2 SBU

libwnck Dependencies

Required

GTK+-3.12.2

Recommended

gobject-introspection-1.40.0 and startup-notification-0.12

Optional

GTK-Doc-1.20

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/libwnck

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

Installed Program: wnckprop and wnck-urgency-monitor
Installed Library: libwnck-3.so
Installed Directories: /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.

totem-pl-parser-3.10.2

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-7.6 platform.

Package Information

- Download (HTTP): **http://ftp.gnome.org/pub/gnome/sources/totem-pl-parser/3.10/totem-pl-parser-3.10.2.tar.xz**
- Download (FTP): **ftp://ftp.gnome.org/pub/gnome/sources/totem-pl-parser/3.10/totem-pl-parser-3.10.2.tar.xz**
- Download MD5 sum: 554242a4e3e0864e825cdf0ea3720a6d
- Download size: 1.6 MB
- Estimated disk space required: 10 MB (additional 3 MB for the tests)
- Estimated build time: 0.2 SBU (additional 0.1-0.9 SBU for the tests)

Totem PL Parser Dependencies

Required

GMime-2.6.20 and libsoup-2.46.0

Recommended

gobject-introspection-1.40.0, libarchive-3.1.2, and libgcrypt-1.6.2

Optional

GTK-Doc-1.20, **lcov**, and **libquvi (version 0.9) and libquvi-scripts** - if they are installed, then **lua-socket (git)** is necessary for the tests

User Notes: *http://wiki.linuxfromscratch.org/blfs/wiki/totem-pl-parser*

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 successfully complete all tests. In a graphical section with gvfs running, test suite take much longer.

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

VTE-0.36.3

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-7.6 platform.

Package Information

- Download (HTTP): **http://ftp.gnome.org/pub/gnome/sources/vte/0.36/vte-0.36.3.tar.xz**
- Download (FTP): **ftp://ftp.gnome.org/pub/gnome/sources/vte/0.36/vte-0.36.3.tar.xz**
- Download MD5 sum: 3f9df4c9a67b09bf5c660bf5c3bae109
- Download size: 992 KB
- Estimated disk space required: 19 MB (additional 3 MB for the tests)
- Estimated build time: 0.3 SBU (additional 0.1 SBU for the tests)

VTE Dependencies

Required

GTK+-3.12.2

Recommended

gobject-introspection-1.40.0

Optional

Glade and GTK-Doc-1.20

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/vte

Installation of VTE

Install VTE by running the following commands:

```
./configure --prefix=/usr            \
            --sysconfdir=/etc        \
            --disable-static         \
            --enable-introspection && 
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-1.40.0 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.

`--libexecdir=/usr/lib/vte-2.90`: This option puts the package's private program into `/usr/lib/vte-2.90` instead of `/usr/libexec` in accordance with the old version of the FHS used before LFS-7.5.

Contents

Installed Program: vte2_90 and gnome-pty-helper

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.

Last updated on 2014-09-19 13:13:19 -0700

Required Runtime Dependencies

Last updated on 2013-06-01 05:19:53 -0700

DConf-0.20.0

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-7.6 platform.

Package Information

- Download (HTTP): **http://ftp.gnome.org/pub/gnome/sources/dconf/0.20/dconf-0.20.0.tar.xz**
- Download (FTP): **ftp://ftp.gnome.org/pub/gnome/sources/dconf/0.20/dconf-0.20.0.tar.xz**
- Download MD5 sum: 542db78e4867ac575ec0f69f79b3eebd
- Download size: 384 KB
- Estimated disk space required: 15 MB
- Estimated build time: 0.2 SBU

DConf Dependencies

Required

D-Bus-1.8.8, GTK+-3.12.2, and libxml2-2.9.1

Recommended

Vala-0.24.0

Optional

GTK-Doc-1.20

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/dconf

Installation of DConf

Install DConf 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.

Installed Libraries: libdconf-dbus-1.so, libdconf.so and /usr/lib/gio/modules/libdconfsettings.so
Installed Directories: /usr/include/dconf, /usr/include/dconf-dbus-1, and /usr/share/gtk-doc/html/dconf

Short Descriptions

dconf	is a simple tool for manipulating the DConf database.
dconf-editor	is a graphical program for editing settings that are stored in the DConf database.
dconf-service	is the D-Bus service that writes to the DConf database.
libdconf.so	contains the DConf client API functions.
libdconf-dbus-1.so	contains the DConf client API functions for D-Bus.

Last updated on 2014-09-14 14:01:57 -0700

gnome-icon-theme-3.12.0

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-7.6 platform.

Package Information

- Download (HTTP): **http://ftp.gnome.org/pub/gnome/sources/gnome-icon-theme/3.12/gnome-icon-theme-3.12.0.tar.xz**
- Download (FTP): **ftp://ftp.gnome.org/pub/gnome/sources/gnome-icon-theme/3.12/gnome-icon-theme-3.12.0.tar.xz**
- Download MD5 sum: f14bed7f804e843189ffa7021141addd
- Download size: 17 MB
- Estimated disk space required: 85 MB
- Estimated build time: 0.5 SBU

GNOME Icon Theme Dependencies

Required

GTK+-3.12.2 or GTK+-2.24.24, hicolor-icon-theme-0.13, and icon-naming-utils-0.8.90

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/gnome-icon-theme

Installation of GNOME Icon Theme

Install GNOME Icon Theme by running the following commands:

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

This package does not come with a test suite.

Now, as the *root* user:

```
make install
```

Contents

Installed Programs: None
Installed Libraries: None
Installed Directory: /usr/share/icons/gnome

Last updated on 2014-09-17 04:20:33 -0700

gnome-icon-theme-extras-3.12.0

This package is known to build and work properly using an LFS-7.6 platform.

Package Information

- Download (HTTP): **http://ftp.gnome.org/pub/gnome/sources/gnome-icon-theme-extras/3.12/gnome-icon-theme-extras-3.12.0.tar.xz**
- Download (FTP): **ftp://ftp.gnome.org/pub/gnome/sources/gnome-icon-theme-extras/3.12/gnome-icon-theme-extras-3.12.0.tar.xz**
- Download MD5 sum: 91f8f7e35a3d8d926716d88b8b1e9a29
- Download size: 1.7 MB
- Estimated disk space required: 12 MB
- Estimated build time: less than 0.1 SBU

GNOME Icon Theme Extras Dependencies

Required

gnome-icon-theme-3.12.0

User Notes: *http://wiki.linuxfromscratch.org/blfs/wiki/gnome-icon-theme-extras*

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
```

Last updated on 2014-09-14 14:01:57 -0700

gnome-icon-theme-symbolic-3.12.0

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-7.6 platform.

Package Information

- Download (HTTP): **http://ftp.gnome.org/pub/gnome/sources/gnome-icon-theme-symbolic/3.12/gnome-icon-theme-symbolic-3.12.0.tar.xz**
- Download (FTP): **ftp://ftp.gnome.org/pub/gnome/sources/gnome-icon-theme-symbolic/3.12/gnome-icon-theme-symbolic-3.12.0.tar.xz**
- Download MD5 sum: 3c9c0e6b9fa04b3cbbb84da825a26fd9
- Download size: 228 KB
- Estimated disk space required: 6.8 MB
- Estimated build time: less than 0.1 SBU

GNOME Icon Theme Symbolic Dependencies

Required

gnome-icon-theme-3.12.0

User Notes: *http://wiki.linuxfromscratch.org/blfs/wiki/gnome-icon-theme-symbolic*

Installation of GNOME Icon Theme Symbolic

```
make
```

This package does not come with a test suite.

Now, as the *root* user:

```
make install
```

Contents

Installed Programs: None
Installed Libraries: None
Installed Directories: /usr/share/icons/gnome/scalable

Last updated on 2014-09-14 14:01:57 -0700

gnome-themes-standard-3.12.0

Introduction to GNOME Themes Standard

The GNOME Themes Standard package contains various components of the default GNOME theme.

This package is known to build and work properly using an LFS-7.6 platform.

Package Information

- Download (HTTP): **http://ftp.gnome.org/pub/gnome/sources/gnome-themes-standard/3.12/gnome-themes-standard-3.12.0.tar.xz**
- Download (FTP): **ftp://ftp.gnome.org/pub/gnome/sources/gnome-themes-standard/3.12/gnome-themes-standard-3.12.0.tar.xz**
- Download MD5 sum: 5036f65f08bbe305ff82c9ab97b2aa3f
- Download size: 5.7 MB
- Estimated disk space required: 49 MB
- Estimated build time: 0.6 SBU

GNOME Themes Standard Dependencies

Required

GTK+-2.24.24 or GTK+-3.12.2 with librsvg-2.40.3 or both

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/gnome-themes-standard

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
```

Command Explanations

`--disable-gtk2-engine`: This switch disables GTK+-2 theming engine.

`--disable-gtk3-engine`: This switch disables GTK+-3 theming engine.

Contents

Installed Programs: None
Installed Library: libadwaita.so

Short Descriptions

`libadwaita.so`   is the Adwaita GTK+ theme.

Last updated on 2014-09-14 14:01:57 -0700

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-7.6 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: 0.1 SBU

Notification Daemon Dependencies

Required

GTK+-3.12.2 and libcanberra-0.30 (Built with GTK+-3.12.2 support).

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/notification-daemon

Installation of Notification Daemon

Install Notification Daemon 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
```

Contents

Installed Program: notification-daemon
Installed Libraries: none
Installed Directory: none

Short Descriptions

`notification-daemon`   is the Notification Daemon itself.

Last updated on 2014-09-14 14:01:57 -0700

polkit-gnome-0.105

Introduction to Polkit GNOME

This package is known to build and work properly using an LFS-7.6 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+-3.12.2 and Polkit-0.112

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/polkit-gnome

Installation of Polkit GNOME

Install Polkit GNOME 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 Polkit GNOME

Automatic Startup

For the authentification framework to work, `polkit-gnome-authentification-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/libexec/polkit-gnome-authentication-agent-1
Terminal=false
Type=Application
Categories=
NoDisplay=true
OnlyShowIn=GNOME;XFCE;Unity;
AutostartCondition=GNOME3 unless-session gnome
EOF
```

Contents

Installed Program: polkit-gnome-authentication-agent-1
Installed Libraries: None
Installed Directory: None

Short Descriptions

`polkit-gnome-authentication-agent-1`   is the Polkit authentication agent.

Last updated on 2014-09-19 13:13:19 -0700

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-7.6 platform.

Package Information

- Download (HTTP): **http://ftp.gnome.org/pub/gnome/sources/yelp/3.12/yelp-3.12.0.tar.xz**
- Download (FTP): **ftp://ftp.gnome.org/pub/gnome/sources/yelp/3.12/yelp-3.12.0.tar.xz**
- Download MD5 sum: 02f0383b02960766ea46059b9a02cf85
- Download size: 1.4 MB
- Estimated disk space required: 25 MB
- Estimated build time: 0.2 SBU

Yelp Dependencies

Required

WebKitGTK+-2.4.5 and yelp-xsl-3.12.0

Optional

GTK-Doc-1.20

> **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.

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/yelp

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: gnome-help (symlink) and yelp
Installed Library: libyelp.so
Installed Directories: /usr/include/libyelp, /usr/share/gtk-doc/html/libyelp, /usr/share/yelp-xsl, and /usr/share/yelp

Short Descriptions

`yelp` is the GNOME Help Browser.

`libyelp.so` contains the Yelp API functions.

Last updated on 2014-09-19 13:13:19 -0700

These packages are desktop applications and assorted utilities from the GNOME project. Feel free to install them on an as needed or as desired basis.

Baobab-3.12.1

Introduction to Baobab

The Baobab package contains a graphical directory tree analyzer.

This package is known to build and work properly using an LFS-7.6 platform.

Package Information

- Download (HTTP): **http://ftp.gnome.org/pub/gnome/sources/baobab/3.12/baobab-3.12.1.tar.xz**
- Download (FTP): **ftp://ftp.gnome.org/pub/gnome/sources/baobab/3.12/baobab-3.12.1.tar.xz**
- Download MD5 sum: 1d265bf555143f7aa0a7d961fd8126c2
- Download size: 852 KB
- Estimated disk space required: 14 MB
- Estimated build time: 0.1 SBU

Baobab Dependencies

Required

GTK+-3.12.2, Vala-0.24.0 and yelp-xsl-3.12.0

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/baobab

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

Installed Program: baobab
Installed Libraries: None
Installed Directories: /usr/share/help/*/baobab

Short Descriptions

baobab   is a graphical tool used to analyze disk usage.

Last updated on 2014-09-21 14:28:22 -0700

Brasero-3.10.0

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-7.6 platform.

Package Information

- Download (HTTP): **http://ftp.gnome.org/pub/gnome/sources/brasero/3.10/brasero-3.10.0.tar.xz**

- Download size: 3.3 MB
- Estimated disk space required: 95 MB (additional 1 MB to rebuild and install the API documentation)
- Estimated build time: 1.9 SBU

Brasero Dependencies

Required

gst-plugins-base-1.4.1, libcanberra-0.30, libnotify-0.7.6, and yelp-xsl-3.12.0

Recommended

gobject-introspection-1.40.0, libburn-1.3.8 and libisofs-1.3.8, Nautilus-3.12.2, and totem-pl-parser-3.10.2

Optional

GTK-Doc-1.20 and **Tracker**

Recommended (Runtime)

dvd+rw-tools-7.1 and Gvfs-1.20.3

Optional (Runtime)

Cdrdao-1.2.3, libdvdcss-1.3.0, one of **cdrkit** or **cdrtools** (conflict), and **VCDImager**

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/brasero

Installation of Brasero

Install Brasero by running the following commands:

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

This package does not come with a test suite.

> **Note**
>
> When installing, the Makefile does some additional linking. If you do not have Xorg in /usr, the LIBRARY_PATH variable needs to be defined for the root user. If using sudo to assume root, use the -E option to pass your current environment variables for the install process.

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: brasero

Installed Libraries: libbrasero-burn3.so, libbrasero-media3.so, libbrasero-utils3.so, several under /usr/lib/brasero3/plugins/, and /usr/lib/nautilus/extensions-3.0/libnautilus-brasero-extension.so

Installed Directories: /usr/include/brasero3, /usr/lib/brasero3, /usr/share/brasero, /usr/share/gtk-doc/html/{libbrasero-burn,libbrasero-media}, and /usr/share/help/*/brasero

Short Descriptions

`brasero`	is a simple and easy to use CD/DVD burning application for the GNOME Desktop.
`libbrasero-burn3.so`	contains the Burning API functions.
`libbrasero-media3.so`	contains the Media API functions.

Cheese-3.12.2

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-7.6 platform.

Package Information

- Download (HTTP): **http://ftp.gnome.org/pub/gnome/sources/cheese/3.12/cheese-3.12.2.tar.xz**
- Download (FTP): **ftp://ftp.gnome.org/pub/gnome/sources/cheese/3.12/cheese-3.12.2.tar.xz**
- Download MD5 sum: fab1e00717d8f3e027b9bb79299e12e8
- Download size: 1.7 MB
- Estimated disk space required: 22 MB
- Estimated build time: 0.4 SBU

Cheese Dependencies

Required

clutter-gst-2.0.12, clutter-gtk-1.4.4, gnome-desktop-3.12.2, gnome-video-effects-0.4.1, gst-plugins-bad-1.4.1, gst-plugins-good-1.4.1, libcanberra-0.30, librsvg-2.40.3, udev-extras (from eudev) (for GUdev), and yelp-xsl-3.12.0

Recommended

appdata-tools-0.1.8, gobject-introspection-1.40.0, and Vala-0.24.0

Optional

GTK-Doc-1.20 and **Nautilus SendTo**

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/cheese

Installation of Cheese

Install Cheese by running the following commands:

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

This package does not have a working 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 Program: cheese
Installed Library: libcheese.so and libcheese-gtk.so
Installed Directories: /usr/include/cheese, /usr/share/gtk-doc/html/cheese, and /usr/share/help/*/cheese

Short Descriptions

`cheese`	is the webcam tool with graphical effects.
`libcheese.so`	contains the Cheese API functions.
`libcheese-gtk.so`	contains the Cheese GTK+ widgets.

EOG-3.12.2

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-7.6 platform.

Package Information

- Download (HTTP): **http://ftp.gnome.org/pub/gnome/sources/eog/3.12/eog-3.12.2.tar.xz**
- Download (FTP): **ftp://ftp.gnome.org/pub/gnome/sources/eog/3.12/eog-3.12.2.tar.xz**
- Download MD5 sum: a47f4a40b34aead0cd3fb3d6f8b4dd75
- Download size: 3.8 MB
- Estimated disk space required: 56 MB
- Estimated build time: 0.6 SBU

EOG Dependencies

Required

gnome-desktop-3.12.2, gnome-icon-theme-3.12.0, libpeas-1.10.1, shared-mime-info-1.3, and yelp-xsl-3.12.0

Recommended

gobject-introspection-1.40.0 and librsvg-2.40.3

Optional

Exempi-2.2.2, GTK-Doc-1.20, Little CMS-2.6, and libexif-0.6.21

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/eog

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

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

Contents

Installed Program: eog
Installed Libraries: several libraries under /usr/lib/eog/plugins/
Installed Directories: /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.

Last updated on 2014-09-19 13:13:19 -0700

Epiphany-3.12.1

and standards compliance.

This package is known to build and work properly using an LFS-7.6 platform.

Package Information

- Download (HTTP): **http://ftp.gnome.org/pub/gnome/sources/epiphany/3.12/epiphany-3.12.1.tar.xz**
- Download (FTP): **ftp://ftp.gnome.org/pub/gnome/sources/epiphany/3.12/epiphany-3.12.1.tar.xz**
- Download MD5 sum: 48d1ae142c41c55d62183456d4527d3d
- Download size: 2.9 MB
- Estimated disk space required: 86 MB
- Estimated build time: 0.9 SBU

Epiphany Dependencies

Required

Avahi-0.6.31, Gcr-3.12.2, gnome-desktop-3.12.2, libnotify-0.7.6, libwnck-3.4.9, and WebKitGTK+-2.4.5

Recommended

NSS-3.17

Optional

lsb_release-1.4

Runtime Dependencies

gnome-keyring-3.12.2 (for storing passwords) and Seahorse-3.12.2 (for managing stored passwords)

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/epiphany

Installation of Epiphany

Install Epiphany 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 Program: epiphany, ephy-profile-migrator, and epiphany-search-provider
Installed Libraries: /usr/lib/epiphany/3.12/web-extensions/libephywebextension.so
Installed Directories: /usr/lib/epiphany, /usr/share/epiphany, and /usr/share/help/*/epiphany

Short Descriptions

`epiphany`   is a GNOME web browser based on the WebKit2 rendering engine.

Last updated on 2014-09-19 13:13:19 -0700

Evince-3.12.2

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.

- Download (HTTP): **http://ftp.gnome.org/pub/gnome/sources/evince/3.12/evince-3.12.2.tar.xz**
- Download (FTP): **ftp://ftp.gnome.org/pub/gnome/sources/evince/3.12/evince-3.12.2.tar.xz**
- Download MD5 sum: f8ea3cb5ba39c75a0b28b34a9c508cd4
- Download size: 2.8 MB
- Estimated disk space required: 77 MB (additional 5 MB to rebuild and install the API documentation)
- Estimated build time: 1.2 SBU

Evince Dependencies

Required

gnome-icon-theme-3.12.0, gsettings-desktop-schemas-3.12.2, GTK+-3.12.2, and yelp-xsl-3.12.0

Recommended

gobject-introspection-1.40.0, libsecret-0.18, Nautilus-3.12.2, and Poppler-0.26.4

Optional

GTK-Doc-1.20, texlive-20140525, **DjVuLibre**, **libgxps**, **libspectre**, and **t1lib**

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/evince

Installation of Evince

Install Evince by running the following commands:

```
./configure --prefix=/usr        \
            --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 libsecret. Use this switch if libsecret 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.

`--libexecdir=/usr/lib/evince`: This option puts the package's private program in an `evince` directory in `/usr/lib` instead of using `/usr/libexec` in accordance with the old version of the FHS used before LFS-7.5.

Contents

Installed Programs: evince, evinced, evince-previewer, and evince-thumbnailer
Installed Libraries: libevdocument3.so and libevview3.so and some libraries under /usr/lib/{evince/4/backends,nautilus/extensions-3.0}
Installed Directories: /usr/include/evince, /usr/lib/evince, /usr/share/evince, /usr/share/gtk-doc/html/{evince,libevdocument-3.0,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.

File-Roller-3.12.2

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-7.6 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/3.12/file-roller-3.12.2.tar.xz**
- Download (FTP): **ftp://ftp.gnome.org/pub/gnome/sources/file-roller/3.12/file-roller-3.12.2.tar.xz**
- Download MD5 sum: 408e3bfc9616f6688ac7854c512b7dfa
- Download size: 1.4 MB
- Estimated disk space required: 25 MB
- Estimated build time: 0.3 SBU

File Roller Dependencies

Required

GTK+-3.12.2 and yelp-xsl-3.12.0

Recommended

JSON-GLib-1.0.2, libarchive-3.1.2, libnotify-0.7.6, and Nautilus-3.12.2

Optional (Runtime)

UnRar-5.1.7, UnZip-6.0, and Zip-3.0

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/file-roller

Installation of File Roller

Install File Roller by running the following commands:

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

This package does not come with a test suite.

Now, as the *root* user:

```
make install &&
chmod -v 0755 /usr/libexec/file-roller/isoinfo.sh
```

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.

`--libexecdir=/usr/lib/`: This option will put the package's private programs in `/usr/lib/file-roller` instead of `/usr/libexec/file-roller` in accordance with the old version of the FHS used before LFS-7.5.

Installed Program: file-roller, isoinfo.sh, and rpm2cpio

Installed Libraries: /usr/lib/nautilus/extensions-3.0/libnautilus-fileroller.so

Installed Directories: /usr/libexec/file-roller, /usr/share/file-roller, and /usr/share/help/*/file-roller

Short Descriptions

`file-roller`   is an archive manager for GNOME.

Last updated on 2014-09-19 13:13:19 -0700

Gedit-3.12.2

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-7.6 platform.

Package Information

- Download (HTTP): **http://ftp.gnome.org/pub/gnome/sources/gedit/3.12/gedit-3.12.2.tar.xz**
- Download (FTP): **ftp://ftp.gnome.org/pub/gnome/sources/gedit/3.12/gedit-3.12.2.tar.xz**
- Download MD5 sum: a23644771605c4226059d0b92faf70d2
- Download size: 2.8 MB
- Estimated disk space required: 87 MB (additional less than 1 MB for tests)
- Estimated build time: 1.1 SBU (additional 0.1 SBU for tests)

Gedit Dependencies

Required

gsettings-desktop-schemas-3.12.2, gtksourceview-3.12.3, libpeas-1.10.1, and yelp-xsl-3.12.0

Recommended

enchant-1.6.0, Gvfs-1.20.3 (runtime), ISO Codes-3.56, libsoup-2.46.0, and PyGObject-3.12.2 (Python 3 module)

Optional

GTK-Doc-1.20, Vala-0.24.0, and **zeitgeist**

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/gedit

Installation of Gedit

Install Gedit 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-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.

`--libexecdir=/usr/lib`: This option puts the package's private programs in `/usr/lib/gedit` instead of `/usr/libexec/gedit` in accordance with the old version of the FHS used before LFS-7.5.

Contents

Short Descriptions

gedit   is a lightweight text editor integrated with the GNOME Desktop.

Last updated on 2014-09-19 13:13:19 -0700

---

gnome-calculator-3.12.4

Introduction to GNOME Calculator

GNOME Calculator 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-7.6 platform.

Package Information

- Download (HTTP): **http://ftp.gnome.org/pub/gnome/sources/gnome-calculator/3.12/gnome-calculator-3.12.4.tar.xz**
- Download (FTP): **ftp://ftp.gnome.org/pub/gnome/sources/gnome-calculator/3.12/gnome-calculator-3.12.4.tar.xz**
- Download MD5 sum: d6896ed3a4d86ec18f8056c3c4e33f7a
- Download size: 1.2 MB
- Estimated disk space required: 41 MB
- Estimated build time: 0.3 SBU

GNOME Calculator Dependencies

Required

GTK+-3.12.2 and yelp-xsl-3.12.0

Recommended

Vala-0.24.0

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/gnome-calculator

Installation of GNOME Calculator

Install GNOME Calculator by running the following commands:

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

To test the results, issue: `make -k check`. Tests may fail for unknown reasons.

Now, as the *root* user:

```
make install
```

Contents

Installed Programs: gcalccmd and gnome-calculator
Installed Libraries: None
Installed Directories: /usr/share/help/*/gnome-calculator

Short Descriptions

gnome-calculator   is the official calculator of the GNOME Desktop.

gcalccmd   is a command line version of gnome-calculator .

Last updated on 2014-09-19 14:39:35 -0700

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-7.6 platform.

Package Information

- Download (HTTP): **http://ftp.gnome.org/pub/gnome/sources/gnome-nettool/3.8/gnome-nettool-3.8.1.tar.xz**
- Download (FTP): **ftp://ftp.gnome.org/pub/gnome/sources/gnome-nettool/3.8/gnome-nettool-3.8.1.tar.xz**
- Download MD5 sum: d4fc944b7ba8fd5f49f04a73e0d37e80
- Download size: 576 KB
- Estimated disk space required: 14 MB
- Estimated build time: 0.1 SBU

GNOME Nettool Dependencies

Required

GTK+-3.12.2, libgtop-2.30.0, and yelp-xsl-3.12.0

Runtime Dependencies

BIND-9.10.0-P2, Nmap-6.47, Net-tools-CVS_20101030, Traceroute-2.0.20, and Whois-5.2.0

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/gnome-nettool

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
```

Contents

Installed Program: gnome-nettool
Installed Libraries: None
Installed Directories: /usr/share/gnome-nettool and /usr/share/help/*/gnome-nettool

Short Descriptions

`gnome-nettool`   is a network information tool.

Last updated on 2014-09-19 14:39:35 -0700

gnome-screenshot-3.12.0

Introduction to GNOME Screenshot

The GNOME Screenshot is a utility used for taking screenshots of the entire screen, a window or a user-defined area of the screen, with optional beautifying border effects.

This package is known to build and work properly using an LFS-7.6 platform.

Package Information

- Download (HTTP): **http://ftp.gnome.org/pub/gnome/sources/gnome-screenshot/3.12/gnome-screenshot-3.12.0.tar.xz**

- Download MD5 sum: d3467ad5bf6a84715a88f5bbc7ef596a
- Download size: 256 KB
- Estimated disk space required: 6.4 MB
- Estimated build time: less than 0.1 SBU

GNOME Screenshot Dependencies

Required

GTK+-3.12.2 and libcanberra-0.30 (Compiled with GTK+3 support).

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/gnome-screenshot

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

Installed Program: gnome-screenshot
Installed Libraries: None
Installed Directory: None

Short Descriptions

gnome-screenshot	is used to capture the screen, a window, or a user-defined area and save the snapshot image to a file.

Last updated on 2014-09-21 14:28:22 -0700

gnome-system-monitor-3.12.2

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-7.6 platform.

Package Information

- Download (HTTP): **http://ftp.gnome.org/pub/gnome/sources/gnome-system-monitor/3.12/gnome-system-monitor-3.12.2.tar.xz**
- Download (FTP): **ftp://ftp.gnome.org/pub/gnome/sources/gnome-system-monitor/3.12/gnome-system-monitor-3.12.2.tar.xz**
- Download MD5 sum: dc9f4ffa25ebee2795821251ef0d73db
- Download size: 796 KB
- Estimated disk space required: 28 MB
- Estimated build time: 0.4 SBU

GNOME System Monitor Dependencies

Required

gnome-icon-theme-3.12.0, Gtkmm-3.12.0, libgtop-2.30.0, librsvg-2.40.3, and yelp-xsl-3.12.0

Recommended

Installation of GNOME System Monitor

Install GNOME System Monitor by running the following commands:

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

This package does not come with a test suite.

Now, as the *root* user:

```
make install
```

Contents

Installed Program: gnome-system-monitor, gsm-kill, and gsm-renice
Installed Libraries: None
Installed Directories: /usr/libexec/gnome-system-monitor and /usr/share/help/*/gnome-system-monitor

Short Descriptions

`gnome-system-monitor`   is used to display the process tree and hardware meters.

Last updated on 2014-09-19 13:13:19 -0700

---

gnome-terminal-3.12.3

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-7.6 platform.

Package Information

- Download (HTTP): **http://ftp.gnome.org/pub/gnome/sources/gnome-terminal/3.12/gnome-terminal-3.12.3.tar.xz**
- Download (FTP): **ftp://ftp.gnome.org/pub/gnome/sources/gnome-terminal/3.12/gnome-terminal-3.12.3.tar.xz**
- Download MD5 sum: a3fe2df34f57e8ab0dac00c44cff2552
- Download size: 1.7 MB
- Estimated disk space required: 41 MB
- Estimated build time: 0.3 SBU

GNOME Terminal Dependencies

Required

appdata-tools-0.1.8, DConf-0.20.0, gsettings-desktop-schemas-3.12.2, VTE-0.36.3, and yelp-xsl-3.12.0

Recommended

Nautilus-3.12.2

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/gnome-terminal

Installation of GNOME Terminal

Install GNOME Terminal by running the following commands:

```
./configure --prefix=/usr            \
            --disable-static         \
            --disable-migration      \
            --disable-search-provider &&
make
```

```
make install
```

Command Explanations

--disable-search-provider: This switch disables "search gnome-shell" provider. Necessary, because gnome-shell is not in BLFS. Remove it, if you have gnome-shell installed.

--disable-migration: This switch disables building of the GNOME Terminal GConf migration tool which is not necessary for BLFS.

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

Contents

Installed Program: gnome-terminal and gnome-terminal-server
Installed Libraries: /usr/lib/nautilus/extensions-3.0/libterminal-nautilus.so
Installed Directories: /usr/share/help/*/gnome-terminal

Short Descriptions

gnome-terminal   is the GNOME Terminal Emulator.

Last updated on 2014-09-19 13:13:19 -0700

Gucharmap-3.12.1

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-7.6 platform.

Package Information

- Download (HTTP): **http://ftp.gnome.org/pub/gnome/sources/gucharmap/3.12/gucharmap-3.12.1.tar.xz**
- Download (FTP): **ftp://ftp.gnome.org/pub/gnome/sources/gucharmap/3.12/gucharmap-3.12.1.tar.xz**
- Download MD5 sum: 3a39588c963e7848a4850a0b5975211b
- Download size: 1.9 MB
- Estimated disk space required: 40 MB
- Estimated build time: 0.2 SBU

Gucharmap Dependencies

Required

desktop-file-utils-0.22, GTK+-3.12.2 and yelp-xsl-3.12.0

Recommended

gobject-introspection-1.40.0 and Vala-0.24.0 (compilation with vala is currently broken)

Optional

GTK-Doc-1.20

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/gucharmap

Installation of Gucharmap

Install Gucharmap by running the following commands:

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

```
make install
```

Command Explanations

`--enable-vala`: This switch enables building of the Vala bindings. Remove if you don't have [Vala-0.24.0](#) 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: charmap, gnome-character-map (both symlinks), and 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.

Last updated on 2014-09-19 13:13:19 -0700

Nautilus-3.12.2

Introduction to Nautilus

The Nautilus package contains the GNOME file manager.

This package is known to build and work properly using an LFS-7.6 platform.

Package Information

- Download (HTTP): **http://ftp.gnome.org/pub/gnome/sources/nautilus/3.12/nautilus-3.12.2.tar.xz**
- Download (FTP): **ftp://ftp.gnome.org/pub/gnome/sources/nautilus/3.12/nautilus-3.12.2.tar.xz**
- Download MD5 sum: cc802f9b49504b8ca5f5ec11fd4418c6
- Download size: 4.8 MB
- Estimated disk space required: 114 MB
- Estimated build time: 0.7 SBU

Nautilus Dependencies

Required

[gnome-desktop-3.12.2](#) and [libnotify-0.7.6](#)

Recommended

[Exempi-2.2.2](#), [libexif-0.6.21](#) and [gobject-introspection-1.40.0](#)

Optional

[GTK-Doc-1.20](#) and **[Tracker](#)**

Recommended (Runtime)

[gnome-icon-theme-symbolic-3.12.0](#), and [Gvfs-1.20.3](#) (For hotplugging and device mounting to work)

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/nautilus

Installation of Nautilus

Install Nautilus by running the following commands:

```
./configure --prefix=/usr        \
            --sysconfdir=/etc     \
```

This package needs to be installed before its testsuite can be run.

Now, as the *root* user:

```
make install
```

Command Explanations

--disable-packagekit: This switch disables use of PackageKit which isn't suitable for BLFS.

--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.

--disable-xmp: Use this switch if you did not install Exempi.

--disable-libexif: Use this switch if you did not install libexif.

Contents

Installed Programs: nautilus, nautilus-autorun-software, nautilus-connect-server, and nautilus-convert-metadata
Installed Library: libnautilus-extension.so, and /usr/lib/nautilus/extensions-3.0/libnautilus-sendto.so
Installed Directories: /usr/include/nautilus, /usr/lib/nautilus, /usr/share/gnome-shell/search-providers, /usr/share/gtk-doc/html/libnautilus-extension, and /usr/share/nautilus

Short Descriptions

`nautilus`	is the GNOME file manager.
`libnautilus-extension.so`	supplies the functions needed by the file manager extensions.

Last updated on 2014-09-19 13:13:19 -0700

network-manager-applet-0.9.10.0

Introduction to NetworkManager Applet

The NetworkManager Applet provides a tool and a panel applet used to configure wired and wireless network connections through GUI. It's designed for use with any desktop environment that uses GTK+ like Xfce and LXDE.

This package is known to build and work properly using an LFS-7.6 platform.

Package Information

- Download (HTTP): **http://ftp.gnome.org/pub/gnome/sources/network-manager-applet/0.9/network-manager-applet-0.9.10.0.tar.xz**
- Download (FTP): **ftp://ftp.gnome.org/pub/gnome/sources/network-manager-applet/0.9/network-manager-applet-0.9.10.0.tar.xz**
- Download MD5 sum: 6c23e6d208f6e78f2ecb7d0a03ddd03d
- Download size: 1.3 MB
- Estimated disk space required: 43 MB
- Estimated build time: 0.5 SBU

NetworkManager Applet Dependencies

Required

GTK+-3.12.2, ISO Codes-3.56, libsecret-0.18, libnotify-0.7.6, and NetworkManager-0.9.10.0

Recommended

gobject-introspection-1.40.0

Required (Runtime)

LXPolkit-0.1.0 or polkit-gnome-0.105

Installation of NetworkManager Applet

Install NetworkManager Applet by running the following commands:

```
./configure --prefix=/usr \
            --sysconfdir=/etc \
            --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 the 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.

Last updated on 2014-09-19 13:13:19 -0700

Seahorse-3.12.2

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-7.6 platform.

Package Information

- Download (HTTP): **http://ftp.gnome.org/pub/gnome/sources/seahorse/3.12/seahorse-3.12.2.tar.xz**
- Download (FTP): **ftp://ftp.gnome.org/pub/gnome/sources/seahorse/3.12/seahorse-3.12.2.tar.xz**
- Download MD5 sum: 998578f6dbde86037107c137161662f2
- Download size: 1.4 MB
- Estimated disk space required: 51 MB
- Estimated build time: 0.4 SBU

Seahorse Dependencies

Required

Gcr-3.12.2, GPGME-1.5.1, GnuPG-2.0.26, libsecret-0.18 and yelp-xsl-3.12.0

Recommended

libsoup-2.46.0, OpenSSH-6.6p1 (for managing SSH keys) and Vala-0.24.0

Runtime Dependency

gnome-keyring-3.12.2

User Notes: *http://wiki.linuxfromscratch.org/blfs/wiki/seahorse*

Installation of Seahorse

Install Seahorse by running the following commands:

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

This package does not come with a test suite.

Now, as the *root* user:

```
make install
```

Command Explanations

--bindir=/usr/bin: Fix desktop file.

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

Contents

Installed Program: seahorse
Installed Libraries: None
Installed Directories: /usr/lib/seahorse, /usr/share/help/*/seahorse, and /usr/share/seahorse

Short Descriptions

seahorse is the graphical interface for managing and using encryption keys.

Last updated on 2014-09-19 13:13:19 -0700

Totem-3.12.2

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-7.6 platform.

Package Information

- Download (HTTP): **http://ftp.gnome.org/pub/gnome/sources/totem/3.12/totem-3.12.2.tar.xz**
- Download (FTP): **ftp://ftp.gnome.org/pub/gnome/sources/totem/3.12/totem-3.12.2.tar.xz**
- Download MD5 sum: 939272a90d60c075b957a220c87bd680
- Download size: 3.2 MB
- Estimated disk space required: 68 MB
- Estimated build time: 1.6 SBU

Totem Dependencies

Required

clutter-gst-2.0.12, clutter-gtk-1.4.4, gnome-icon-theme-3.12.0, gst-plugins-bad-1.4.1, gst-plugins-good-1.4.1, libpeas-1.10.1, totem-pl-parser-3.10.2, and yelp-xsl-3.12.0

Optional

Avahi-0.6.31 (if installed at build time, make sure avahi-daemon is running as a system daemon, started by bootscript/systemd unit), GTK-Doc-1.20, **LIRC**, **pylint**, and **zeitgeist**,

Recommended (Runtime)

gst-libav-1.4.1, gst-plugins-ugly-1.4.1, and libdvdcss-1.3.0

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/totem

Installation of Totem

Install Totem by running the following commands:

```
./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 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.

--libexecdir=/usr/lib: This option will put the package's private programs into /usr/lib/totem instead of /usr/libexec/totem in accordance with the old version of the FHS used before LFS-7.5.

Contents

Installed Programs: totem, totem-audio-preview, totem-bugreport.py, totem-plugin-viewer, and totem-video-thumbnailer

Installed Library: libtotem.so and several plugins under /usr/lib/mozilla/plugins/, and /usr/lib/nautilus/extensions-3.0/

Installed Directories: /usr/include/totem, /usr/lib/totem, /usr/libexec/totem, /usr/share/gtk-doc/html/totem, /usr/share/help/*/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.

Last updated on 2014-09-19 13:13:19 -0700

Part IX. Xfce

Chapter 32. 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.

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-7.6 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-2.40.0

Optional

GTK-Doc-1.20

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/libxfce4util

Installation of libxfce4util

Install libxfce4util 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

Installed Program: xfce4-kiosk-query
Installed Library: libxfce4util.so
Installed Directories: /usr/include/xfce4 and /usr/share/gtk-doc/html/libxfce4util

Short Descriptions

xfce4-kiosk-query	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.
libxfce4util.so	contains basic utility functions for the Xfce desktop environment.

Last updated on 2014-09-13 19:04:15 -0700

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-7.6 platform.

- Download MD5 sum: 4ed48150a03fb5f42b455494307b7f28
- Download size: 508 KB
- Estimated disk space required: 8.7 MB
- Estimated build time: 0.1 SBU

Xfconf Dependencies

Required

dbus-glib-0.102 and libxfce4util-4.10.1

Optional

GTK-Doc-1.20 and Perl Module **Glib** (you may want to use build and installation instructions or alternate auto installation instructions)

User Notes: *http://wiki.linuxfromscratch.org/blfs/wiki/xfconf*

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.

Last updated on 2014-09-13 19:04:15 -0700

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-7.6 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

libxfce4ui Dependencies

Required

GTK+-2.24.24 and Xfconf-4.10.0

Recommended

startup-notification-0.12

Optional

GTK-Doc-1.20

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/libxfce4ui

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

`--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: libxfce4kbd-private-2.so and libxfce4ui-1.so
Installed Directories: /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.

Last updated on 2014-09-13 19:04:15 -0700

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-7.6 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

.

[GTK-Doc-1.20](#)

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

Installed Programs: exo-csource, exo-desktop-item-edit, exo-open and exo-preferred-applications
Installed Libraries: libexo-1.so
Installed Directories:/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

`exo-csource`	is a small utility that generates C code containing arbitrary data, useful for compiling texts or other data directly into programs.
`exo-desktop-item-edit`	is a command line utility to create or edit icons on the desktop.
`exo-open`	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.
`exo-preferred-applications`	is a command line utility to edit the preferred application that is used to handle a particular type of file or URI.
`libexo-1.so`	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).

Last updated on 2014-09-13 19:04:15 -0700

Garcon-0.3.0

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-7.6 platform.

Package Information

- Download (HTTP): **http://archive.xfce.org/src/xfce/garcon/0.3/garcon-0.3.0.tar.bz2**
- Download MD5 sum: 853f13fbad4760374a2a889acaa4a6c1
- Download size: 440 KB
- Estimated disk space required: 8.2 MB
- Estimated build time: 0.1 SBU

Garcon Dependencies

Optional

GTK-Doc-1.20

User Notes: *http://wiki.linuxfromscratch.org/blfs/wiki/garcon*

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

Installed Programs: None
Installed Library: libgarcon-1.so and libgarcon-gtk2-1.so
Installed Directory: /usr/include/garcon-1, /usr/include/garcon-gtk2-1 and /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 .

Last updated on 2014-09-13 19:04:15 -0700

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-7.6 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+-2.24.24

Recommended

GTK+-3.12.2

User Notes: *http://wiki.linuxfromscratch.org/blfs/wiki/gtk-xfce-engine*

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

This package does not come with a test suite.

Now, as the *root* user:

```
make install
```

Contents

Installed Programs: None

Installed Library: libxfce.so (in /usr/lib/gtk-2.0/2.10.0/engines and /usr/lib/gtk-3.0/3.0.0/theming-engines)

Installed Directories: 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.

Last updated on 2014-09-15 14:09:24 -0700

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-7.6 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+-2.24.24

Recommended

startup-notification-0.12

Optional

gobject-introspection-1.40.0 and GTK-Doc-1.20

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/libwnck2

Installation of libwnck

Install libwnck by running the following commands:

```
./configure --prefix=/usr \
            --disable-static \
            --program-suffix=-1 &&
make GETTEXT_PACKAGE=libwnck-1
```

```
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-3.4.9.

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-3.4.9.

--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.

Last updated on 2014-09-13 19:04:15 -0700

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-7.6 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 libxfce4util-4.10.1

Optional

GTK-Doc-1.20

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/libxfcegui4

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:

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: libxfcegui4.so and libxfce4.so
Installed Directories: /usr/include/xfce4/libxfcegui4 and /usr/share/gtk-doc/html/libxfcegui4

Short Descriptions

libxfcegui4.so   contains the basic GUI functions used by Xfce .

Last updated on 2014-09-15 14:09:24 -0700

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-7.6 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-0.3.0, libwnck-2.30.7 and libxfce4ui-4.10.0

Optional

GTK-Doc-1.20

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/xfce4-panel

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

Installed Programs: xfce4-panel, xfce4-popup-directorymenu, xfce4-popup-applicationsmenu and xfce4-popup-

Installed Directories: /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.

Last updated on 2014-09-13 19:04:15 -0700

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-7.6 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 libxfce4ui-4.10.0

Recommended

libnotify-0.7.6, startup-notification-0.12, udev-extras (from eudev) (for GUdev) and xfce4-panel-4.10.1

Optional

libexif-0.6.21 and Tumbler-0.1.30 (runtime)

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/thunar

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.

Installed Programs: Thunar, thunar and thunar-settings

Installed Library: libthunarx-2.so

Installed Directories: /etc/xdg/Thunar, /usr/include/thunarx-2, /usr/lib/Thunar, /usr/lib/thunarx-2, /usr/share/doc/Thunar-1.6.3, /usr/share/gtk-doc/html/thunarx, /usr/share/pixmaps/Thunar and /usr/share/Thunar

Short Descriptions

`Thunar`	is the Xfce file manager.
`thunar`	is a symbolic link to Thunar.
`thunar-settings`	is a shell script that launches a dialog box to allow you to alter the behaviour of Thunar.
`libthunarx-2.so`	contains the Thunar extension library which permits adding new features to the Thunar file manager.

Last updated on 2014-09-15 14:09:24 -0700

---

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-7.6 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, libxfce4ui-4.10.0 and udev-extras (from eudev) (for GUdev)

Recommended

libnotify-0.7.6 and startup-notification-0.12

Recommended Runtime Dependencies

Gvfs-1.20.3 and polkit-gnome-0.105

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/thunar-volman

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

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.

Last updated on 2014-09-15 14:09:24 -0700

Tumbler-0.1.30

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-7.6 platform.

Package Information

- Download (HTTP): **http://archive.xfce.org/src/xfce/tumbler/0.1/tumbler-0.1.30.tar.bz2**
- Download MD5 sum: 2524e39439c13238565160da0b6fed2d
- Download size: 504 KB
- Estimated disk space required: 13 MB
- Estimated build time: 0.2 SBU

Tumbler Dependencies

Required

dbus-glib-0.102

Optional

cURL-7.37.1, **FFmpegThumbnailer**, FreeType-2.5.3, gdk-pixbuf-2.30.8, gst-plugins-base-0.10.36, GTK-Doc-1.20, libjpeg-turbo-1.3.1, libgsf-1.14.30, **libopenraw**, libpng-1.6.13 and Poppler-0.26.4

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/tumbler

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

Installed Programs: tumblerd
Installed Library: libtumbler-1.so and several under /usr/lib/tumbler-1/plugins/
Installed Directories: /usr/include/tumbler-1, /usr/lib/tumbler-1 and /usr/share/gtk-doc/html/tumbler

Short Descriptions

`tumblerd`	is a daemon D-Bus service for applications such as Thunar and Ristretto to use thumbnail images..
`libtumbler-1.so`	contains functions that the Tumbler daemon uses to create thumbnail images.

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-7.6 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-0.3.0 and libxfce4ui-4.10.0

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/xfce4-appfinder

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

Installed Programs: xfce4-appfinder and xfrun4
Installed Libraries: None
Installed Directories: None

Short Descriptions

xfce4-appfinder	Is a GTK+ 2 application that enables you to quickly search through the .desktop files installed on your system looking for an application.

Last updated on 2014-09-15 14:09:24 -0700

xfce4-power-manager-1.4.0

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-7.6 platform.

Package Information

- Download (HTTP): **http://archive.xfce.org/src/xfce/xfce4-power-manager/1.4/xfce4-power-manager-1.4.0.tar.bz2**

- Estimated disk space required: 25 MB
- Estimated build time: 0.2 SBU

Xfce4 Power Manager Dependencies

Required

[libnotify-0.7.6](), [UPower-0.9.23](), and [xfce4-panel-4.10.1]()

Optional

[UDisks-1.0.5]()

User Notes: ***http://wiki.linuxfromscratch.org/blfs/wiki/xfce4-power-manager***

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-1.4.0 \
    imagesdir=/usr/share/doc/xfce4-power-manager-1.4.0/images install
```

Contents

Installed Programs: xfce4-power-information, xfce4-power-manager, xfce4-power-manager-settings and xfpm-power-backlight-helper

Installed Libraries: None

Installed Directories: None

Short Descriptions

xfce4-power-information	is a GTK+ 2 application that displays information about installed devices. It uses DBus to comunicate 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.

Last updated on 2014-09-18 13:23:29 -0700

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-7.6 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

- Estimated build time: 0.3 SBU

Xfce4 Settings Dependencies

Required

Exo-0.10.2 and libxfce4ui-4.10.0

Recommended

libcanberra-0.30, libnotify-0.7.6 and libxklavier-5.3

User Notes: *http://wiki.linuxfromscratch.org/blfs/wiki/xfce4-settings*

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

Installed Programs: 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

Installed Libraries: None

Installed Directories: None

Short Descriptions

xfce4-accessibility-settings	is a GTK+ 2 GUI to allow you to change some of your keyboard and mouse preferences.
xfce4-appearance-settings	is a GTK+ 2 GUI to allow you to change some of your theme, icon and font preferences.
xfce4-display-settings	is a GTK+ 2 GUI to allow you to change some of your screen preferences.
xfce4-keyboard-settings	is a GTK+ 2 GUI to allow you to change some of your keyboard preferences.
xfce4-mime-settings	is a GTK+ 2 GUI to allow you to change which applications are used to handle different mime types.
xfce4-mouse-settings	is a GTK+ 2 GUI to allow you to change some of your mouse preferences.
xfce4-settings-editor	is a GTK+ 2 GUI to allow you to change your preferences stored in Xfconf .
xfce4-settings-manager	is a GTK+ 2 GUI to allow you to change many of your Xfce preferences.
xfsettingsd	is the Xfce settings daemon.

Last updated on 2014-09-15 14:09:24 -0700

Xfdesktop-4.10.2

Introduction to Xfdesktop

Xfdesktop is a desktop manager for the Xfce Desktop Environment. Xfdesktop sets the background image / color,

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-0.7.6, startup-notification-0.12 and Thunar-1.6.3

User Notes: *http://wiki.linuxfromscratch.org/blfs/wiki/xfdesktop*

Installation of Xfdesktop

Install Xfdesktop 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

Installed Programs: xfdesktop and xfdesktop-settings
Installed Libraries: None
Installed Directories: /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.

Last updated on 2014-09-13 19:04:15 -0700

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-7.6 platform.

Package Information

- Download (HTTP): **http://archive.xfce.org/src/xfce/xfwm4/4.10/xfwm4-4.10.1.tar.bz2**
- Download MD5 sum: 10de50c79ed944cbb9c87741062c2a76
- Download size: 1.1 MB
- Estimated disk space required: 30 MB
- Estimated build time: 0.3 SBU

Xfwm4 Dependencies

Recommended

startup-notification-0.12

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/xfwm4

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

Installed Programs: xfwm4, xfwm4-settings, xfwm4-tweaks-settings and xfwm4-workspace-settings
Installed Libraries: None
Installed Directories: /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.

Last updated on 2014-09-13 19:04:15 -0700

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-7.6 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

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/xfce4-session

```
./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 system.

Configuring Xfce4 Session

There are several optional run time dependencies for Xfce4: ConsoleKit-0.4.6, D-Bus-1.8.8, GnuPG-2.0.26, hicolor-icon-theme-0.13 and OpenSSH-6.6p1

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

Installed Programs: xfce4-session, xfce4-session-logout, xfce4-session-settings and xfce4-tips
Installed Library: libxfsm-4.6.so
Installed Directories: /usr/include/xfce4/xfce4-session-4.6, /usr/share/xfce4/tips and /usr/share/doc/xfce4-session-4.10.1

Short Descriptions

`xfce4-session`	starts up the Xfce Desktop Environment.
`xfce4-session-logout`	logs out from Xfce .
`xfce4-session-settings`	is a GTK+ 2 GUI which allows you to alter your preferences for your Xfce Session .
`xfce4-tips`	is a GTK+ 2 GUI which displays tips when you log in to an Xfce Session .
`libxfsm-4.6.so`	contains the Xfce Session API functions.

Last updated on 2014-09-14 13:18:45 -0700

Chapter 33. Xfce Applications

This is a small collection of optional applications that add extra capabilities to your Xfce desktop.

Midori-0.5.8

Introduction to Midori

Midori is a lightweight web browser that uses WebKitGTK+.

This package is known to build and work properly using an LFS-7.6 platform.

Package Information

- Download (HTTP): **http://www.midori-browser.org/downloads/midori_0.5.8_all_.tar.bz2**
- Download MD5 sum: b89e25e74199d705e74767499a415976
- Download size: 1.3 MB
- Estimated disk space required: 63 MB (additional 1 MB for the tests)
- Estimated build time: 0.5 SBU (additional less than 0.1 SBU for the tests)

Midori Dependencies

Required

librsvg-2.40.3

Installation of Midori

The tarball is not compressed from a directory, thus it is better to create a directory to uncompress it:

```
mkdir -v midori-0.5.8 &&
tar xf midori_0.5.8_all_.tar.bz2 -C midori-0.5.8 &&
cd midori-0.5.8
```

Install Midori by running the following commands:

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

To test the results, issue: `make check` from an X terminal emulator.

Now, as the *root* user:

```
make install
```

Command Explanations

`--enable-gtk3`: Use this switch if you want to build Midori with WebKitGTK+ built against GTK+ 3, because by default it chooses WebKitGTK+ built against GTK+ 2.

`--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 makehe log file difficult to read with a text editor.

Contents

Installed Program: midori
Installed Libraries: libmidori-core.so and several libraries under /usr/lib/midori
Installed Directories:/etc/xdg/midori, /usr/lib/midori, /usr/share/doc/midori and /usr/share/midori

Short Descriptions

  `midori`   is a lightweight WebKitGTK+ browser.

Last updated on 2014-09-16 13:49:04 -0700

Parole-0.5.4

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-7.6 platform.

Package Information

- Download (HTTP): **http://archive.xfce.org/src/apps/parole/0.5/parole-0.5.4.tar.bz2**
- Download MD5 sum: fa25b069c90bb9d59fef46e77c98f9b0
- Download size: 656 KB
- Estimated disk space required: 16 MB
- Estimated build time: 0.2 SBU

gst-plugins-base-0.10.36 or gst-plugins-base-1.4.1 and libxfce4ui-4.10.0

Recommended

libnotify-0.7.6 and taglib-1.9.1

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/parole

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-1.4.1 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: Two libraries under /usr/lib/parole-0/
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.

Last updated on 2014-09-13 19:04:15 -0700

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-7.6 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

Optional

GTK-Doc-1.20

User Notes: *http://wiki.linuxfromscratch.org/blfs/wiki/gtksourceview2*

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

Installed Programs: None
Installed Library: libgtksourceview-2.0.so
Installed Directories: /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.

Last updated on 2014-09-16 10:29:57 -0700

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-7.6 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

gtksourceview-2.10.5

Optional

dbus-glib-0.102

User Notes: *http://wiki.linuxfromscratch.org/blfs/wiki/mousepad*

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

This package does not come with a test suite.

Now, as the *root* user:

```
make install
```

Contents

Installed Program: mousepad
Installed Libraries: None
Installed Directories: None

Short Descriptions

`mousepad` is a simple GTK+ 2 text editor.

Last updated on 2014-09-16 10:29:57 -0700

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-7.6 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+-2.24.24

Optional

gobject-introspection-1.40.0, GTK-Doc-1.20 and PyGTK-2.24.0

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/vte2

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
```

they do not overwrite each other if both are installed.

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

Contents

Installed Program: vte
Installed Library: libvte.so
Installed Directories: /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.

Last updated on 2014-09-13 19:04:15 -0700

xfce4-terminal-0.6.3

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-7.6 platform.

Package Information

- Download (HTTP): **http://archive.xfce.org/src/apps/xfce4-terminal/0.6/xfce4-terminal-0.6.3.tar.bz2**
- Download MD5 sum: 6a2816d8b0933cd707ed456ceb731399
- Download size: 800 KB
- Estimated disk space required: 14 MB
- Estimated build time: 0.1 SBU

Xfce4 Terminal Dependencies

Required

libxfce4ui-4.10.0 and Vte-0.28.2

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/xfce4-terminal

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

Installed Program: xfce4-terminal
Installed Libraries: None
Installed Directory: /usr/share/xfce4/terminal

Short Descriptions

`xfce4-terminal`   is a GTK+ 2 terminal emulator.

Last updated on 2014-09-13 19:04:15 -0700

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-7.6 platform.

Package Information

- Download (HTTP): **http://archive.xfce.org/src/apps/xfburn/0.5/xfburn-0.5.2.tar.bz2**
- Download MD5 sum: 5a277c76ec9f70900b8b98a2cd500a1d
- Download size: 744 KB
- Estimated disk space required: 17 MB (additional 1 MB for the tests)
- Estimated build time: 0.1 SBU (additional 0.1 SBU for the tests)

Xfburn Dependencies

Required

Exo-0.10.2, libxfce4util-4.10.1, and libisoburn-1.3.8

Optional

gst-plugins-base-0.10.36

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/xfburn

Installation of Xfburn

Install Xfburn 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

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

Short Descriptions

xfburn   is a GTK+ 2 application for creating CDs and DVDs.

Last updated on 2014-09-16 12:59:17 -0700

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-7.6 platform.

Package Information

- 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](#)

Optional

[Tumbler-0.1.30](#) (runtime)

User Notes: ***http://wiki.linuxfromscratch.org/blfs/wiki/ristretto***

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

Installed Program: ristretto
Installed Libraries: None
Installed Directories: None

Short Descriptions

ristretto   is a fast and lightweight image viewer.

Last updated on 2014-09-13 19:04:15 -0700

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-7.6 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/7.6/libunique-1.1.6-upstream_fixes-1.patch**

libunique Dependencies

Optional

[gobject-introspection-1.40.0](#) and [GTK-Doc-1.20](#)

User Notes: [*http://wiki.linuxfromscratch.org/blfs/wiki/libunique*](#)

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

Installed Programs: None
Installed Library: libunique-1.0.so
Installed Directories: /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.

Last updated on 2014-09-16 10:29:57 -0700

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-7.6 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](#)

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

Installed Program: xfce4-mixer
Installed Libraries: None
Installed Directories: /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.

Last updated on 2014-09-16 13:49:04 -0700

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-7.6 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-0.7.6 and libxfce4ui-4.10.0

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/xfce4-notifyd

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"
```

Installed Program:	xfce4-notifyd-config
Installed Libraries:	None
Installed Directories:	/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

xfce4-notifyd-config	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.

Last updated on 2014-09-16 13:49:04 -0700

Part X. LXDE

Chapter 34. LXDE Desktop

LXDE is an extremely fast-performing and energy-saving desktop environment.

LXDE comes with a beautiful interface, multi-language support, standard keyboard shortcuts and additional features like tabbed file browsing. LXDE uses less CPU and less RAM than other environments. It is especially designed for cloud computers with low hardware specifications, such as netbooks, mobile devices (e.g. MIDs) or older computers.

Build LXDE core packages in the order presented in the book for the easiest resolution of dependencies.

lxmenu-data-0.1.4

Introduction to LXMenu Data

The LXMenu Data package provides files required to build freedesktop.org menu spec-compliant desktop menus for LXDE.

This package is known to build and work properly using an LFS-7.6 platform.

Package Information

- Download (HTTP): **http://downloads.sourceforge.net/lxde/lxmenu-data-0.1.4.tar.xz**
- Download MD5 sum: a44bb6214594fee21b8ef3e478b0f0e5
- Download size: 176 KB
- Estimated disk space required: 3.0 MB
- Estimated build time: less than 0.1 SBU

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/lxmenu-data

Installation of LXMenu Data

Install LXMenu Data 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

Installed Programs:	None
Installed Libraries:	None
Installed Directories:	/etc/xdg/menus and /usr/share/desktop-directories

Introduction to LXDE Icon Theme

The LXDE Icon Theme package contains nuoveXT 2.2 Icon Theme for LXDE.

This package is known to build and work properly using an LFS-7.6 platform.

Package Information

- Download (HTTP): **http://downloads.sourceforge.net/lxde/lxde-icon-theme-0.5.1.tar.xz**
- Download MD5 sum: 7467133275edbbcc79349379235d4411
- Download size: 4.3 MB
- Estimated disk space required: 18 MB
- Estimated build time: less than 0.1 SBU

LXDE Icon Theme Dependencies

Optional

GTK+-2.24.24 or GTK+-3.12.2 (for `gtk-update-icon-cache` command)

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/lxde-icon-theme

Installation of LXDE Icon Theme

Install LXDE 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
```

If you have installed one of the optional dependencies, run the following command as the *root* user:

```
gtk-update-icon-cache -qf /usr/share/icons/nuoveXT2
```

Contents

Installed Programs: None
Installed Libraries: None
Installed Directory: /usr/share/icons/nuoveXT2

Last updated on 2014-09-13 22:25:33 -0700

libfm-extra-1.2.2.1

Introduction to libfm-extra

The libfm-extra package contains a library and other files required by `menu-cache-gen` libexec of menu-cache-0.7.0.

This package is known to build and work properly using an LFS-7.6 platform.

Package Information

- Download (HTTP): **http://downloads.sourceforge.net/pcmanfm/libfm-1.2.2.1.tar.xz**
- Download MD5 sum: f898c480b142b56471377ef3a2810f2d
- Download size: 876 KB
- Estimated disk space required: 11 MB
- Estimated build time: less than 0.1 SBU

libfm Dependencies

Installation of libfm-extra

Install libfm-extra by running the following commands:

```
./configure --prefix=/usr    \
            --sysconfdir=/etc \
            --with-extra-only \
            --with-gtk=no     \
            --disable-static  &&
make
```

This package does not come with a test suite.

Now, as the *root* user:

```
make install
```

Command Explanations

--with-extra-only Disable all components but libfm-extra library.

--with-gtk=no Gtk is not necessary for this package.

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

Contents

Installed Programs: None
Installed Library: libfm-extra.so
Installed Directories: /usr/include/libfm (symlink), /usr/include/libfm-1.0 and /usr/lib/libfm

Short Descriptions

libfm-extra.so   contains the libfm-extra API functions.

Last updated on 2014-09-13 22:25:33 -0700

menu-cache-0.7.0

Introduction to Menu Cache

The Menu Cache package contains a library for creating and utilizing caches to speed up the manipulation for freedesktop.org defined application menus.

This package is known to build and work properly using an LFS-7.6 platform.

Package Information

- Download (HTTP): **http://downloads.sourceforge.net/lxde/menu-cache-0.7.0.tar.xz**
- Download MD5 sum: 515a69ab45bc9963e053756ab7e5b529
- Download size: 256 KB
- Estimated disk space required: 3.2 MB (additional 0.5 MB to build and install the API documentation)
- Estimated build time: less than 0.1 SBU

Menu Cache Dependencies

Required

libfm-extra-1.2.2.1

Optional

GTK-Doc-1.20

Install Menu Cache 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 option if GTK-Doc is installed and you wish to build and install the API documentation. With this option enabled, the package doesn't support parallel build.

Contents

Installed Programs: None
Installed Library: libmenu-cache.so
Installed Directories: /usr/include/menu-cache, /usr/libexec/menu-cache and /usr/share/gtk-doc/html/libmenu-cache

Short Descriptions

`libmenu-cache.so`   contains the menu-cache API functions.

Last updated on 2014-09-13 22:25:33 -0700

libfm-1.2.2.1

Introduction to libfm

The libfm package contains a library used to develop file managers providing some file management utilities.

This package is known to build and work properly using an LFS-7.6 platform.

Package Information

- Download (HTTP): **http://downloads.sourceforge.net/pcmanfm/libfm-1.2.2.1.tar.xz**
- Download MD5 sum: f898c480b142b56471377ef3a2810f2d
- Download size: 876 KB
- Estimated disk space required: 28 MB
- Estimated build time: 0.3 SBU

libfm Dependencies

Required

GTK+-2.24.24 and menu-cache-0.7.0

Recommended

libexif-0.6.21, Vala-0.24.0, and lxmenu-data-0.1.4

Optional

dbus-glib-0.102 and UDisks-1.0.5 (for volume management - experimental) or Gvfs-1.20.3 and GTK-Doc-1.20

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/libfm

Installation of libfm

```
                --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.

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

Contents

Installed Program: libfm-pref-apps and lxshortcut
Installed Libraries: libfm.so, libfm-extra.so and libfm-gtk.so
Installed Directories:/etc/xdg/libfm, /usr/lib/libfm/modules, /usr/share/gtk-doc/html/libfm and /usr/share/libfm

Short Descriptions

`libfm-pref-apps`	sets preferred applications for programs based on libfm .
`lxshortcut`	is a small program used to edit application shortcuts.
`libfm.so`	contains the libfm API functions.

Last updated on 2014-09-13 22:25:33 -0700

PCManFM-1.2.2

Introduction to PCManFM

The PCManFM package contains an extremely fast, lightweight, yet feature-rich file manager with tabbed browsing.

This package is known to build and work properly using an LFS-7.6 platform.

Package Information

- Download (HTTP): **http://downloads.sourceforge.net/pcmanfm/pcmanfm-1.2.2.tar.xz**
- Download MD5 sum: ac0ba2f8e2b4d47014a62ccf43388e0f
- Download size: 396 KB
- Estimated disk space required: 9.2 MB
- Estimated build time: less than 0.1 SBU

PCManFM Dependencies

Required

libfm-1.2.2.1

Recommended

gnome-icon-theme-3.12.0 or oxygen-icons-4.14.1 or lxde-icon-theme-0.5.1

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/pcmanfm

Installation of PCManFM

Install PCManFM by running the following commands:

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

```
make install &&
sed -i 's/System;//' /usr/share/applications/pcmanfm.desktop
```

Command Explanations

`sed -i ...`: Fixes submenu for PCManFM entry.

Contents

Installed Program: pcmanfm
Installed Libraries: None
Installed Directories: /etc/xdg/pcmanfm and /usr/share/pcmanfm

Short Descriptions

`pcmanfm`   is a lightweight GTK+ based file manager for X Window System.

Last updated on 2014-09-17 15:52:31 -0700

LXPanel-0.7.0

Introduction to LXPanel

The LXPanel package contains a lightweight X11 desktop panel.

This package is known to build and work properly using an LFS-7.6 platform.

Package Information

- Download (HTTP): **http://downloads.sourceforge.net/lxde/lxpanel-0.7.0.tar.xz**
- Download MD5 sum: 39698de2c5eda2837607762c9f522cd0
- Download size: 1.5 MB
- Estimated disk space required: 24 MB
- Estimated build time: 0.3 SBU

LXPanel Dependencies

Required

libwnck-2.30.7, lxmenu-data-0.1.4 and menu-cache-0.7.0

Recommended

alsa-lib-1.0.28 and Wireless Tools-29

Optional

libxslt-1.1.28 with docbook-xml-4.5 and docbook-xsl-1.78.1 (to build man pages)

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/lxpanel

Installation of LXPanel

Install LXPanel by running the following commands:

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

This package does not come with a test suite.

Now, as the *root* user:

```
make install
```

Contents

Installed Programs: lxpanel and lxpanelctl
Installed Libraries: Several under /usr/lib/lxpanel/plugins
Installed Directories:/usr/include/lxpanel, /usr/lib/lxpanel and /usr/share/lxpanel

Short Descriptions

`lxpanel`   is a lightweight GTK+ based panel for the LXDE Desktop.

Last updated on 2014-09-13 22:25:33 -0700

LXAppearance-0.5.6

Introduction to LXAppearance

The LXAppearance package contains a desktop-independent theme switcher for GTK+.

This package is known to build and work properly using an LFS-7.6 platform.

Package Information

- Download (HTTP): **http://downloads.sourceforge.net/lxde/lxappearance-0.5.6.tar.xz**
- Download MD5 sum: 90bed417817a42b24af368f85cb5fc58
- Download size: 160 KB
- Estimated disk space required: 4.0 MB
- Estimated build time: less than 0.1 SBU

LXAppearance Dependencies

Required

GTK+-2.24.24

Recommended

dbus-glib-0.102

Optional

libxslt-1.1.28 with docbook-xml-4.5 and docbook-xsl-1.78.1 (to build man pages)

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/lxappearance

Installation of LXAppearance

Install LXAppearance by running the following commands:

```
./configure --prefix=/usr     \
            --sysconfdir=/etc \
            --disable-static  \
            --enable-dbus     &&
make
```

This package does not come with a test suite.

Now, as the *root* user:

```
make install
```

Command Explanations

--enable-dbus: This switch enables DBus support in LXAppearance which is useful for communicating with LXSession. Remove it if you are not building LXDE or have not installed dbus-glib-0.102.

Contents

Installed Program: lxappearance
Installed Libraries: None
Installed Directories: /usr/include/lxappearance and /usr/share/lxappearance

Short Descriptions

`lxappearance`   is a program used to change GTK+ themes, icon themes, and fonts used by applications.

Last updated on 2014-09-20 10:54:20 -0700

LXPolkit-0.1.0

Introduction to LXPolkit

The LXPolkit package contains a simple PolicyKit authentication agent.

This package is known to build and work properly using an LFS-7.6 platform.

Package Information

- Download (HTTP): **http://downloads.sourceforge.net/lxde/lxpolkit-0.1.0.tar.gz**
- Download MD5 sum: 2597b00035fe1d695219e0f9bfa8c26f
- Download size: 200 KB
- Estimated disk space required: 2.7 MB
- Estimated build time: 0.1 SBU

LXPolkit Dependencies

Required

GTK+-2.24.24 and Polkit-0.112

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/lxpolkit

Installation of LXPolkit

Install LXPolkit 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

Installed Programs: None
Installed Libraries: None
Installed Directories: /usr/lib/lxpolkit and /usr/share/lxpolkit

Last updated on 2014-09-13 22:25:33 -0700

LXSession-0.4.9.2

Introduction to LXSession

The LXSession package contains the default session manager for LXDE.

- Download (HTTP): **http://downloads.sourceforge.net/lxde/lxsession-0.4.9.2.tar.gz**
- Download MD5 sum: bc3eb71936dbdf813e9ac2f00ab948f0
- Download size: 732 KB
- Estimated disk space required: 23 MB
- Estimated build time: 0.3 SBU

LXSession Dependencies

Required

dbus-glib-0.102, GTK+-2.24.24, libgee-0.6.8, lsb_release-1.4 (runtime for lxde-logout do not crash), Polkit-0.112 and Vala-0.24.0

Optional

libxslt-1.1.28 with docbook-xml-4.5, docbook-xsl-1.78.1 (to build man pages) and UPower-0.9.23 with pm-utils-1.4.1 (used by `lxsession-logout`)

User Notes: *http://wiki.linuxfromscratch.org/blfs/wiki/lxsession*

Installation of LXSession

Install LXSession by running the following commands:

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

This package does not come with a test suite.

Now, as the *root* user:

```
make install
```

Command Explanations

`--disable-man`: This switch disables building of the manual pages. Remove it if you have installed optional dependencies and wish to build the manual pages.

Contents

Installed Programs: lxclipboard, lxlock, lxpolkit, lxsession, lxsession-default, lxsession-default-apps, lxsession-default-terminal, lxsession-edit and lxsession-logout

Installed Libraries: None

Installed Directory: /usr/share/lxsession

Short Descriptions

`lxsession`   is a lightweight X session manager.

Last updated on 2014-09-19 14:39:35 -0700

lxde-common-0.5.6

Introduction to LXDE Common

The LXDE Common package provides a set of default configuration for LXDE.

This package is known to build and work properly using an LFS-7.6 platform.

Package Information

- Download (HTTP): **http://downloads.sourceforge.net/lxde/lxde-common-0.5.6.tar.xz**
- Download MD5 sum: 259b4a2db50117e632e34912251cfcb9
- Download size: 844 KB

LXDE Common Dependencies

Required

[ConsoleKit-0.4.6](#), [lxde-icon-theme-0.5.1](#), [LXPanel-0.7.0](#), [LXSession-0.4.9.2](#), [openbox-3.5.2](#) (runtime), and [PCManFM-1.2.2](#)

Recommended

[desktop-file-utils-0.22](#), [hicolor-icon-theme-0.13](#), and [shared-mime-info-1.3](#)

Optional Runtime Dependencies

[D-Bus-1.8.8](#), a notification daemon such as [notification-daemon-0.7.6](#) or [xfce4-notifyd-0.2.4](#), and a polkit authentication agent such as [LXPolkit-0.1.0](#) or [polkit-gnome-0.105](#)

User Notes: [http://wiki.linuxfromscratch.org/blfs/wiki/lxde-common](#)

Installation of LXDE Common

Install LXDE 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 &&
ln -svfn profile/LXDE /etc/xdg/lxpanel/LXDE &&
install -Dm644 lxde-logout.desktop \
               /usr/share/applications/lxde-logout.desktop
```

If you have installed recommended dependencies, run the following commands as the *root* user:

```
update-mime-database /usr/share/mime &&
gtk-update-icon-cache -qf /usr/share/icons/hicolor &&
update-desktop-database -q
```

Starting LXDE

To start LXDE using [xinit-1.3.3](#), run the following commands:

```
cat > ~/.xinitrc << "EOF"
ck-launch-session startlxde
EOF

startx
```

Command Explanations

`ln -svfn profile/LXDE ...`: Fixes the wrong path of the default LXPanel profile.

Contents

Installed Programs: lxde-logout, openbox-lxde and startlxde
Installed Libraries: None
Installed Directories:/etc/xdg/lxsession/LXDE, /etc/xdg/pcmanfm/LXDE and /usr/share/lxde

Short Descriptions

`openbox-lxde`   is a wrapper script which runs Openbox with LXDE specific config file.

`startlxde`   is used to start the desktop session for LXDE .

Last updated on 2014-09-19 14:39:35 -0700

This is a small collection of optional applications that add extra capabilities to the LXDE desktop.

GPicView-0.2.4

Introduction to GPicView

The GPicView package contains a lightweight image viewer.

This package is known to build and work properly using an LFS-7.6 platform.

Package Information

- Download (HTTP): **http://downloads.sourceforge.net/lxde/gpicview-0.2.4.tar.gz**
- Download MD5 sum: b209e36531f89c48e3067b389699d4c7
- Download size: 480 KB
- Estimated disk space required: 6.2 MB
- Estimated build time: 0.2 SBU

GPicView Dependencies

Required

GTK+-2.24.24

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/gpicview

Installation of GPicView

Install GPicView 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 &&
sed -i 's/Utility;//' /usr/share/applications/gpicview.desktop
```

If you have xdg-utils-1.1.0-rc2 installed, as the `root` user, you should run the `xdg-icon-resource forceupdate --theme hicolor` command, for the installed icon to be displayed in the menu item.

Command Explanations

`sed -i ...`: Fixes submenu for GPicView.

Contents

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

Short Descriptions

`gpicview`   is a lightweight image viewer.

Last updated on 2014-09-17 15:52:31 -0700

lxappearance-obconf-0.2.2

Introduction to LXAppearance OBconf

The LXAppearance OBconf package contains a plugin for LXAppearance to configure OpenBox.

- Download (HTTP): **http://downloads.sourceforge.net/lxde/lxappearance-obconf-0.2.2.tar.xz**
- Download MD5 sum: d958ac5514ba1707429ff6794ab59abf
- Download size: 288 KB
- Estimated disk space required: 4.0 MB
- Estimated build time: 0.1 SBU

LXAppearance OBconf Dependencies

Required

LXAppearance-0.5.6 and openbox-3.5.2

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/lxappearance-obconf

Installation of LXAppearance OBconf

Install LXAppearance OBconf 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: None
Installed Library: /usr/lib/lxappearance/plugins/obconf.so
Installed Directories:/usr/lib/lxappearance and /usr/share/lxappearance/obconf

Last updated on 2014-09-17 15:52:31 -0700

LXInput-0.3.3

Introduction to LXInput

The LXInput package contains a small program used to configure keyboard and mouse for LXDE.

This package is known to build and work properly using an LFS-7.6 platform.

Package Information

- Download (HTTP): **http://downloads.sourceforge.net/lxde/lxinput-0.3.3.tar.xz**
- Download MD5 sum: d2a6467c5d23f9aa7f65d0d3abacd102
- Download size: 144 KB
- Estimated disk space required: 2.4 MB
- Estimated build time: 0.1 SBU

LXInput Dependencies

Required

GTK+-2.24.24

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/lxinput

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

This package does not come with a test suite.

Now, as the *root* user:

```
make install
```

Contents

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

Short Descriptions

`lxinput`   is a program used to configure keyboard and mouse.

Last updated on 2014-09-17 15:52:31 -0700

LXRandR-0.3.0

Introduction to LXRandR

The LXRandR package contains a monitor configuration tool for LXDE.

This package is known to build and work properly using an LFS-7.6 platform.

Package Information

- Download (HTTP): **http://downloads.sourceforge.net/lxde/lxrandr-0.3.0.tar.xz**
- Download MD5 sum: 250f0ebb09c1e02f430f951911ba1259
- Download size: 124 KB
- Estimated disk space required: 2.5 MB
- Estimated build time: less than 0.1 SBU

LXRandR Dependencies

Required

GTK+-2.24.24 and Xorg Applications

Optional

libxslt-1.1.28 with docbook-xml-4.5 and docbook-xsl-1.78.1 (to build man pages)

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/lxrandr

Installation of LXRandR

Install LXRandR 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-man`: Use this switch if you have installed optional dependencies and wish to build the manual pages.

Installed Program: lxrandr
Installed Libraries: None
Installed Directories: None

Short Descriptions

> `lxrandr`   is a GTK+ interface to XRandR.

Last updated on 2014-09-20 10:54:20 -0700

LXTask-0.1.5

Introduction to LXTask

The LXTask package contains a lightweight and desktop-independent task manager.

This package is known to build and work properly using an LFS-7.6 platform.

Package Information

- Download (HTTP): **http://downloads.sourceforge.net/lxde/lxtask-0.1.5.tar.xz**
- Download MD5 sum: c8b1e9df8cbe41c07ebc3830d4386324
- Download size: 136 KB
- Estimated disk space required: 3.3 MB
- Estimated build time: less than 0.1 SBU

LXTask Dependencies

Required

GTK+-2.24.24

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/lxtask

Installation of LXTask

Install LXTask by running the following commands:

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

This package does not come with a test suite.

Now, as the *root* user:

```
make install
```

Contents

Installed Program: lxtask
Installed Libraries: None
Installed Directories: None

Short Descriptions

> `lxtask`   is a lightweight and desktop-independent task manager.

Last updated on 2014-09-17 15:52:31 -0700

LXTerminal-0.1.11

Introduction to LXTerminal

The LXTerminal package contains a VTE-based terminal emulator for LXDE with support for multiple tabs.

- Download (HTTP): **http://downloads.sourceforge.net/lxde/lxterminal-0.1.11.tar.gz**
- Download MD5 sum: fd9140b45c0f28d021253c4aeb8c4aea
- Download size: 300 KB
- Estimated disk space required: 4.2 MB
- Estimated build time: 0.1 SBU

LXTerminal Dependencies

Required

Vte-0.28.2

Optional

libxslt-1.1.28 with docbook-xml-4.5 and docbook-xsl-1.78.1 (to build man pages)

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/lxterminal

Installation of LXTerminal

Install LXTerminal 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-man`: Use this switch if you have installed optional dependencies and wish to build the manual pages.

Contents

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

Short Descriptions

`lxterminal`   a lightweight terminal emulator for the LXDE desktop.

Last updated on 2014-09-15 14:09:24 -0700

LXDM-0.5.0

Introduction to LXDM

The LXDM is a lightweight Display Manager for the LXDE desktop. It can also be used as an alternative to other Display Managers such as GNOME's GDM or KDE's KDM.

This package is known to build and work properly using an LFS-7.6 platform.

Package Information

- Download (HTTP): **http://downloads.sourceforge.net/lxdm/lxdm-0.5.0.tar.xz**
- Download MD5 sum: a51686720e606ca456d7f56ae4159d1f
- Download size: 232 KB
- Estimated disk space required: 4.7 MB
- Estimated build time: less than 0.1 SBU

[GTK+-2.24.24](#), [ISO Codes-3.56](#) and [librsvg-2.40.3](#) (runtime, for default theme background)

Recommended

[ConsoleKit-0.4.6](#) and [Linux-PAM-1.1.8](#)

Optional

[GTK+-3.12.2](#)

User Notes: [_http://wiki.linuxfromscratch.org/blfs/wiki/lxdm_](http://wiki.linuxfromscratch.org/blfs/wiki/lxdm)

Installation of LXDM

First, some fixes.

```
cat > pam/lxdm << "EOF" &&
#%PAM-1.0
auth         required    pam_unix.so
auth         requisite   pam_nologin.so
account      required    pam_unix.so
password     required    pam_unix.so
session      required    pam_unix.so
EOF

sed -i 's:sysconfig/i18n:profile.d/i18n.sh:g' data/lxdm.in &&
sed -i 's:/etc/xprofile:/etc/profile:g' data/Xsession &&
sed -e 's/^bg/#&/' -e '/reset=1/ s/# //' \
    -e 's/logou$/logout/' -i data/lxdm.conf.in
```

Install LXDM by running the following commands:

```
./configure --prefix=/usr      \
            --sysconfdir=/etc \
            --with-pam        \
            --with-systemdsystemunitdir=no &&
make
```

This package does not come with a test suite.

Now, as the _root_ user:

```
make install
```

Command Explanations

`cat > pam/lxdm << "EOF" ...`: Replace default `/etc/pam.d/lxdm` by another one appropriate for BLFS.

`sed -i ... data/lxdm.conf.in`: Three modifications in the default configuration: (1) fix the background to the default one; (2) restart X when session is close; and (3) typo.

`sed -i ... data/Xsession`: Source `/etc/profile`, instead of other file, according to BLFS standard.

`sed -i ... data/lxdm.in`: Fix greeter's locale for BLFS specification.

`--with-pam`: This option enables use of pam authentication.

`--with-systemdsystemunitdir=no`: BLFS does not support systemd.

Configuring LXDM

Config Files

`/etc/lxdm/lxdm.conf`

Boot Script

Install the `/etc/rc.d/init.d/lxdm` init script from the [blfs-bootscripts-20140919](#) package.

```
make install-lxdm
```

session, etc. You can set a default session by uncommenting the line: session=/usr/bin/startlxde and replacing `startlxde` with your session of choice. For GNOME session=/usr/bin/gnome-session. For OPENBOX session=/usr/bin/openbox-session and for XFCE session=/usr/bin/startxfce4.

It is also possible to set the preferred session on a per-user basis by editing the ~/.dmrc file for each user and adding:

```
[Desktop]
        Session=xfce
```

You can replace the default dummy face in the greeting screen by other image representing your user. For that, copy or symlink the desired image to your home directory, with the name `.face`.

Starting lxdm

You can manually start `lxdm`, e.g, if the bootscript has been installed, by running, as *root* user:

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

By definition, X should be executed at runlevel 5, consequently, the same is true for lxdm. However, BLFS default runlevel is 3. Changing to runlevel 5, from the terminal, as *root* user, makes the `lxdm` bootscript to be executed, obtaining the greeter screen:

```
init 5
```

In order to permanently set the default to 5, obtaining the `lxdm` greeter screen automatically, you can modify `/etc/inittab`, as *root* user (the instructions below also make a backup, so you can easily revert the modification):

```
cp -v /etc/inittab{,-orig} &&
sed -i '/initdefault/ s/3/5/' /etc/inittab
```

One important script, executed after login, is `/etc/lxdm/Xsession`, which we have fixed to fit BLFS specifications.

Contents

Installed Programs: lxdm, lxdm-binary and lxdm-config, and, under /usr/libexec/, lxdm-greeter-gdk, lxdm-greeter-gtk, lxdm-numlock, and lxdm-session.

Installed Libraries: None

Installed Directories:/etc/lxdm and /usr/share/lxdm

Short Descriptions

lxdm
is a script to execute `lxdm-binary`

lxdm-binary
is the actual Display Manager; needs to be executed with option `-d` to daemonize

lxdm-config
is a graphical customizing program

lxdm-greeter-gtk
is the graphical login greeter, where, between other options, user name is chosen and password is typed (if not in auto login mode)

lxdm-numlock
is a program to set the numlock key, if so defined in `/etc/lxdm/lxdm.conf`

Last updated on 2014-09-21 15:00:18 -0700

Part XI. X Software

Chapter 36. 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.

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-7.6 platform.

Package Information

- Download (HTTP): **http://www.abisource.com/downloads/abiword/3.0.0/source/abiword-3.0.0.tar.gz**
- Download MD5 sum: 8d9c41cff3a8fbef8d0c835c65600e65
- Download size: 11 MB
- Estimated disk space required: 648 MB (84 MB installed)
- Estimated build time: 7.3 SBU

Additional Downloads

- AbiWord Docs: **http://www.abisource.com/downloads/abiword/3.0.0/source/abiword-docs-3.0.0.tar.gz**
- AbiWord Docs MD5 sum: 1.5 MB
- AbiWord Docs size: ed73d0743a19eb85e46b59464e0ef2bb
- Required patch: **http://www.linuxfromscratch.org/patches/blfs/svn/abiword-3.0.0-libgcrypt_1_6_0-1.patch**

AbiWord Dependencies

Required

Boost-1.56.0, FriBidi-0.19.6, GOffice-0.10.17, and wv-1.2.9

Recommended

enchant-1.6.0

Optional

Aiksaurus, dbus-glib-0.102, **Evolution Data Server**, gobject-introspection-1.40.0, **GtkMathView**, **libchamplain**, libgcrypt-1.6.2, libical-1.0, libsoup-2.46.0, **libwmf**, **libwpd**, **libwpg**, **libwps**, **Link Grammar Parser**, **Loudmouth**, Redland-1.0.17, **Telepathy GLib**, **OTS** **Psiconv**, and Valgrind-3.10.0

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.

User Notes: *http://wiki.linuxfromscratch.org/blfs/wiki/abiword*

Installation of AbiWord

Install AbiWord by running the following commands:

```
patch -Np1 -i ../abiword-3.0.0-libgcrypt_1_6_0-1.patch &&
./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-3.0.0.tar.gz &&
cd abiword-docs-3.0.0                &&
./configure --prefix=/usr            &&
make
```

Command Explanations

`--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.

`--enable-plugins="collab openxml goffice grammar"`: Build some or all 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-3.0/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-3.0/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-0.22 installed, you should run the `update-desktop-database` command to update the mimeinfo cache and allow the Help system to work.

If you have xdg-utils-1.1.0-rc2 installed, you should run the `xdg-icon-resource forceupdate --theme hicolor` command, for the installed icon to be displayed in the menu item.

Contents

Installed Program: abiword
Installed Library: libabiword-3.0.so
Installed Directories: /usr/include/abiword-3.0, /usr/lib/abiword-3.0, and /usr/share/abiword-3.0

Short Descriptions

`abiword`	is the word processor, a wrapper for the functions in libabiword-3.0 - it can also be used on the command line, see `man 1 abiword`.
`libabiword-3.0.so`	provides functions to access MS Word documents.

Last updated on 2014-09-21 14:28:22 -0700

Gnumeric-1.12.17

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-7.6 platform.

Package Information

- Download (HTTP): **http://ftp.gnome.org/pub/gnome/sources/gnumeric/1.12/gnumeric-1.12.17.tar.xz**
- Download (FTP): **ftp://ftp.gnome.org/pub/gnome/sources/gnumeric/1.12/gnumeric-1.12.17.tar.xz**
- Download MD5 sum: 7d488148ca5192178f60d2d33c32c9e7

- Estimated build time: 1.7 SBU (additional 1.3 SBU for the tests)

Gnumeric Dependencies

Required

[GOffice-0.10.17](#) and [Rarian-0.8.1](#)

Optional

[dblatex (for PDF docs)](#), [gobject-introspection-1.40.0](#), **[libgda](#)**, **[Mono](#)**, **[pxlib](#)**, **[Psiconv](#)**, [PyGObject-3.12.2](#), and [Valgrind-3.10.0](#) (for some tests)

> **Note**
>
> Though only a run-time dependency, if you don't install the [Yelp-3.12.0](#) package, the built-in help functionality in Gnumeric will not be available.

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/gnumeric

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
```

If you wish to test the results, issue `make -k check`. A few tests fail, some for known reasons.

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 dblatex and wish to create PDF docs.

Contents

Installed Programs: gnumeric (symlink), gnumeric-1.12.17, ssconvert, ssdiff, ssgrep and ssindex

Installed Libraries: libspreadsheet-1.12.17.so, libspreadsheet.so, several plugins under /usr/lib/gnumeric/1.12.17/plugins/, and /usr/lib/goffice/0.10/plugins/gnumeric/gnumeric.so

Installed Directories: /usr/include/libspreadsheet-1.12, /usr/lib/gnumeric, /usr/lib/goffice/0.10/plugins/gnumeric, /usr/share/gnome/help/gnumeric, /usr/share/gnumeric, /usr/share/omf/gnumeric and /usr/share/pixmaps/gnumeric

Short Descriptions

gnumeric	is a symlink to `gnumeric-1.12.17`.
gnumeric-1.12.17	is GNOME 's spreadsheet application.
ssconvert	is a command line utility to convert spreadsheet files between various spreadsheet file formats.
ssdiff	is a command line utility to compare two spreadsheets.
ssgrep	is a command line utility to search spreadsheets for strings.
ssindex	is a command line utility to generate index data for spreadsheet files.

Last updated on 2014-09-21 14:28:22 -0700

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-7.6 platform.

Package Information

- Core Download: **http://download.documentfoundation.org/libreoffice/src/4.3.1/libreoffice-4.3.1.2.tar.xz**
- Core Download MD5 sum: cf750c01b6cd0b5c6fdd1760672e67d4
- Core Download size: 146 MB
- Estimated disk space required: 8.1 GB (535 MB installed), with translations
- Estimated build time: 200 SBU, with translations

Additional Downloads

- Dictionaries: **http://download.documentfoundation.org/libreoffice/src/4.3.1/libreoffice-dictionaries-4.3.1.2.tar.xz**
- Dictionaries MD5 sum: aae27f6c9db741c42acae48a1dfb0f5e
- Dictionaries size: 36 MB
- Help Files: **http://download.documentfoundation.org/libreoffice/src/4.3.1/libreoffice-help-4.3.1.2.tar.xz**
- Help Files MD5 sum: 24692bf69bbe877ad2524653c991705a
- Help Files size: 1.8 MB
- Translations: **http://download.documentfoundation.org/libreoffice/src/4.3.1/libreoffice-translations-4.3.1.2.tar.xz**
- Translations MD5 sum: b8d3445100c10bb4f21f6c8f25c5c600
- Translations size: 121 MB
- Required patch to fix building with system Boost: **http://www.linuxfromscratch.org/patches/blfs/7.6/libreoffice-4.3.1.2-boost_1_56_0-1.patch**
- Required patch for i686 systems, in order to fix a problem inroduced by gcc-4.9.0: **http://www.linuxfromscratch.org/patches/blfs/7.6/libreoffice-4.3.1.2-gcc_4_9_0-1.patch**

LibreOffice Dependencies

Required

Archive::Zip-1.37, UnZip-6.0, Wget-1.15, 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-1.56.0, CLucene-2.3.3.4, Cups-1.7.5, cURL-7.37.1, dbus-glib-0.102, libjpeg-turbo-1.3.1, GLU-9.0.0, Graphite2-1.2.4, gst-plugins-base-0.10.36 or gst-plugins-base-1.4.1, GTK+-2.24.24, Harfbuzz-0.9.35, ICU-53.1, Little CMS-2.6, librsvg-2.40.3, libxml2-2.9.1 and libxslt-1.1.28, MesaLib-10.2.7, neon-0.30.0, NPAPI-SDK-0.27.2, NSS-3.17, OpenLDAP-2.4.39 (client only), OpenSSL-1.0.1i, Poppler-0.26.4, Python-3.4.1 (used to build the translations), Redland-1.0.17, and unixODBC-2.3.2

Optional

Avahi-0.6.31, BlueZ-5.23, Doxygen-1.8.8 (not relevant if using --disable-odk), GDB-7.8, GTK+-3.12.2, kdelibs-4.14.1, libatomic_ops-7.4.2, MariaDB-10.0.13 or **MySQL**, MIT Kerberos V5-1.12.2, OpenJDK-1.7.0.65/IcedTea-2.5.2, PostgreSQL-9.3.5, SANE-1.0.24, VLC-2.1.5, **Cppunit**, **firebird**, **glew (OpenGL Extension Wrangler Library)**, **Hunspell**, **Hyphen**, **libabw**, **libcdr**, **libcmis**, **libebook**, **libexttextcat**, **libfreehand**, **liblangtag**, **libmspub**, **libmwaw**, **libodfgen**, **librevenge (WordPerfect Document importer)**, **libvisio**, **libwpd**, **libwpg**, **libwps**, **lp_solve**, **mdds**, **MyThes**, **ogl-math - OpenGL Mathematics (GLM)**, **Orcus**, **VIGRA**, and **Zenity**

There are many optional dependencies not listed here. They can be found in "download.lst" (source directory).

```
tar -xf libreoffice-4.3.1.2.tar.xz --no-overwrite-dir &&
cd libreoffice-4.3.1.2
```

Unpack the dictionaries file and create symlinks to tarballs from the source directory so they won't get downloaded again (it is not necessary to unpack the help nor the translations tarballs):

```
install -dm755 external/tarballs &&

tar -xf ../libreoffice-dictionaries-4.3.1.2.tar.xz \
        --no-overwrite-dir --strip-components=1     &&


ln -sv ../../../libreoffice-dictionaries-4.3.1.2.tar.xz \
        external/tarballs/ &&
ln -sv ../../../libreoffice-help-4.3.1.2.tar.xz \
        external/tarballs/
```

If you have downloaded the translations tarball, create a symlink:

```
ln -sv ../../../libreoffice-translations-4.3.1.2.tar.xz \
        external/tarballs/
```

In the rest of the page, locales "en-US" and "pt-BR" are examples; you can change them to suit your needs - you might want to read the "Command Explanations", further below, before proceeding.

Due to the large size of the package, you may prefer to install it in `/opt`, instead of `/usr`. Depending on your choice, replace *<PREFIX>* by `/usr` or by `/opt/libreoffice-4.3.1.2`:

```
export LO_PREFIX=<PREFIX>
```

For i686 systems, fix a problem inroduced by gcc-4.9.0:

```
patch -Np1 -i ../libreoffice-4.3.1.2-gcc_4_9_0-1.patch &&
```

Prepare LibreOffice for compilation by running the following commands:

```
patch -Np1 -i ../libreoffice-4.3.1.2-boost_1_56_0-1.patch &&

sed -e "/gzip -f/d"   \
    -e "s|.1.gz|.1|g" \
    -i bin/distro-install-desktop-integration        &&

sed -e "/distro-install-file-lists/d" -i Makefile.in &&

chmod -v +x bin/unpack-sources                      &&
sed -e "s/target\.mk/langlist\.mk/"                 \
    -e "s/tar -xf/tar -x --strip-components=1 -f/" \
    -e "/tar -x/s/lo_src_dir/start_dir/"            \
    -i bin/unpack-sources                           &&

./autogen.sh --prefix=$LO_PREFIX            \
```

```
                         --with-help                  \
                         --with-alloc=system          \
                         --without-java               \
                         --disable-gconf              \
                         --disable-odk                \
                         --disable-postgresql-sdbc    \
                         --enable-release-build=yes   \
                         --enable-python=system       \
                         --with-system-boost          \
                         --with-system-clucene        \
                         --with-system-cairo          \
                         --with-system-curl           \
                         --with-system-expat          \
                         --with-system-graphite       \
                         --with-system-harfbuzz       \
                         --with-system-icu            \
                         --with-system-jpeg           \
                         --with-system-lcms2          \
                         --with-system-libpng         \
                         --with-system-libxml         \
                         --with-system-mesa-headers   \
                         --with-system-neon           \
                         --with-system-npapi-headers  \
                         --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                            &&
install -v -m755 -d $LO_PREFIX/share/appdata        &&
install -v -m644    sysui/desktop/appstream-appdata/*.xml \
                    $LO_PREFIX/share/appdata
```

If the dictionaries have been built, again as *root* user:

```
chown -cR 0:0 dictionaries/                                                  &&
mkdir -pv $LO_PREFIX/lib/libreoffice/share/extensions/dict-en                &&
cp -vR dictionaries/en/*    $LO_PREFIX/lib/libreoffice/share/extensions/dict-en    &&
mkdir -pv $LO_PREFIX/lib/libreoffice/share/extensions/dict-pt-BR             &&
cp -vR dictionaries/pt_BR/* $LO_PREFIX/lib/libreoffice/share/extensions/dict-pt-BR
```

If installed in `/opt/libreoffice-4.3.1.2` and the icons in the new items of the desktop menu are not properly displayed, optionally run the following commands, as *root* user (it may be necessary to logout the session, before the icons appear):

```
mkdir -pv /usr/share/pixmaps &&
for i in writer base calc draw impress math startcenter writer
do
  ln -svf /opt/libreoffice-4.3.1.2/share/icons/hicolor/32x32/apps/libreoffice-$i.png \
          /usr/share/pixmaps/
done
unset i
```

Command Explanations

`sed -e ...`: First sed prevents compression of the manual pages, the second one prevents a script that causes install to fail from running, the third one fixes the unpack script.

`chmod -v +x ...`: Fix the unpack script's permissions.

--with-vendor=BLFS: This switch sets BLFS as the vendor which is mentioned when you click "About" on the toolbar.

> **Note**
>
> For a list of the available languages, you can uncompress the translations tarball, `tar -xf ../libreoffice-translations-4.3.1.2.tar.xz --no-overwrite-dir -C /tmp`, and run `ls /tmp/libreoffice-4.3.1.2/translations/source`.

--with-help: Without this switch, the help files are not built.

--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-release-build=yes: This switch enables a Release Build. LibreOffice can be built as a Release Build or as a Developer Build, because their default installation paths and user profile paths are different. Developer Build displays the words "Dev" and "Beta" in several places (e.g, menu and splash screen).

--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-dbus`: Use this switch if you've not installed D-Bus-1.8.0. It also disables Bluetooth support and font install via PackageKit.

`--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-1.4.1 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, localc, lodraw, loffice, lofromtemplate, loimpress, lomath, loweb, lowriter, soffice and unopkg; several programs under $LO_PREFIX/lib/libreoffice/program

Installed Libraries: several libraries under $LO_PREFIX/lib/libreoffice/{ure/lib,program}

Installed Directory: $LO_PREFIX/lib/libreoffice

Short Descriptions

lobase	is a database manager.
localc	is a spreadsheet program.
lodraw	is a vector graphics editor and diagramming tool.
loimpress	can edit and display PowerPoint presentations.
lomath	is a mathematical formula editor.
lowriter	is a word processor.
unopkg	is a tool to manage LibreOffice extensions from the command line.

Last updated on 2014-09-22 00:10:59 -0700

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-2.29

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-32.0.1 and Thunderbird-31.1.1. Both are based on the Mozilla source code.

This package is known to build and work properly using an LFS-7.6 platform.

Package Information

- Download (HTTP): **http://ftp.mozilla.org/pub/mozilla.org/seamonkey/releases/2.29/source/seamonkey-2.29.source.tar.bz2**
- Download (FTP): **ftp://ftp.mozilla.org/pub/mozilla.org/seamonkey/releases/2.29/source/seamonkey-2.29.source.tar.bz2**
- Download MD5 sum: ffd77471765e1a38c2a00ab3453a96a7
- Download size: 166 MB
- Estimated disk space required: 2.1 GB (79 MB installed)
- Estimated build time: 13 SBU

SeaMonkey Dependencies

Required

alsa-lib-1.0.28, GTK+-2.24.24, Zip-3.0, and UnZip-6.0.

Recommended

yasm-1.3.0 or libvpx-1.3.0 (to allow SeaMonkey to play webm videos).

Optional

dbus-glib-0.102, startup-notification-0.12, SQLite-3.8.6, **Hunspell**, libevent-2.0.21, Doxygen-1.8.8, gst-plugins-base-0.10.36 (with gst-plugins-good-0.10.31 and gst-ffmpeg-0.10.13 at runtime), libnotify-0.7.6, NSPR-4.10.7, NSS-3.17, OpenJDK-1.7.0.65/IcedTea-2.5.2, PulseAudio-5.0, Wireless Tools-29, Valgrind-3.10.0 (only for testing the jemalloc code), and Wget-1.15

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/seamonkey

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
```

```
# GStreamer is necessary for H.264 video playback in HTML5 Video Player;
# to be enabled, also remember to set "media.gstreamer.enabled" to "true"
# in about:config. If you have GStreamer 0.x.y, uncomment this line:
#ac_add_options --enable-gstreamer

# 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-cairo
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
```

The moz-build-dir directory needs to exist and match the value used in mozconfig (above) for the object directory (MOZ_OBJDIR):

```
mkdir -vp mozilla/moz-build-dir
```

Compile SeaMonkey by running the following command:

> ### Note
>
> If you did not install Xorg in /usr, be sure to specify the location with:
>
> ```
> export CPLUS_INCLUDE_PATH=$XORG_PREFIX/include
> export C_INCLUDE_PATH=$XORG_PREFIX/include
> ```

```
make -f client.mk
```

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:

```
make -f client.mk install INSTALL_SDK= &&

cp -v moz-build-dir/mozilla/dist/man/man1/seamonkey.1 /usr/share/man/man1
```

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

`mkdir -vp mozilla/moz-build-dir`: fixes a build failure at the beginning of the build.

`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

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-2.29/chrome/icons/default/seamonkey.png \
        /usr/share/pixmaps
```

Contents

Installed Programs: seamonkey

Installed Libraries: Numerous libraries, browser, and email/newsgroup components, plugins, extensions, and helper modules installed in `/usr/lib/seamonkey-2.29`

Installed Directory: /usr/lib/seamonkey-2.29.

Short Descriptions

seamonkey   is the Mozilla browser/email/newsgroup/chat client suite.

Last updated on 2014-09-19 20:27:12 -0700

Firefox-32.0.1

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-7.6 platform.

Package Information

- Download (HTTP): **http://ftp.mozilla.org/pub/mozilla.org/firefox/releases/32.0.1/source/firefox-**

- Download MD5 sum: 9559f6cef55251bab743e510e1f9b478
- Download size: 144 MB
- Estimated disk space required: 4.7 GB (66 MB installed)
- Estimated build time: 60 SBU

Firefox Dependencies

Required

alsa-lib-1.0.28, GTK+-2.24.24, Zip-3.0, and UnZip-6.0

Recommended

ICU-53.1, libevent-2.0.21, libvpx-1.3.0, NSPR-4.10.7, NSS-3.17, SQLite-3.8.6 and yasm-1.3.0

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.

Note

With Firefox-31.0 and later versions, you must have installed Openssl before Python 2 or the build system will quickly fail with output including "ImportError: cannot import name HTTPSHandler". If you are in any doubt about this (e.g. upgrading from an older version of Firefox), check if `/usr/lib/python2.7/lib-dynload/_ssl.so` exists. If it does not, reinstall Python-2.7.8 (after installing OpenSSL-1.0.1i. The latest version of any *currently maintained* version of Openssl should be satisfactory if already installed.

Optional

cURL-7.37.1, dbus-glib-0.102, Doxygen-1.8.8, gst-plugins-base-0.10.36 (with gst-plugins-good-0.10.31 and gst-ffmpeg-0.10.13 at runtime), or gst-plugins-base-1.4.1 (with gst-plugins-good-1.4.1 and gst-libav-1.4.1 at runtime), **Hunspell**, libnotify-0.7.6, OpenJDK-1.7.0.65/IcedTea-2.5.2, PulseAudio-5.0, startup-notification-0.12, Wget-1.15, and Wireless Tools-29

User Notes: *http://wiki.linuxfromscratch.org/blfs/wiki/firefox*

Installation of Firefox

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 any other desired options. Create the file by issuing the following command:

```
cat > mozconfig << "EOF"
# If you have a multicore machine, firefox will now use all the cores by
# default. Exceptionally, you can reduce the number of cores, e.g. to 1,
# by uncommenting the next line and setting a valid number of CPU cores.
#mk_add_options MOZ_MAKE_FLAGS="-j1"

# If you have installed DBus-Glib comment out this line:
ac_add_options --disable-dbus

# If you have installed dbus-glib, and you have installed (or will install)
# wireless-tools, and you wish to use geolocation web services, comment out
# this line
ac_add_options --disable-necko-wifi

# If you have installed libnotify comment out this line:
ac_add_options --disable-libnotify

# GStreamer is necessary for H.264 video playback in HTML5 Video Player;
# to be enabled, also remember to set "media.gstreamer.enabled" to "true"
# in about:config. If you have GStreamer 0.x.y, uncomment this line:
#ac_add_options --enable-gstreamer
```

```
# uncomment these lines if you have installed optional dependencies:
#ac_add_options --enable-system-hunspell
#ac_add_options --enable-startup-notification

# Comment out following option if you have PulseAudio installed
ac_add_options --disable-pulseaudio

# 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
ac_add_options --with-system-icu

# The BLFS editors recommend not changing anything below this line:
ac_add_options --prefix=/usr
ac_add_options --enable-application=browser

ac_add_options --disable-crashreporter
ac_add_options --disable-updater
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-cairo
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:

> ### Note
>
> If you are compiling Firefox in chroot, prepend `SHELL=/bin/sh` to the first make command below.

```
test $(uname -m) = "i686" && sed -i 's/enable-optimize/disable-optimize/' mozconfig || true &&
make -f client.mk
```

This package does not come with a test suite.

Now, as the *root* user:

```
make -f client.mk install INSTALL_SDK= &&

mkdir -pv /usr/lib/mozilla/plugins &&
ln -sfv ../mozilla/plugins /usr/lib/firefox-32.0.1
```

Command Explanations

`test $(uname -m) = "i686" && sed ...`: On this version of firefox, an old bug has reappeared in 32-bit builds. With optimization, the install fails with a Python error. This command will fix i686 builds and preserve the optimization on x86_64.

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-32.0.1: 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=application/xhtml+xml;text/xml;application/xhtml+xml;application/vnd.mozilla.xul+xml;text/mml;x-scheme-handler/http;
StartupNotify=true
EOF

ln -sfv /usr/lib/firefox-32.0.1/browser/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-32.0.1`

Installed Directory: /usr/lib/firefox-32.0.1

Short Descriptions

`firefox`   is a GTK+ 2 internet browser that uses the Mozilla Gecko rendering engine.

Last updated on 2014-09-18 16:04:08 -0700

Chapter 38. Other X-based Programs

These programs use the X Window System and don't fit easily into any of the other chapters.

Balsa-2.5.1

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-7.6 platform.

Package Information

- Download size: 3.7 MB

- Estimated disk space required: 72 MB

- Estimated build time: 0.5 SBU

Balsa Dependencies

Required

enchant-1.6.0, GMime-2.6.20, libESMTP-1.0.6, Rarian-0.8.1, and Aspell-0.60.6.1 or **GtkSpell** (GtkSpell provides on-the-fly as you type spell checking)

Recommended

PCRE-8.35

Optional

GtkHTML, gtksourceview-3.12.3, OpenSSL-1.0.1i, OpenLDAP-2.4.39, Compface-1.5.2, MIT Kerberos V5-1.12.2, libnotify-0.7.6, SQLite-3.8.6, 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-1.5.1

User Notes: *http://wiki.linuxfromscratch.org/blfs/wiki/balsa*

Installation of Balsa

Install Balsa by running the following commands:

```
sed -i "/(HAVE_CONFIG_H)/i \
#include <glib-2.0/glib.h>" src/main-window.c &&

./configure --prefix=/usr              \
            --sysconfdir=/etc/gnome  \
            --localstatedir=/var/lib \
            --with-rubrica           \
            --without-html-widget    \
            --without-libnotify      \
            --without-nm             \
            --without-gtkspell       &&
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.

`--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.

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 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

Installed Programs: balsa and balsa-ab
Installed Libraries: None
Installed Directories: /usr/share/balsa and /usr/share/sounds/balsa

Short Descriptions

`balsa`   is a glib based mail client.

Last updated on 2014-09-21 16:43:46 -0700

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-7.6 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-1.56.0, gnome-icon-theme-3.12.0, GTK+-2.24.24 and Opal-3.10.10

Recommended

dbus-glib-0.102, GConf-3.2.6 and libnotify-0.7.6

Optional

Avahi-0.6.31, **Evolution Data Server**, **GNOME Doc Utils** and OpenLDAP-2.4.39

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/ekiga

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:

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.

`--disable-dbus`: This switch disables D-Bus support. Use if you have not installed D-Bus.

`--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

Installed Programs: ekiga, ekiga-config-tool and ekiga-helper

Installed Libraries: None

Installed Directories: /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.

Last updated on 2014-09-21 14:28:22 -0700

FontForge-2.0.20140101

Introduction to FontForge

The FontForge package contains an outline font editor that lets you create your own postscript, truetype, opentype, cid-keyed, multi-master, cff, svg and bitmap (bdf, FON, NFNT) fonts, or edit existing ones.

This package is known to build and work properly using an LFS-7.6 platform.

Package Information

- Download (HTTP): **http://anduin.linuxfromscratch.org/sources/other/fontforge-2.0.20140101.tar.xz**
- Download MD5 sum: 024ebb9dca824154fc19310b675f9d50
- Download size: 14 MB
- Estimated disk space required: 235 MB
- Estimated build time: 2.2 SBU

The FontForge tarball specified above was not generated by the FontForge maintainers. It was created by the BLFS team by pulling a Git version and then generating the autotools components and documentation. The BLFS team made no changes to the existing source files.

FontForge Dependencies

Recommended

Cairo-1.12.16, FreeType-2.5.3, libxml2-2.9.1 and Xorg Libraries

Optional

giflib-5.1.0, libjpeg-turbo-1.3.1, libpng-1.6.13, LibTIFF-4.0.3, Pango-1.36.7, Python-2.7.8, **libspiro**, **libunicodenames**, **libuninameslist**, and **libzmq**,

Installation of FontForge

Fix building with Giflib 5.1.0:

```
sed "/DGifCloseFile/s:gif:&, NULL:g" -i gutils/gimagereadgif.c
```

Install FontForge by running the following commands:

```
./configure --prefix=/usr    \
            --disable-static \
            --docdir=/usr/share/doc/fontforge-2.0.20140101 &&
make
```

To test the results, issue: `make -k check`. Test 32 fails for unknown reasons.

Now, as the *root* user:

```
make install
```

If desired, install desktop support files as the *root* user:

```
rm -rf desktop/icons/src &&
cp -rf desktop/icons/* /usr/share/icons/hicolor &&
install -Dm644 desktop/fontforge.desktop /usr/share/applications/fontforge.desktop &&
install -Dm644 desktop/fontforge.xml /usr/share/mime/packages/fontforge.xml
```

Contents

Installed Programs: fontforge, fontimage, fontlint and sfddiff
Installed Libraries: libfontforgeexe.so, libfontforge.so, libgdraw.so, libgioftp.so, libgunicode.so and libgutils.so
Installed Directories: /usr/include/fontforge, /usr/share/doc/fontforge-2.0.20140101 and /usr/share/fontforge

Short Descriptions

fontforge	is a program that allows you to create and modify font files.
fontimage	is a program that produces an image showing representative glyphs of the font.
fontlint	is a program that checks the font for certain common errors.
sfddiff	is a program that compares two font files.

Last updated on 2014-09-14 13:18:45 -0700

Gimp-2.8.14

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-7.6 platform.

Package Information

- Download (HTTP): **http://download.gimp.org/pub/gimp/v2.8/gimp-2.8.14.tar.bz2**
- Download MD5 sum: 233c948203383fa078434cc3f8f925cb
- Download size: 20 MB
- Estimated disk space required: 642 MB (additional 553 MB to run the test suite, the help files add from 307 MB (en only) to reputedly 1.3 GB (all 18 languages), typically increasing by 60 MB per translation)
- Estimated build time: 4.2 SBU (additional 0.9 SBU to run the test suite, and for the help files, from 0.6 SBU (en only) to reputedly 19 SBU (all) - typically 1.3 SBU per translation)

Additional Downloads

- Optional help files: **http://download.gimp.org/pub/gimp/help/gimp-help-2.8.2.tar.bz2**
- Download MD5 sum: a591c8974b2f4f584d0a769d52ed6c5b
- Download size: 152 MB
- Optional patch: **http://www.linuxfromscratch.org/patches/blfs/7.6/gimp-2.8.14-device_info-1.patch**

Required

gegl-0.2.0 and GTK+-2.24.24

Recommended

PyGTK-2.24.0 (including the gtk and pango modules)

Optional

AAlib-1.4rc5, alsa-lib-1.0.28, cURL-7.37.1, dbus-glib-0.102, ghostscript-9.14 (with libgs installed), Gvfs-1.20.3, ISO Codes-3.56, JasPer-1.900.1, Little CMS-1.19 or Little CMS-2.6, libexif-0.6.21, libmng-2.0.2, librsvg-2.40.3, **libwmf**, Poppler-0.26.4, an MTA (that provides a `sendmail` program), udev-extras (from eudev) (for GUdev), WebKitGTK+-2.4.5 (required for the help-plugin) and GTK-Doc-1.20

Optional, for optimizing the PNG files in the help system

pngnq and **pngcrush**

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/gimp

Installation of Gimp

In order to get rid of an annoying message when running from a terminal and/or if you wish to run the test suite, optionally use the following patch:

```
patch -Np1 -i ../gimp-2.8.14-device_info-1.patch
```

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. Prepare for the build with the following command:

```
ALL_LINGUAS="ca da de el en en_GB es fr it ja ko nl nn pt_BR 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, remove the line starting with `ALL_LINGUAS`, if you wish to build all languages.

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+-2.24.24 or GTK+-3.12.2 installed (for the icon cache) and desktop-file-utils-0.22 (for the desktop cache) and issue the following commands as the *root* user:
>
> ```
> gtk-update-icon-cache &&
> ```

Command Explanations

ALL_LINGUAS="ca da de el 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.

--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

Installed Programs: gimp, gimp-2.8, gimp-console, gimp-console-2.8 and gimptool-2.0

Installed Libraries: 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

Installed Directories: /etc/gimp, /usr/include/gimp-2.0, /usr/lib/gimp, /usr/share/gimp, /usr/share/gimp/2.0/help/{en,lang2,lang3,...}, /usr/share/gtk-doc/html/{libgimp,libgimpbase,libgimpcolor}, /usr/share/gtk-doc/html/{libgimpconfig,libgimpmath}, /usr/share/gtk-doc/html/{libgimpmodule,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.

Last updated on 2014-09-13 17:48:40 -0700

---

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-7.6 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/7.6/gnash-0.8.10-CVE-2012-1175-1.patch**

gnash Dependencies

Required

agg-2.5, Boost-1.56.0, cURL-7.37.1, gst-ffmpeg-0.10.13, NPAPI-SDK-0.27.2, and giflib-5.1.0

Optional

DejaGnu-1.5.1, GConf-3.2.6, git-2.1.0, kdelibs-4.14.1, libogg-1.3.2, libvorbis-1.3.4, Qt-4.8.6, Speex-1.2rc1, Wget-1.15, **SWFTools**, **Swfmill** , **Mtasc**, **Netcat**, **Csound**, **LibGSM** and **Libdc1394**.

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/gnash

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   &&
sed -e '/DGifOpen/s:Data:&, NULL:'          \
    -e '/DGifCloseFile/s:_gif:&, NULL:'     \
    -i libbase/GnashImageGif.cpp            &&
sed -i '/#include <csignal>/a\#include <unistd.h>' plugin/klash4/klash_part.cpp &&

./configure --prefix=/usr --sysconfdir=/etc                \
  --with-npapi-incl=/usr/include/npapi-sdk --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-sdk: This option tells it where to find some Mozilla headers that it needs.

--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.

Last updated on 2014-09-21 14:28:22 -0700

Gparted-0.19.1

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-7.6 platform.

Package Information

- Download (HTTP): **http://downloads.sourceforge.net/gparted/gparted-0.19.1.tar.bz2**
- Download MD5 sum: 9aff8cef2c46e5ca4adaab43588c9e64
- Download size: 2.0 MB
- Estimated disk space required: 77 MB (additional 3 MB, building the optional documentation)
- Estimated build time: 0.9 SBU (additional 0.1 SBU, building the optional documentation)

Gparted Dependencies

Required

Gtkmm-2.24.4 and parted-3.2

Optional

GNOME Doc Utils and Rarian-0.8.1

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/gparted

Installation of Gparted

Install Gparted by running the following commands:

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

This package does not come with a testsuite.

Now, as the *root* user:

Command Explanations

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

`--disable-doc`: This switch disables building of the optional documentation. Remove it if you have installed GNOME Doc Utils.

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-2014.2.15, reiserfsprogs-3.6.24, xfsprogs-3.2.1, **btrfs-progs**, **dosfstools**, **mtools** (required to read and write FAT16/32 volume labels and UUIDs), **hfsutils**, hfsprogs, **nilfs-utils** and reiser4progs.

Root privileges are required to run Gparted. If you wish to run the application from the menu, further applications and configurations are necessary. Examples of applications that may be used: **gksu**, **kdesudo**, or **xdg-su**. Other solution is to use pkexec, from Polkit-0.112, but some configuration is necessary. Another simple solution is ssh-askpass-6.6p1. Below, we describe these two alternatives: "ssh-askpass" and "pkexec".

ssh-askpass

To optionally use ssh-askpass-6.6p1 if it is installed in your system, run the following commands as the *root* user:

```
cp -v /usr/share/applications/gparted.desktop /usr/share/applications/gparted.desktop.back &&
sed -i 's/Exec=/Exec=sudo -A /'              /usr/share/applications/gparted.desktop       &&
```

Now, clicking in the menu item for Gparted, a dialog appears in the screen, asking for the administrator password.

pkexec

To optionally use pkexec, you need polkit-gnome-0.105 or LXPolkit-0.1.0, and ConsoleKit-0.4.6 installed with support to Linux-PAM-1.1.8 and Polkit-0.112. As the *root* user, configure Gparted-0.19.1 and Polkit-0.112 with the following commands:

```
cp -v /usr/share/applications/gparted.desktop \
                                  /usr/share/applications/gparted.desktop.back &&
sed -i 's:/usr/sbin/gparted:/usr/sbin/gparted_polkit:' \
                                  /usr/share/applications/gparted.desktop       &&

cat > /usr/sbin/gparted_polkit << "EOF" &&
#!/bin/bash

pkexec /usr/sbin/gparted $@
EOF
chmod -v 0755 /usr/sbin/gparted_polkit
```

Still as the *root* user, configure Polkit-0.112 and Gparted-0.19.1 to use pkexec:

```
cat > /usr/share/polkit-1/actions/org.gnome.gparted.policy << "EOF"
<?xml version="1.0" encoding="UTF-8"?>
<!DOCTYPE policyconfig PUBLIC
 "-//freedesktop//DTD PolicyKit Policy Configuration 1.0//EN"
 "http://www.freedesktop.org/standards/PolicyKit/1/policyconfig.dtd">
<policyconfig>

  <action id="org.freedesktop.policykit.pkexec.run-gparted">
    <description>Run GParted</description>
    <message>Authentication is required to run GParted</message>
    <defaults>
      <allow_any>no</allow_any>
      <allow_inactive>no</allow_inactive>
      <allow_active>auth_admin_keep</allow_active>
    </defaults>
    <annotate key="org.freedesktop.policykit.exec.path">/usr/sbin/gparted</annotate>
    <annotate key="org.freedesktop.policykit.exec.allow_gui">true</annotate>
  </action>

</policyconfig>
EOF
chmod -v 0644 /usr/share/polkit-1/actions/org.gnome.gparted.policy
```

Now, clicking in the menu item for Gparted, a dialog appears in the screen, asking for the administrator password.

Contents

Short Descriptions

gparted   is a shell script which sets up the environment before calling `gpartedbin`.

gpartedbin   is the Gparted binary.

gparted_polkit is an optional script which can be used to run gparted with polkit, from a menu.

Last updated on 2014-09-21 14:28:22 -0700

IcedTea-Web-1.5.1

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-7.6 platform.

Package Information

- Download (HTTP): **http://icedtea.classpath.org/download/source/icedtea-web-1.5.1.tar.gz**
- Download MD5 sum: ee53fdd19456a59aa9d3a407d35a358c
- Download size: 1.6 MB
- Estimated disk space required: 30 MB
- Estimated build time: 0.2 SBU

IcedTea-Web Dependencies

Required

NPAPI-SDK-0.27.2, and OpenJDK-1.7.0.65/IcedTea-2.5.2 or Java-1.7.0.65 (remember to configure as described in the OpenJDK-1.7.0.65/IcedTea-2.5.2 page),

Required at runtime, a web browser, such as:

Epiphany-3.12.1, Firefox-32.0.1, Midori-0.5.8, SeaMonkey-2.29, **Chromium**, and **Opera**

Optional

libxslt-1.1.28, Mercurial-3.1.1, **EMMA**, and **JACOCO**

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/icedtea-web

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 &&
mandb -c /opt/jdk/man
```

To test the man pages are correctly installed, issue `man policyeditor` to display the respective man page.

If desired, you may install a .desktop file corresponding to an entry in a desktop menu for `policyeditor`, as *root* user:

```
install -v -Dm0644 itweb-settings.desktop /usr/share/applications/itweb-settings.desktop &&
install -v -Dm0644 javaws.png /usr/share/pixmaps/javaws.png
```

--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:

```
ln -s ${JAVA_HOME}/jre/lib/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

Installed Programs: itweb-settings, javaws and policyeditor
Installed Libraries: IcedTeaPlugin.so, about.jar, netx.jar, plugin.jar
Installed Directories: ${JAVA_HOME}/jre/share/icedtea-web

Short Descriptions

`itweb-settings`	allows customization of the browser plugin and `javaws`.
`javaws`	launches Java application/applets hosted on a network.
`policyeditor`	view and modify security policy settings, including certificates, for javaws and the browser plugin.
`IcedTeaPlugin.so`	is the Java browser plugin.
`about.jar`	contains functions for the about dialog boxes.
`netx.jar`	contains functions for the IcedTea-Web webstart implementation (NetX).
`plugin.jar`	contains functions for the IcedTea-Web Java plugin.

Last updated on 2014-09-21 01:03:52 -0700

Inkscape-0.48.5

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-7.6 platform.

Package Information

- Download (HTTP): **http://downloads.sourceforge.net/inkscape/inkscape-0.48.5.tar.bz2**
- Download MD5 sum: 431cda5cd40cd4fdf2b89db1bdcce61f
- Download size: 19 MB
- Estimated disk space required: 1.4 GB
- Estimated build time: 12 SBU

Additional Downloads

- Required patch: **http://www.linuxfromscratch.org/patches/blfs/7.6/inkscape-0.48.5-gc-1.patch**

Inkscape Dependencies

Required

Boost-1.56.0, GC-7.4.2, Gsl-1.16, Gtkmm-2.24.4 and libxslt-1.1.28

Recommended

Aspell-0.60.6.1, Doxygen-1.8.8, ImageMagick-6.8.9-7, **libwpg**, Poppler-0.26.4 and popt-1.16

Optional Runtime Dependencies (for some of the Inkscape extensions)

XML::XQL and **python-lxml**

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/inkscape

Installation of Inkscape

Install Inkscape by running the following commands:

```
patch -Np1 -i ../inkscape-0.48.5-gc-1.patch &&

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

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+-2.24.24 or GTK+-3.12.2 installed (for the icon cache) and desktop-file-utils-0.22 (for the desktop cache) and issue the following commands as the *root* user:
>
> ```
> gtk-update-icon-cache &&
> update-desktop-database
> ```

Contents

Installed Programs: inkscape and inkview
Installed Libraries: None
Installed Directory: /usr/share/inkscape

Short Descriptions

inkscape   an SVG (Scalable Vector Graphics) editing program.

inkview   is a simple program for displaying SVG files.

Last updated on 2014-09-14 13:18:45 -0700

Pidgin-2.10.9

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-7.6 platform.

Package Information

- Download (HTTP): **http://downloads.sourceforge.net/pidgin/pidgin-2.10.9.tar.bz2**
- Download MD5 sum: 10a4a69d077893f6dd3438cd8af94e81
- Download size: 9.7 MB
- Estimated disk space required: 238 MB (additional 2MB for the tests and 90 MB for API docs)
- Estimated build time: 1.7 SBU (additional 0.1 SBU for API docs)

Pidgin Dependencies

libgcrypt-1.6.2 and GnuTLS-3.3.7 or NSS-3.17

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-0.9.14 (only used during the test suite), Cyrus SASL-2.1.26, D-Bus-1.8.8, GConf-3.2.6, libidn-1.29, NetworkManager-0.9.10.0, GStreamer-0.10.36 (required for audio support), SQLite-3.8.6 (required for the Contact Availability Prediction plugin), startup-notification-0.12, Tcl-8.6.2, Tk-8.6.2, **Evolution Data Server**, **Farstream (Version 0.1)** (required for video and voice support), **Gtkspell**, **libgadu**, **Meanwhile** (required for Sametime protocol support), **SILC Client**, **SILC Toolkit**, **Zephyr**, and MIT Kerberos V5-1.12.2 (required for Kerberos support in the Zephyr module),

User Notes: *http://wiki.linuxfromscratch.org/blfs/wiki/pidgin*

Installation of Pidgin

Compile Pidgin by running the following commands:

```
./configure --prefix=/usr        \
            --sysconfdir=/etc    \
            --disable-avahi      \
            --disable-gtkspell   \
            --disable-gstreamer  \
            --disable-meanwhile  \
            --disable-idn        \
            --disable-nm         \
            --disable-vv         \
            --disable-tcl &&
make
```

If you have Doxygen-1.8.8 installed (Graphviz-2.38.0 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-2.10.9 &&
cp -v README doc/gtkrc-2.0 /usr/share/doc/pidgin-2.10.9
```

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

```
mkdir -pv /usr/share/doc/pidgin-2.10.9/api &&
cp -v doc/html/* /usr/share/doc/pidgin-2.10.9/api
```

> **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+-2.24.24 or GTK+-3.12.2 installed (for the icon cache) and desktop-file-utils-0.22 (for the desktop cache) and issue the following commands as the *root* user:
>
> ```
> gtk-update-icon-cache &&
> update-desktop-database
> ```

Command Explanations

`--disable-avahi`: Remove this switch if you've installed Avahi-0.6.31.

`--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-nm`: Remove this switch if you've installed [NetworkManager-0.9.10.0](#).

`--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-8.6.2](#).

`--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-3.3.7](#) and [NSS-3.17](#) installed, but want to use [NSS-3.17](#) 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

Installed Programs: finch, pidgin, purple-client-example, purple-remote, purple-send, purple-send-async, and purple-url-handler

Installed Library: libgnt.so, libpurple.so, libpurple-client.so, and plugins under /usr/lib/{finch,gnt,pidgin,purple-2}

Installed Directories: /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-2.10.9, /usr/share/pixmaps/pidgin, /usr/share/purple, and /usr/share/sounds/purple

Short Descriptions

`pidgin`   is a GTK+ 2 instant messaging client.

`finch`   is a text-based instant messaging client.

Last updated on 2014-09-21 15:00:18 -0700

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-7.6 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-1.3](#)

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/rox-filer

Kernel Configuration

```
    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 you local network) with ssh configured for passwordless logins and you have sshfs-fuse-2.5 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}
```

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

Installed Programs: rox
Installed Libraries: None
Installed Directories: /usr/share/rox

Short Descriptions

`rox`   is the rox file manager.

Last updated on

rxvt-unicode-9.20

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-7.6 platform.

Package Information

- Download (HTTP): **http://dist.schmorp.de/rxvt-unicode/Attic/rxvt-unicode-9.20.tar.bz2**
- Download MD5 sum: 4a5b823f08d21036f94a6c51e94d025b
- Download size: 896 KB
- Estimated disk space required: 25 MB
- Estimated build time: 0.2 SBU

X Window System

Optional

[gdk-pixbuf-2.30.8](#) (for background images) and [startup-notification-0.12](#)

User Notes: ***[http://wiki.linuxfromscratch.org/blfs/wiki/rxvt-unicode](#)***

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 **urxvtc** 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

Installed Programs: urxvt, urxvtd, and urxvtc
Installed Libraries: Many Perl extensions located under `/usr/lib/urxvt/perl`
Installed Directory: /usr/lib/urxvt

Short Descriptions

urxvtc   controls the **urxvtd** daemon.

Thunderbird-31.1.1

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-7.6 platform.

Package Information

- Download (HTTP): **http://ftp.mozilla.org/pub/mozilla.org/thunderbird/releases/31.1.1/source/thunderbird-31.1.1.source.tar.bz2**
- Download (FTP): **ftp://ftp.mozilla.org/pub/mozilla.org/thunderbird/releases/31.1.1/source/thunderbird-31.1.1.source.tar.bz2**
- Download MD5 sum: 92a36f2e4916529c1226aa283dc160a6
- Download size: 163 MB
- Estimated disk space required: 4.6 GB (62 MB installed)
- Estimated build time: 50 SBU

Thunderbird Dependencies

Required

alsa-lib-1.0.28, GTK+-2.24.24, Zip-3.0 and UnZip-6.0

Recommended

libevent-2.0.21, libvpx-1.3.0, NSPR-4.10.7, NSS-3.17, SQLite-3.8.6 and yasm-1.3.0

> ### 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.

> ### Note
>
> With Thunderbird-31.0 and later versions, you must have installed Openssl before Python 2, or the build system will quickly fail with output including "ImportError: cannot import name HTTPSHandler". If you are in any doubt about this (e.g. upgrading from an older version of Thunderbird), check if `/usr/lib/python2.7/lib-dynload/_ssl.so` exists. If it does not, reinstall Python-2.7.8 (after installing OpenSSL-1.0.1i - the latest version of any *currently maintained* version of Openssl should be satisfactory if already installed - if that package has not already been installed).

Optional

cURL-7.37.1, Cyrus SASL-2.1.26, dbus-glib-0.102, Doxygen-1.8.8, gst-plugins-good-0.10.31 and gst-ffmpeg-0.10.13, libnotify-0.7.6, OpenJDK-1.7.0.65/IcedTea-2.5.2, PulseAudio-5.0, startup-notification-0.12, Wget-1.15, Wireless Tools-29, and **Hunspell**

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/Thunderbird

Installation of Thunderbird

The configuration of Thunderbird 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 a brief description of each), issue `mozilla/configure --help`. Create the file with the following command:

```
# is the number of CPU cores. The option below is therefore useless, unless
# you want to use a smaller number of jobs:
#mk_add_options MOZ_MAKE_FLAGS="-j1"

# If you have installed DBus-Glib comment out this line:
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

# GStreamer is necessary for H.264 video playback in HTML5 Video Player;
# to be enabled, also remember to set "media.gstreamer.enabled" to "true"
# in about:config. If you have installed GStreamer comment out this line:
ac_add_options --disable-gstreamer

# Uncomment these lines if you have installed optional dependencies:
#ac_add_options --enable-system-hunspell
#ac_add_options --enable-startup-notification

# Comment out following option if you have PulseAudio installed
ac_add_options --disable-pulseaudio

# 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
ac_add_options --with-system-icu

# The BLFS editors recommend not changing 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-cairo
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
```

First, a bug needs to be fixed. Notice that thunderbuild needs to match the value used in mozconfig (above) for the object directory (MOZ_OBJDIR):

```
mkdir -vp mozilla/thunderbuild
```

```
make -f client.mk
```

This package does not come with a test suite.

Install Thunderbird by running the following commands as the *root* user:

```
make -f client.mk install INSTALL_SDK=
```

The above instruction just installs 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

`mkdir -vp mozilla/thunderbuild`: fixes a build failure of Makefile at the beginning of build, where a file cannot be found.

`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.

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 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
```

```
EOF

ln -sfv /usr/lib/thunderbird-31.1.1/chrome/icons/default/default256.png \
        /usr/share/pixmaps/thunderbird.png
```

Contents

Installed Program: thunderbird
Installed Libraries: None
Installed Directory: /usr/lib/thunderbird-31.1.1

Short Descriptions

`thunderbird`   is Mozilla 's email and newsgroup client.

Last updated on 2014-09-22 01:43:56 -0700

Tigervnc-1.3.1

Introduction to Tigervnc

Tigervnc is an advanced VNC (Virtual Network Computing) implementation. It allows creation of an Xorg server not tied to a physical console and also provides a client for viewing of the remote graphical desktop.

This package is known to build and work properly using an LFS-7.6 platform.

Package Information

- Download (FTP): **http://downloads.sourceforge.net/project/tigervnc/tigervnc/1.3.1/tigervnc-1.3.1.tar.gz**
- Download MD5 sum: e80b16aa74f1d8e89f284a6aef99955d
- Download size: 6.6 MB
- Estimated disk space required: 168 MB
- Estimated build time: 1.7 SBU

Additional Downloads

- Required file: **ftp://ftp.x.org/pub/individual/xserver/xorg-server-1.15.0.tar.bz2**
- Required patch: **http://www.linuxfromscratch.org/patches/blfs/7.6/tigervnc-1.3.1-gethomedir-1.patch**
- Required patch: **http://www.linuxfromscratch.org/patches/blfs/7.6/tigervnc-1.3.1-getmaster-1.patch**
- Required patch: **http://www.linuxfromscratch.org/patches/blfs/7.6/tigervnc-1.3.1-xorg115-1.patch**

> **Note**
>
> The version of Xorg is a few versions out of date, but is required for the customizations needed for this package.

Tigervnc Dependencies

Required

CMake-3.0.1, FLTK-1.3.2, GnuTLS-3.3.7, libgcrypt-1.6.2, libjpeg-turbo-1.3.1, NASM-2.11.05, Pixman-0.32.6, and Xorg Applications

Recommended

ImageMagick-6.8.9-7 and Linux-PAM-1.1.8

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/tigervnc

Installation of Tigervnc

Install tigervnc by running the following commands:

```
tar -xf ../xorg-server-1.15.0.tar.bz2 -C unix/xserver --strip-components=1 &&
```

```
patch -Np1 -i ../tigervnc-1.3.1-xorg113-1.patch    &&

cmake -G "Unix Makefiles" -DCMAKE_INSTALL_PREFIX=/usr &&
make &&

pushd unix/xserver                    &&
  patch -Np1 -i ../xserver114.patch &&
  autoreconf -fiv                   &&

  ./configure $XORG_CONFIG \
      --disable-present     --disable-dri3      --disable-dmx         \
      --disable-static      --disable-xinerama  --disable-dri         \
      --disable-xorg        --disable-xnest     --disable-xvfb        \
      --disable-xwin        --disable-xephyr    --disable-kdrive      \
      --disable-config-dbus --disable-config-hal --disable-config-udev \
      --disable-unit-tests  --disable-selective-werror                \
      --without-dtrace      --enable-dri2       --enable-glx \
      --enable-glx-tls      --with-pic  &&
  make     &&
popd
```

This package does not come with a test suite.

Now, as the *root* user:

```
make install &&

cd unix/xserver/hw/vnc &&
make install            &&
sed -i 's/iconic/nowin/' /usr/bin/vncserver &&
[ -e /usr/bin/Xvnc ] || ln -svf $XORG_PREFIX/bin/Xvnc /usr/bin/Xvnc
```

Finally, create a menu entry. As the *root* user:

```
cat > /usr/share/applications/vncviewer.desktop << "EOF"
[Desktop Entry]
Type=Application
Name=TigerVNC Viewer
Comment=VNC client
Exec=/usr/bin/vncviewer
Icon=tigervnc
Terminal=false
StartupNotify=false
Categories=Network;RemoteAccess;
EOF
```

Command Explanations

`tar .. xorg-server...`: This command extracts the standard Xorg packages into the tree in a location needed for modification.

`patch ...`: This set of patches modifies the standard Xorg server so that the Xvnc command can be built.

`--disable ...`: Most options that are usually needed for the standard Xorg server are not needed fror the Xvnc instance being built.

`[ -e /usr/bin/Xvnc ] || ln ... Xvnc`: If the Xvnc server is not installed in the `/usr/bin` directory, then create a link so the `vncserver` script can find it.

Configuring Tigervnc

The user specific configuration files of vncserver resides in the `.vnc` directory in the user's home directory. The `xstartup` file in that directory is a script specifying what commands to be run when a VNC desktop is started. If no `xstartup` file exists, **vncserver** will try to start an xterm in a twm session. An example `xstartup` would be:

```
#!/bin/sh

[ -x /etc/vnc/xstartup ] && exec /etc/vnc/xstartup
[ -r $HOME/.Xresources ] && xrdb $HOME/.Xresources
startlxde &
```

Contents

Short Descriptions

`Xvnc`	is a X VNC (Virtual Network Computing) server. It is based on a standard X server, but it has a "virtual" screen rather than a physical one.
`vncconfig`	is a program to configure and control a VNC server.
`vncserver`	is a perl script used to start or stop a VNC server.
`vncviewer`	is a client used to access VNC desktops.
`x0vncserver`	is a program to make an X display onm a physical terminal accessible via TigerVNC or compatible viewers.

Last updated on 2014-03-01 00:00:12 -0600

Transmission-2.84

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-7.6 platform.

Package Information

- Download (HTTP): **http://download.transmissionbt.com/files/transmission-2.84.tar.xz**
- Download MD5 sum: 411aec1c418c14f6765710d89743ae42
- Download size: 3 MB
- Estimated disk space required: 230 MB
- Estimated build time: 1.1 SBU

Transmission Dependencies

Required

cURL-7.37.1, libevent-2.0.21, and OpenSSL-1.0.1i

Recommended (to build a GUI)

GTK+-3.12.2 and either Qt-4.8.6 or Qt-5.3.1

Optional

Doxygen-1.8.8 and GDB-7.8

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/transmission

Installation of Transmission

Install Transmission by running the following commands:

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

The following commands are used if you have installed Qt and would like to compile the Qt GUI. If Qt4 and Qt5 are installed in /opt, use `source setqt4` or `source setqt5` to choose which one will be used to build the Qt GUI. For Qt4, first fix the code with:

```
sed -i '/^CONFIG/aQMAKE_CXXFLAGS += -std=c++11' qt/qtr.pro
```

Now, compile the Qt GUI, with the following commands:

```
pushd qt          &&
  qmake qtr.pro &&
  make          &&
popd
```

```
make install
```

If you compiled the Qt GUI, install it by running the following commands as the *root* user:

```
make INSTALL_ROOT=/usr -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 if GTK+ is present on the system (useful for Qt5 or cli only builds).

Contents

Installed Programs: transmission-cli, transmission-create, transmission-daemon, transmission-edit, transmission-gtk, transmission-qt, transmission-remote and transmission-show

Installed Libraries: None

Installed Directory: /usr/share/transmission

Short Descriptions

`transmission-cli`	is a lightweight, command-line BitTorrent client with scripting capabilities.
`transmission-create`	is a command line tool used to create .torrent files.
`transmission-daemon`	is a daemon-based Transmission session that can be controlled via RPC commands from transmission's web interface or `transmission-remote`.
`transmission-edit`	is a command-line utility to modify .torrent files' announce URLs.
`transmission-gtk`	is a GTK+ bittorrent client.
`transmission-qt`	is a Qt bittorrent client.
`transmission-remote`	is a remote control utility for transmission-daemon and transmission.
`transmission-show`	is a command line tool to display bittorrent .torrent file metadata.

Last updated on 2014-09-21 14:28:22 -0700

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-7.6 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/7.6/xchat-2.8.8-glib-2.31-1.patch**

Required

  GLib-2.40.0

Recommended

  GTK+-2.24.24

Optional

  enchant-1.6.0 (runtime), dbus-glib-0.102, GConf-3.2.6, OpenSSL-1.0.1i, Python-2.7.8, and Tcl-8.6.2

User Notes: *http://wiki.linuxfromscratch.org/blfs/wiki/xchat*

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.

Last updated on 2014-09-21 16:43:46 -0700

xdg-utils-1.1.0-rc2

Introduction to xdg-utils

xdg-utils is a 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-7.6 platform.

Package Information

- Download (HTTP): **http://people.freedesktop.org/~rdieter/xdg-utils/xdg-utils-1.1.0-rc2.tar.gz**

- Estimated disk space required: 2.1 MB
- Estimated build time: less than 0.1 SBU

xdg-utils Dependencies

Required

[xmlto-0.0.26](#) with one of [Lynx-2.8.8rel.2](#), [w3m-0.5.3](#), [Links-2.8](#), or [fop-1.1](#)

Required (runtime)

[Xorg Applications](#)

Optional (runtime)

[D-Bus-1.8.8](#)

Installation of xdg-utils

Compile xdg-utils with the following commands:

```
./configure --prefix=/usr --mandir=/usr/share/man &&
make
```

> ### 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 broswer and an MTA. Running the tests as *root* usr is not recommended.

To run the tests, issue: `make test`.

Now install it as the *root* user:

```
make install
```

Contents

Installed Programs: xdg-desktop-menu, xdg-desktop-icon, xdg-mime, xdg-icon-resource, xdg-open, xdg-email, xdg-screensaver, xdg-settings

Installed Libraries: None

Installed Directories: None

Short Descriptions

`xdg-desktop-menu`	is a command line tool for (un)installing desktop menu items.
`xdg-desktop-icon`	is a command line tool for (un)installing icons to the desktop.
`xdg-mime`	is a command line tool for querying information about file type handling and adding descriptions for new file types.
`xdg-icon-resource`	is a command line tool for (un)installing icon resources.
`xdg-open`	opens a file or URL in the user's preferred application.
`xdg-email`	opens the user's preferred e-mail composer in order to send a mail message.
`xdg-screensaver`	is a command line tool for controlling the screensaver.
`xdg-settings`	is a command line tool for managing various settings from the desktop environment.

Last updated on

Part XII. Multimedia

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-1.0.28

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.

Last updated on 2012-01-23 19:05:41 -0800

alsa-lib-1.0.28

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-7.6 platform.

Package Information

- Download (HTTP): **http://alsa.cybermirror.org/lib/alsa-lib-1.0.28.tar.bz2**
- Download (FTP): **ftp://ftp.alsa-project.org/pub/lib/alsa-lib-1.0.28.tar.bz2**
- Download MD5 sum: c9e21b88a2b3e6e12ea7ba0f3b271fc3
- Download size: 884 KB
- Estimated disk space required: 16 MB (additional 1 MB for the tests and 26 MB for the docs)
- Estimated build time: 0.2 SBU

ALSA Library Dependencies

Optional

Doxygen-1.8.8 and Python-2.7.8

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/alsa-lib

Kernel Configuration

If needed, enable the following options in the kernel configuration and recompile the kernel:

```
Device Drivers --->
  <y/m> Sound card support --->
    <y/m> Advanced Linux Sound Architecture --->
            Select settings and drivers appropriate for your hardware.
    < >   Open Sound System (unselected)
```

In the Device Drivers ⇒ Sound card support ⇒ Advanced Linux Sound Architecture section of the kernel configuration, select the settings and drivers appropriate for your hardware. Ensure that the deprecated Device Drivers ⇒ Sound card support ⇒ 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:

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

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

Now, as the `root` user:

```
make install
```

```
make doc
```

To install the API documentation, run the following command as the *root* user:

```
install -v -d -m755 /usr/share/doc/alsa-lib-1.0.28/html/search &&
install -v -m644 doc/doxygen/html/*.* \
                 /usr/share/doc/alsa-lib-1.0.28/html &&
install -v -m644 doc/doxygen/html/search/* \
                 /usr/share/doc/alsa-lib-1.0.28/html/search
```

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/main/index.php/Asoundrc**.

Contents

Installed Program: aserver
Installed Library: libasound.so and several under /usr/lib/alsa-lib/smixer
Installed Directories: /usr/include/alsa, /usr/lib/alsa-lib, /usr/share/alsa and /usr/share/doc/alsa-lib-1.0.28

Short Descriptions

aserver   is the ALSA server.

libasound.so   contains the ALSA API functions.

Last updated on 2014-09-18 05:17:47 -0700

alsa-plugins-1.0.28

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-7.6 platform.

Package Information

- Download (HTTP): **http://alsa.cybermirror.org/plugins/alsa-plugins-1.0.28.tar.bz2**
- Download (FTP): **ftp://ftp.alsa-project.org/pub/plugins/alsa-plugins-1.0.28.tar.bz2**
- Download MD5 sum: 6fcbbb31e96f8ebc5fb926184a717aa4
- Download size: 360 KB
- Estimated disk space required: 4.4 MB
- Estimated build time: less than 0.1 SBU

ALSA Plugins Dependencies

Required

alsa-lib-1.0.28

Optional

FFmpeg-2.3.3, **JACK**, libsamplerate-0.1.8, PulseAudio-5.0 and Speex-1.2rc1

User Notes: *http://wiki.linuxfromscratch.org/blfs/wiki/alsa-plugins*

Installation of ALSA Plugins

```
make
```

This package does not come with a test suite.

Now, as the *root* user:

```
make install
```

Contents

Installed Programs: None

Installed Libraries: 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*

Installed Directories: 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 jackd.
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 libsamplerate.

Last updated on 2014-09-22 11:20:08 -0700

alsa-utils-1.0.28

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-7.6 platform.

Package Information

- Download (HTTP): **http://alsa.cybermirror.org/utils/alsa-utils-1.0.28.tar.bz2**
- Download (FTP): **ftp://ftp.alsa-project.org/pub/utils/alsa-utils-1.0.28.tar.bz2**
- Download MD5 sum: 361552d5b1cacd0a1e7ba09e69990211
- Download size: 1.1 MB
- Estimated disk space required: 11 MB
- Estimated build time: 0.1 SBU

ALSA Utilities Dependencies

Required

alsa-lib-1.0.28

Optional

libsamplerate-0.1.8, xmlto-0.0.26 and **Dialog**

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/alsa-utils

Installation of ALSA Utilities

Install ALSA Utilities by running the following commands:

```
./configure --disable-alsaconf --disable-xmlto &&
```

Now, as the *root* user:

```
make install
```

Command Explanations

`--disable-alsaconf`: This switch disables building the `alsaconf` configuration tool which is incompatible with Udev.

`--disable-xmlto`: Omit this switch if you have installed xmlto-0.0.26 and don't wish to install pregenerated man pages.

Configuring ALSA Utilities

Config Files

```
/var/lib/alsa/asound.state
```

Configuration Information

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 should 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.

Boot Script

To automatically store and restore volume settings (if udev rule doesn't work for you) when the system is rebooted, install the `/etc/rc.d/init.d/alsa` boot script from the blfs-bootscripts-20140919 package.

```
make install-alsa
```

Contents

Installed Programs: aconnect, alsactl, alsaloop, alsamixer, alsaucm, amidi, amixer, aplay, aplaymidi, arecord (symlink), arecordmidi, aseqdump, aseqnet, iecset and speaker-test

Installed Libraries: None

Installed Directories: /usr/share/sounds/alsa and /var/lib/alsa

Short Descriptions

aconnect	is a utility for connecting and disconnecting two existing ports in the ALSA sequencer system.
alsactl	is used to control advanced settings for the ALSA sound card drivers.
alsaloop	allows creation of a PCM loopback between a PCM capture device and a PCM playback device.
alsamixer	is an Ncurses based mixer program for use with the ALSA sound card drivers.
alsaucm	allows applications to access the hardware in an abstracted manner
amidi	is used to read from and write to ALSA RawMIDI ports.

aplaymidi	is a command-line utility that plays the specified MIDI file(s) to one or more ALSA sequencer ports.
arecord	is a command-line soundfile recorder for the ALSA sound card drivers.
arecordmidi	is a command-line utility that records a standard MIDI file from one or more ALSA sequencer ports.
aseqdump	is a command-line utility that prints the sequencer events it receives as text.
aseqnet	is an ALSA sequencer client which sends and receives event packets over a network.
iecset	is a small utility to set or dump the IEC958 (or so-called " S/PDIF ") status bits of the specified sound card via the ALSA control API.
speaker-test	is a command-line speaker test tone generator for ALSA.

Last updated on 2014-09-09 14:11:38 -0700

alsa-tools-1.0.28

Introduction to ALSA Tools

The ALSA Tools package contains advanced tools for certain sound cards.

This package is known to build using an LFS 7.6 platform but has not been tested.

Package Information

- Download (HTTP): **http://alsa.cybermirror.org/tools/alsa-tools-1.0.28.tar.bz2**
- Download (FTP): **ftp://ftp.alsa-project.org/pub/tools/alsa-tools-1.0.28.tar.bz2**
- Download MD5 sum: e6c929175d8ee729c06d49b51439bad6
- Download size: 1.7 MB
- Estimated disk space required: 24 MB
- Estimated build time: 0.5 SBU

ALSA Tools Dependencies

Required

alsa-lib-1.0.28

Optional

GTK+-2.24.24 (to build `echomixer`, `envy24control` and `rmedigicontrol`), GTK+-3.12.2 (to build `hdajackretask`) and FLTK-1.3.2 (to build `hdspconf` and `hdspmixer`)

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/alsa-tools

Installation of ALSA Tools

> ### 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-1.8.10p3 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 $*
> ```

```
        export -f as_root
```

First, start a subshell that will exit on error:

```
bash -e
```

Now, remove a tool that needs Qt2 or 3 and two unneed files (for the BLFS instructions below):

```
rm -rf qlo10k1 Makefile gitcompile
```

The ALSA Tools package is only needed by those with advanced requirements for their sound card. The tools can be built all together at once, but if only a subset is needed, you need to **cd** into the directory of each tool you wish to compile and run the commands. Here, we present instructions to build all tools.

Install all ALSA Tools by running the following commands:

```
for tool in *
do
  case $tool in
    seq )
      tool_dir=seq/sbiload
    ;;
    * )
      tool_dir=$tool
    ;;
  esac

  pushd $tool_dir
    ./configure --prefix=/usr
    make
    as_root make install
    as_root /sbin/ldconfig
  popd

done
unset tool tool_dir
```

Finally, exit the shell that was started earlier:

```
exit
```

Contents

Installed Programs: 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 (broken, needs Qt2 or 3), rmedigicontrol, sbiload, sscape_ctl, us428control, usx2yloader and vxloader

Installed Library: liblo10k1.so

Installed Directories: /usr/include/lo10k1, /usr/share/ld10k1 and /usr/share/sounds

Short Descriptions

as10k1	is an assembler for the emu10k1 DSP chip present in the Creative SB Live, PCI 512, and emu APS sound cards. It is used to make audio effects such as a flanger, chorus or reverb.
cspctl	is an SB16/AWE32 Creative Signal Processor (ASP/CSP) control program.
echomixer	is the Linux equivalent of the Echoaudio console application from Echoaudio. It is a tool to control all the features of any Echoaudio soundcard. This includes clock sources, input and output gains, mixers, etc.
envy24control	is a control tool for Envy24 (ice1712) based sound cards.
hdspconf	is a GUI to control the Hammerfall HDSP Alsa Settings. Up to four hdsp cards are supported.
hdsploader	is used to load the firmware required by the Hammerfall HDSP sound cards.
hdspmixer	is the Linux equivalent of the Totalmix application from RME. It is a tool to control the advanced routing features of the RME Hammerfall DSP soundcard series.
ld10k1	is the server of a EMU10K{1,2} patch loader for ALSA.
lo10k1	is the client of a EMU10K{1,2} patch loader for ALSA.
dl10k1	loads config dumps generated by **lo10k1** and **ld10k1**.

mixartloader	is a helper program to load the firmware binaries onto the Digigram's mixart board sound drivers. The following modules require this program: snd-mixart. These drivers don't work properly at all until the certain firmwares are loaded, i.e. no PCM nor mixer devices will appear.
pcxhrloader	is a helper program to load the firmware binaries onto Digigram's pcxhr compatible board sound drivers. The following modules require this program: snd-pcxhr. These drivers don't work properly at all until the certain firmwares are loaded, i.e. no PCM nor mixer devices will appear.
rmedigicontrol	is a control tool for RME Digi32 and RME Digi96 sound cards. It provides a graphical frontend for all the sound card controls and switches.
sbiload	is an OPL2/3 FM instrument loader for the ALSA sequencer.
sscape_ctl	is an ALSA SoundScape control utility.
us428control	is a Tascam US-428 control program.
usx2yloader	is a helper program to load the 2nd Phase firmware binaries onto the Tascam USX2Y USB sound cards. It has proven to work so far for the US122, US224 and US428. The snd-usb-usx2y module requires this program.
vxloader	is a helper program to load the firmware binaries onto the Digigram's VX-board sound drivers. The following modules require this program: snd-vx222, snd-vxpocket, snd-vxp440. These drivers don't work properly at all until the certain firmwares are loaded, i.e. no PCM nor mixer devices will appear.

Last updated on 2014-09-18 14:33:53 -0700

alsa-firmware-1.0.28

Introduction to ALSA Firmware

The ALSA Firmware package contains firmware for certain sound cards.

This package is known to build using an LFS 7.6 platform but has not been tested.

Package Information

- Download (HTTP): **http://alsa.cybermirror.org/firmware/alsa-firmware-1.0.28.tar.bz2**
- Download (FTP): **ftp://ftp.alsa-project.org/pub/firmware/alsa-firmware-1.0.28.tar.bz2**
- Download MD5 sum: 0615aedafe8251fdf835b68ea3463559
- 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-1.0.28

Optional

AS31 (for rebuilding the firmware from source)

User Notes: *http://wiki.linuxfromscratch.org/blfs/wiki/alsa-firmware*

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
```

Installed Programs: None
Installed Libraries: None
Installed Directories: Several directories in /lib/firmware and /usr/share/alsa/firmware

Last updated on 2014-09-18 14:33:53 -0700

ALSA OSS-1.0.28

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 using an LFS 7.6 platform but has not been tested.

Package Information

- Download (HTTP): **http://alsa.cybermirror.org/oss-lib/alsa-oss-1.0.28.tar.bz2**
- Download (FTP): **ftp://ftp.alsa-project.org/pub/oss-lib/alsa-oss-1.0.28.tar.bz2**
- Download MD5 sum: 91f57e8cee1ad4cc956caa8b62ac5d43
- Download size: 288 KB
- Estimated disk space required: 2.8 MB
- Estimated build time: less than 0.1 SBU

ALSA OSS Dependencies

Required

alsa-lib-1.0.28

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/alsa-oss

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

Installed Program: aoss
Installed Libraries: libalsatoss.so, libaoss.so, and libossredir.a
Installed Directories: None

Short Descriptions

aoss is a simple wrapper script which facilitates the use of the ALSA OSS compatibility library. It just sets the appropriate LD_PRELOAD path and then runs the command.

Last updated on 2014-09-18 14:33:53 -0700

AudioFile-0.3.6

sound file formats.

This package is known to build and work properly using an LFS-7.6 platform.

AudioFile Dependencies

Required

alsa-lib-1.0.28

Recommended

FLAC-1.3.0

Optional

AsciiDoc and Valgrind-3.10.0

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/audiofile

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

Installed Programs: sfconvert and sfinfo
Installed Libraries: libaudiofile.so
Installed Directories: None

Short Descriptions

sfinfo	displays the sound file format, audio encoding, sampling rate and duration for audio formats supported by this library.
sfconvert	converts sound file formats where the original format and destination format are supported by this library.
libaudiofile.so	contains functions used by programs to support AIFF, AIFF-compressed, Sun/NeXT, WAV and BIC audio formats.

Last updated on 2014-09-18 14:33:53 -0700

FAAC-1.28

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-7.6 platform.

Package Information

- Download (HTTP): **http://downloads.sourceforge.net/faac/faac-1.28.tar.bz2**
- Download MD5 sum: c5dde68840cefe46532089c9392d1df0
- Download size: 519 KB
- Estimated disk space required: 20 MB
- Estimated build time: 0.4 SBU

Additional Downloads

- Required patch: **http://www.linuxfromscratch.org/patches/blfs/7.6/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).

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/faac

Installation of FAAC

Install FAAC by running the following commands:

```
patch -Np1 -i ../faac-1.28-glibc_fixes-1.patch &&
sed -i -e '/obj-type/d' -e '/Long Term/d' frontend/main.c &&
./configure --prefix=/usr --disable-static &&
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-1.0.28 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-1.0.28 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".

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

--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

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

Installed Program: faac
Installed Libraries: libfaac.so and libmp4v2.so
Installed Directories: None

Short Descriptions

`faac`	is a command-line AAC encoder.
`libfaac.so`	contains functions for encoding AAC streams.
`libmp4v2.so`	contains functions for creating and manipulating MP4 files.

Last updated on 2014-09-11 23:27:59 -0700

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-7.6 platform.

Package Information

- Download (HTTP): **http://downloads.sourceforge.net/faac/faad2-2.7.tar.bz2**
- Download MD5 sum: 4c332fa23febc0e4648064685a3d4332
- Download size: 880 KB
- Estimated disk space required: 12 MB (without media player plugins)
- Estimated build time: 0.2 SBU (without media player plugins)

Additional Downloads

- Required patch: **http://www.linuxfromscratch.org/patches/blfs/7.6/faad2-2.7-mp4ff-1.patch**
- Sample AAC file: **http://www.nch.com.au/acm/sample.aac** (7 KB)

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/faad2

Installation of FAAD2

Install FAAD2 by running the following commands:

```
patch -Np1 -i ../faad2-2.7-mp4ff-1.patch &&
sed -i "s:AM_CONFIG_HEADER:AC_CONFIG_HEADERS:g" configure.in &&
sed -i "s:man_MANS:man1_MANS:g" frontend/Makefile.am &&
autoreconf -fi &&
./configure --prefix=/usr --disable-static &&
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 <u>alsa-utils-1.0.28</u> 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

`sed -i ...`: First command fixes autotools scripts to be compatible with latest version of Automake and second command fixes manual page install location.

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

`--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

Installed Program: faad
Installed Library: libfaad.so
Installed Directories: None

Short Descriptions

`faad`	is a command-line utility for decoding AAC and MP4 files.
`libfaad.so`	contains functions for decoding AAC streams.

Last updated on 2014-09-11 23:27:59 -0700

fdk-aac-0.1.3

Introduction to fdk-aac

fdk-aac package provides the Fraunhofer FDK AAC library, which is purported to be a high quality Advanced Audio Coding implementation.

This package is known to build and work properly using an LFS-7.6 platform.

Package Information

- Download (HTTP): **http://downloads.sourceforge.net/opencore-amr/fdk-aac-0.1.3.tar.gz**
- Download MD5 sum: 6b3b70faa3108b7a00f7740b3de38b83
- Download size: 1.9 MB
- Estimated disk space required: 26 MB
- Estimated build time: 0.3 SBU

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/fdk-aac

Installation of fdk-aac

Install fdk-aac by running the following commands:

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: None
Installed Library: libfdk-aac.so
Installed Directory: /usr/include/fdk-aac

Short Descriptions

`libfdk-aac.so`   provides the functions used to encode audio in AAC format.

Last updated on 2014-09-11 23:27:59 -0700

FLAC-1.3.0

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-7.6 platform.

Package Information

- Download (HTTP): **http://downloads.xiph.org/releases/flac/flac-1.3.0.tar.xz**
- Download (FTP): **ftp://downloads.xiph.org/pub/xiph/releases/flac/flac-1.3.0.tar.xz**
- Download MD5 sum: 13b5c214cee8373464d3d65dee362cdd
- Download size: 1.1 MB
- Estimated disk space required: 22 MB (additional 77 MB to run the test suite)
- Estimated build time: 0.3 SBU (additional 0.9 SBU to run the test suite)

FLAC Dependencies

Optional

libogg-1.3.2, NASM-2.11.05, DocBook-utils-0.6.14, Doxygen-1.8.8 and Valgrind-3.10.0

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/flac

Installation of FLAC

Install FLAC by running the following commands:

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

enable-sse: This option is on 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.

Contents

Installed Programs: flac and metaflac
Installed Libraries: libFLAC.so and libFLAC++.so
Installed Directories: /usr/include/FLAC, /usr/include/FLAC++ and /usr/share/doc/flac-1.3.0

Short Descriptions

flac	is a command-line utility for encoding, decoding and converting FLAC files.
metaflac	is a program for listing, adding, removing, or editing metadata in one or more FLAC files.
libFLAC{,++}.so	these libraries provide native FLAC and Ogg FLAC C/C++ APIs for programs utilizing FLAC.

Last updated on 2014-09-11 23:27:59 -0700

Grilo-0.2.11

Introduction to Grilo

Grilo is a framework focused on making media discovery and browsing easy for applications and application developers.

This package is known to build and work properly using an LFS-7.6 platform.

Package Information

- Download (HTTP): **http://ftp.gnome.org/pub/gnome/sources/grilo/0.2/grilo-0.2.11.tar.xz**
- Download (FTP): **ftp://ftp.gnome.org/pub/gnome/sources/grilo/0.2/grilo-0.2.11.tar.xz**
- Download MD5 sum: 65ac9100dab7f93c4df41cfad58dccba
- Download size: 600 KB
- Estimated disk space required: 14 MB
- Estimated build time: 0.2 SBU

Grilo Dependencies

Required

GTK+-3.12.2

Recommended

libsoup-2.46.0, gobject-introspection-1.40.0, Grilo-Plugins-0.2.13 (runtime), and Vala-0.24.0

Optional

Avahi-0.6.31 (if installed at build time, make sure avahi-daemon is running as a system daemon, started by bootscript/systemd unit), DocBook-utils-0.6.14, and **liboauth** (to configure flickr personal accounts)

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/grilo

Installation of Grilo

Install Grilo by running the following commands:

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

This package does not have a testsuite.

Now, as the *root* user:

```
make install
```

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

Contents

Installed Programs: grilo-test-ui-0.2, grl-inspect-0.2 and grl-launch-0.2
Installed Libraries: libgrilo-0.2.so, libgrlnet-0.2.so and libgrlpls-0.2.so
Installed Directories: /usr/include/grilo-0.2

Short Descriptions

`grilo-test-ui-0.2`	is a simple playground application that you can use to test the framework and its plugins.
`grl-inspect-0.2`	is a tool that prints out information on available Grilo sources.
`grl-launch-0.2`	is a tool to run Grilo operations from command line.
`libgrilo.so`	provides the Grilo framework.
`libgrlnet.so`	provides Grilo networking helpers for plug-ins.
`libgrlpls.so`	provides playlist handling functions.

Last updated on 2014-09-18 14:33:53 -0700

Grilo-Plugins-0.2.13

Introduction to Grilo-Plugins

Grilo-Plugins is a collection of plugins (Apple Trailers, Blip.tv, Bookmarks, Filesystem, Flickr, Jamendo, Magnatune, Rai.tv, Tracker, Youtube, between others) to make media discovery and browsing easy for applications that support Grilo framework, such as Totem (some plugins are disabled in Totem).

This package is known to build and work properly using an LFS-7.6 platform.

Package Information

- Download (HTTP): **http://ftp.gnome.org/pub/gnome/sources/grilo-plugins/0.2/grilo-plugins-0.2.13.tar.xz**
- Download (FTP): **ftp://ftp.gnome.org/pub/gnome/sources/grilo-plugins/0.2/grilo-plugins-0.2.13.tar.xz**
- Download MD5 sum: 45030aab3f21b561b1c899ebb7dce54d
- Download size: 980 KB
- Estimated disk space required: 24 MB (all plugins)
- Estimated build time: 0.3 SBU

Grilo-Plugins Dependencies

Required

Grilo-0.2.11 and SQLite-3.8.6

Recommended

libsoup-2.46.0, gobject-introspection-1.40.0 and totem-pl-parser-3.10.2

Optional

Avahi-0.6.31, GMime-2.6.20 (Podcasts), JSON-GLib-1.0.2 (TMDB), Lua-5.2.3 (Lua Factory), **gnome-online-accounts** (Flickr, Pocket), **gom** (Bookmarks), **libdmapsharing** (DMAP), **libgdata** (YouTube), **libquvi (version 0.9)** (YouTube), **liboauth** (to configure Flickr personal accounts), **MEDIAART** (local-art), **python-dbusmock** (dLeyna runtime tests), and **tracker** (Tracker)

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/grilo-plugins

Installation of Grilo-Plugins

Install Grilo-Plugins by running the following commands:

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

`check.log`.

Now, as the *root* user:

```
make install
```

To test which plugins are installed and that Grilo-0.2.11 is working, issue `grl-inspect-0.2` or `grilo-test-ui-0.2` (the latter, from an X terminal).

Contents

Installed Programs: None
Installed Libraries: Several under /usr/lib/grilo-0.2, with names related to the respective plugins.
Installed Directories:/usr/lib/grilo-0.2, /usr/share/help/C/{examples,grilo-plugins} and /usr/share/grilo-plugins

Last updated on 2013-10-21 18:39:03 -0300

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-7.6 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-2.40.0 and libxml2-2.9.1

Optional (Required if building GNOME)

gobject-introspection-1.40.0

Optional

Gsl-1.16, Valgrind-3.10.0 (optionally used during the unit regression tests)

Optional (Required to rebuild the API Documentation)

GTK-Doc-1.20 and Python-2.7.8

Optional (Required to Build Manuals)

DocBook-utils-0.6.14, ghostscript-9.14 libxslt-1.1.28 and texlive-20140525

Install GStreamer by running the following commands:

```
sed -i  -e '/YYLEX_PARAM/d'                                \
        -e '/parse-param.*scanner/i %lex-param { void *scanner }' \
           gst/parse/grammar.y &&

./configure --prefix=/usr \
            --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

`sed ... gst/parse/grammar.y`: This command corrects a problem caused by the most recent version of Bison.

`--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.

`--libexecdir=/usr/lib`: This option puts the internal support programs into `/usr/lib/gstreamer-0.10` instead of `/usr/libexec/gstreamer-0.10.` in accordance with the old version of the FHS used before LFS-7.5.

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/libexec/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

`gst-feedback-0.10`   generates debug info for GStreamer bug reports.

`gst-`   prints information about a GStreamer plugin or element.

launch- 0.10		
gst- typefind- 0.10	uses the GStreamer type finding system to determine the relevant GStreamer plugin to parse or decode a file, and determine the corresponding MIME type.	
gst- xmlinspect- 0.10	prints information about a GStreamer plugin or element in XML document format.	
gst- xmllaunch- 0.10	is used to build and run a basic GStreamer pipeline, loading it from an XML description.	

Last updated on 2014-09-13 17:48:40 -0700

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-7.6 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

Additional Downloads

- Optional patch : **http://www.linuxfromscratch.org/patches/blfs/7.6/gst-plugins-base-0.10.36-gcc_4_9_0_i686-1.patch**

GStreamer Base Plug-ins Dependencies

Required

GStreamer-0.10.36 and Pango-1.36.7

Recommended

alsa-lib-1.0.28, libogg-1.3.2, libtheora-1.1.1, libvorbis-1.3.4, udev-extras (from eudev) (for gudev), and Xorg Libraries

Optional (Required if building GNOME)

gobject-introspection-1.40.0

Optional

Optional (Required to Rebuild the API Documentation)

[GTK-Doc-1.20](#) and [Python-2.7.8](#)

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/gst-plugins-base

Installation of GStreamer Base Plug-ins

> ### Note
>
> If you need a plugin for a given dependency, that dependency needs to be installed before this application.

First, if you are using i686, fix a compile problem inroduced by gcc-4.9.0:

```
patch -Np1 -i ../gst-plugins-base-0.10.36-gcc_4_9_0_i686-1.patch
```

Install GStreamer Base Plug-ins by running the following commands:

```
./configure --prefix=/usr --disable-static &&
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, libgstpbutils-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.

Last updated on 2014-09-13 17:48:40 -0700

---

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-7.6 platform.

> ### Note

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-1.12.16, FLAC-1.3.0, libjpeg-turbo-1.3.1, libpng-1.6.13 and Xorg Libraries

Optional (Required if building GNOME)

GConf-3.2.6 and libsoup-2.46.0

Optional

AAlib-1.4rc5, GTK+-3.12.2 (required to build the examples), libdv-1.0.0, PulseAudio-5.0, Speex-1.2rc1, taglib-1.9.1, **JACK**, **libavc1394** (requires **libraw1394**), **libcaca**, **libcdio**, **libiec61883**, **libshout**, **ORC**, **Video4Linux** and **WavPack**

Optional, for the unit regression tests

Valgrind-3.10.0

Optional (Required to Rebuild the API Documentation)

GTK-Doc-1.20 and Python-2.7.8

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/gst-plugins-good

Installation of GStreamer Good Plug-ins

> **Note**
>
> If you need a plugin for a given dependency, that dependency needs to be installed before this application.

Install GStreamer Good Plug-ins by running the following commands:

```
sed -i -e "/input:/d" sys/v4l2/gstv4l2bufferpool.c &&
sed -i -e "/case V4L2_CID_HCENTER/d" -e "/case V4L2_CID_VCENTER/d" sys/v4l2/v4l2_calls.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

Command Explanations

`sed -i -e "..."`: These `sed` commands fix 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

Installed Programs: None
Installed Libraries: None
Installed Directory: /usr/share/gtk-doc/html/gst-plugins-good-plugins-0.10

Last updated on 2014-09-22 11:20:08 -0700

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-7.6 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-1.6.13, libvpx-1.3.0, OpenSSL-1.0.1i and XviD-1.3.3

Optional

cURL-7.37.1, FAAD2-2.7, JasPer-1.900.1, libass-0.11.2, libmusicbrainz-2.1.5, librsvg-2.40.3, libsndfile-1.0.25, libvdpau-0.8, neon-0.30.0, SDL-1.2.15, SoundTouch-1.8.0 **celt**, **Dirac**, **DirectFB**, **Flite**, **Game Music Emu**, **GSM**, **LADSPA**, **libcdaudio**, **libdc1394**, **libdca**, **libiptcdata**, **libkate**, **libmimic**, **libmms**, **libmodplug**, **libmpcdec**, **libofa**, **MJPEG Tools**, **OpenAL**, **ORC**, **rtmpdump**, **Schroedinger**, **SpanDSP**, **VO AACENC**, **VO AMRWBENC**, **WildMidi**, **ZBAR** and **ZVBI**

Optional, for the unit regression tests

Valgrind-3.10.0

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/gst-plugins-bad

Installation of GStreamer Bad Plug-ins

If you need a plugin for a given dependency, that dependency needs to be installed before this application.

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

Installed Programs: None

Installed Libraries: libgstbasecamerabinsrc-0.10.so, libgstbasevideo-0.10.so, libgstcodecparsers-0.10.so, libgstphotography-0.10.so, libgstsignalprocessor-0.10.so and libgstvdp-0.10.so

Installed Directories: /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

Last updated on 2014-09-22 11:20:08 -0700

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-7.6 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/7.6/gst-plugins-ugly-0.10.19-libcdio_fixes-1.patch**

GStreamer Ugly Plug-ins Dependencies

Required

LAME-3.99.5, libdvdnav-5.0.1 and libdvdread-5.0.0

Optional

liba52-0.7.4, **libcdio**, libmad-0.15.1b, libmpeg2-0.5.1, **libsidplay**, **OpenCore AMR**, **ORC**, **TwoLAME** and x264-20140818-2245

Optional, for the unit regression tests

Valgrind-3.10.0

Optional (Required to Rebuild the API Documentation)

GTK-Doc-1.20 and Python-2.7.8

User Notes: *http://wiki.linuxfromscratch.org/blfs/wiki/gst-plugins-ugly*

Installation of GStreamer Ugly Plug-ins

> ### Note
>
> If you need a plugin for a given dependency, that dependency needs to be installed before this application.

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

Installed Programs: None
Installed Libraries: None
Installed Directory: /usr/share/gtk-doc/html/gst-plugins-ugly-plugins-0.10

Last updated on 2014-09-13 17:48:40 -0700

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-7.6 platform.

> ### Note

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/7.6/gst-ffmpeg-0.10.13-gcc-4.7-1.patch**

Gst FFMpeg Dependencies

Required

gst-plugins-base-0.10.36 and yasm-1.3.0

Optional

ORC

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/gst-ffmpeg

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

Last updated on 2014-09-13 17:48:40 -0700

GStreamer-1.4.1

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-1.4.1 and one of Good, Bad, Ugly or Libav plugins.

This package is known to build and work properly using an LFS-7.6 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-1.4.1.tar.xz**
- Download MD5 sum: bd0938d680d657249b885162f310702d

- Estimated build time: 0.7 SBU (additional 0.8 SBU to run the test suite)

GStreamer Dependencies

Required

GLib-2.40.0

Recommended

gobject-introspection-1.40.0

Optional

Gsl-1.16, GTK-Doc-1.20, and Valgrind-3.10.0

User Notes: ***http://wiki.linuxfromscratch.org/blfs/wiki/gstreamer10***

Installation of GStreamer

Install GStreamer by running the following commands:

```
./configure --prefix=/usr \
        --with-package-name="GStreamer 1.4.1 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, libgstreamer-1.0.so and /usr/lib/gstreamer-1.0/libgstcoreelements.so
Installed Directories: /usr/include/gstreamer-1.0, /usr/lib/gstreamer-1.0, /usr/libexec/gstreamer-1.0, and /usr/share/gtk-doc/html/gstreamer{,-{libs,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 utillity 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.
`libgstreamer-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.

Last updated on 2014-09-10 09:45:01 -0700

---

gst-plugins-base-1.4.1

Introduction to GStreamer Base Plug-ins

This package is known to build and work properly using an LFS-7.6 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-1.4.1.tar.xz**
- Download MD5 sum: a825628225bd0a58c0df87cdd2a5db91
- Download size: 2.5 MB
- Estimated disk space required: 94 MB (additional 13 MB to run the test suite)
- Estimated build time: 1.1 SBU (additional 0.7 SBU to run the test suite)

GStreamer Base Plug-ins Dependencies

Required

GStreamer-1.4.1

Recommended

alsa-lib-1.0.28, gobject-introspection-1.40.0, ISO Codes-3.56, libogg-1.3.2, libtheora-1.1.1, libvorbis-1.3.4, and Xorg Libraries

Optional

CDParanoia-III-10.2, GTK+-3.12.2, GTK-Doc-1.20, Qt-4.8.6, Valgrind-3.10.0, **libvisual**, **ORC**, and **Tremor**

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/gst10-plugins-base

Installation of GStreamer Base Plug-ins

> **Note**
>
> If you need a plugin for a given dependency, that dependency needs to be installed before this application.

Install GStreamer Base Plug-ins by running the following commands:

```
./configure --prefix=/usr \
            --with-package-name="GStreamer Base Plugins 1.4.1 BLFS" \
            --with-package-origin="http://www.linuxfromscratch.org/blfs/view/svn/" &&
make
```

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

> **Note**
>
> When installing, the Makefile does some additional linking. If you do not have Xorg in /usr, the LIBRARY_PATH variable needs to be defined for the root user. If using sudo to assume root, use the -E option to pass your current environment variables for the install process.

Now, as the *root* user:

```
make install
```

Contents

Installed Programs: gst-device-monitor-1.0, gst-discoverer-1.0 and gst-play-1.0

Installed Directories: /usr/include/gstreamer-1.0/gst/{allocators,app,audio,fft,pbutils}, /usr/include/gstreamer-1.0/gst/{riff,rtp,rtsp,sdp,tag,video}, /usr/share/gst-plugins-base/1.0 and /usr/share/gtk-doc/html/gst-plugins-base-{libs,plugins}-1.0

Last updated on 2014-09-10 09:45:01 -0700

gst-plugins-good-1.4.1

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-7.6 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-1.4.1.tar.xz**
- Download MD5 sum: eb3a3296b2f6009def1f5a09590ce767
- Download size: 2.9 MB
- Estimated disk space required: 106 MB (additional 11 MB to run the test suite)
- Estimated build time: 1.2 SBU (additional 0.9 SBU to run the test suite)

GStreamer Good Plug-ins Dependencies

Required

gst-plugins-base-1.4.1

Recommended

Cairo-1.12.16, FLAC-1.3.0, gdk-pixbuf-2.30.8, libjpeg-turbo-1.3.1, libpng-1.6.13, libsoup-2.46.0, libvpx-1.3.0, and Xorg Libraries

Optional

AALib-1.4rc5, GTK+-3.12.2, GTK-Doc-1.20, libdv-1.0.0, PulseAudio-5.0, Speex-1.2rc1, taglib-1.9.1, udev-extras (from eudev) (for GUdev), Valgrind-3.10.0, **JACK**, **libcaca**, **libiec61883**, **libraw1394**, **libshout**, **ORC**, **Video4Linux**, and **WavPack**

User Notes: *http://wiki.linuxfromscratch.org/blfs/wiki/gst10-plugins-good*

Installation of GStreamer Good Plug-ins

> **Note**
>
> If you need a plugin for a given dependency, that dependency needs to be installed before this application.

Install GStreamer Good Plug-ins by running the following commands:

```
./configure --prefix=/usr \
            --with-package-name="GStreamer Good Plugins 1.4.1 BLFS" \
            --with-package-origin="http://www.linuxfromscratch.org/blfs/view/svn/"  &&
make
```

To test the results, issue: `make -k check`. Some tests are known to fail.

Contents

Installed Programs: None

Installed Libraries: Several plugins under /usr/lib/gstreamer-1.0

Installed Directories: /usr/share/gstreamer-1.0/presets and /usr/share/gtk-doc/html/gst-plugins-good-plugins-1.0

Last updated on 2014-09-13 17:48:40 -0700

gst-plugins-bad-1.4.1

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-7.6 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-1.4.1.tar.xz**
- Download MD5 sum: 20cb190b18dc63017326321cdb7c91e5
- Download size: 3.7 MB
- Estimated disk space required: 139 MB (additional 7 MB to run the test suite)
- Estimated build time: 1.6 SBU (additional 1.1 SBU to run the test suite)

GStreamer Bad Plug-ins Dependencies

Required

gst-plugins-base-1.4.1

Recommended

libdvdread-5.0.0, libdvdnav-5.0.1, and SoundTouch-1.8.0

Optional

BlueZ-5.23, cURL-7.37.1, FAAC-1.28, FAAD2-2.7, GnuTLS-3.3.7, GTK-Doc-1.20, GTK+-2.24.24 or GTK+-3.12.2, libass-0.11.2, libexif-0.6.21, libgcrypt-1.6.2, libmpeg2-0.5.1, libvdpau-0.8, MesaLib-10.2.7, mpg123-1.20.1, neon-0.30.0, OpenJPEG-1.5.2, OpenSSL-1.0.1i, SDL-1.2.15, Valgrind-3.10.0, Xorg Libraries, **Celt**, **Flite**, **Game Music Emu**, **GSM**, **libdca**, **libmimic**, **libmms**, **libofa**, **MJPEG Tools**, **OpenAL**, **ORC**, **RTMPDUMP**, **Schroedinger**, **VO AAC**, **VO AMRWB**, **Wayland**, and **ZBAR**

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/gst10-plugins-bad

Installation of GStreamer Bad Plug-ins

> **Note**
>
> If you need a plugin for a given dependency, that dependency needs to be installed before this application.

Install GStreamer Bad Plug-ins by running the following commands:

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

To test the results, issue: `make check`. One test (camerabin) needs hardware with a camera. A couple of tests need a terminal emulator in a graphical session.

Now, as the *root* user:

```
make install
```

Contents

Installed Programs: None

Installed Libraries: libgstbadbase-1.0.so, libgstbadvideo-1.0.so, libgstbasecamerabinsrc-1.0.so, libgstcodecparsers-1.0.so, libgstgl-1.0.so, libgstinsertbin-1.0.so, libgstmpegts-1.0.so, libgstphotography-1.0.so, libgsturidownloader-1.0.so and several plugins under /usr/lib/gstreamer-1.0

Installed Directories: /usr/include/gstreamer-1.0/gst/{basecamerabinsrc,codecparsers,gl}, /usr/include/gstreamer-1.0/gst/{insertbin,interfaces,mpegts}, /usr/include/gstreamer-1.0/gst/uridownloader, and /usr/share/gtk-doc/html/gst-plugins-bad-{libs,plugins}-1.0

Last updated on 2014-09-13 17:48:40 -0700

gst-plugins-ugly-1.4.1

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-7.6 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-1.4.1.tar.xz**
- Download MD5 sum: 316974af949ca4654efee704a0164076
- Download size: 828 KB
- Estimated disk space required: 17 MB
- Estimated build time: 0.2 SBU

GStreamer Ugly Plug-ins Dependencies

Required

gst-plugins-base-1.4.1

Recommended

LAME-3.99.5, libdvdread-5.0.0, and x264-20140818-2245

Optional

liba52-0.7.4, libmad-0.15.1b, libmpeg2-0.5.1, **libcdio**, **libsidplay**, **OpenCore AMR**, **ORC**, and **TwoLame**

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/gst10-plugins-ugly

Installation of GStreamer Ugly Plug-ins

> **Note**

Install GStreamer Ugly Plug-ins by running the following commands:

```
./configure --prefix=/usr \
            --with-package-name="GStreamer Ugly Plugins 1.4.1 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: Several plugins under /usr/lib/gstreamer-1.0

Installed Directories: /usr/share/gstreamer-1.0/presets and /usr/share/gtk-doc/html/gst-plugins-ugly-plugins-1.0

Last updated on 2014-09-13 17:48:40 -0700

gst-libav-1.4.1

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-7.6 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-1.4.1.tar.xz**
- Download MD5 sum: ea2d636c24d7c5ae123967ef22e37c07
- Download size: 5 MB
- Estimated disk space required: 249 MB (adittional 1 MB for the tests)
- Estimated build time: 2.3 SBU

GStreamer Libav Dependencies

Required

gst-plugins-base-1.4.1

Recommended

yasm-1.3.0

Optional

Valgrind-3.10.0 and **ORC**

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/gst10-libav

Installation of GStreamer Libav

Install GStreamer Libav by running the following commands:

```
./configure --prefix=/usr \
            --with-package-name="GStreamer Libav Plugins 1.4.1 BLFS" \
```

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

Now, as the *root* user:

```
make install
```

Command Explanations

`--with-libav-extra-configure="--disable-yasm"`: Use this switch if you don't have yasm installed.

Contents

Installed Programs: None
Installed Library: /usr/lib/gstreamer-1.0/libgstlibav.so
Installed Directory: /usr/share/gtk-doc/html/gst-libav-plugins-1.0

Last updated on 2014-09-13 17:48:40 -0700

IcedTea-Sound-1.0.1

Introduction to IcedTea-Sound

The IcedTea-Sound package contains the PulseAudio-5.0 provider which was removed from IcedTea itself from version 2.5.0 onwards. More providers may be included in the future.

Because of pulseaudio real-time capabilities, the pulseaudio provider is said to provide smoother sound than the default alsa provider.

This package is known to build and work properly using an LFS-7.6 platform.

Package Information

- Download (HTTP): **http://icedtea.classpath.org/download/source/icedtea-sound-1.0.1.tar.xz**
- Download MD5 sum: e4d8013735ae517c015327924dabf3ed
- Download size: 1.44 MB
- Estimated disk space required: 4.4 MB
- Estimated build time: 0.1 SBU

IcedTea-Sound Dependencies

Required

OpenJDK-1.7.0.65/IcedTea-2.5.2 or Java-1.7.0.65 (remember to configure as described in the OpenJDK-1.7.0.65/IcedTea-2.5.2 page), and PulseAudio-5.0

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/icedtea-sound

Installation of IcedTea-Sound

Install IcedTea-Sound by running the following commands:

```
./configure --with-jdk-home=${JAVA_HOME} --disable-docs &&
make
```

This package does not come with a working test suite.

Now, as the *root* user:

```
case $(uname -m) in
  i?86   ) ARCH=i386 ;;
  x86_64 ) ARCH=amd64 ;;
esac &&

install icedtea-sound.jar ${JAVA_HOME}/jre/lib/ext &&
install build/native/libicedtea-sound.so ${JAVA_HOME}/jre/lib/$ARCH &&
unset ARCH
```

--disable-docs: Disable building the documentation.

Configuring IcedTea-Sound

Config Files

```
${JAVA_HOME}/jre/lib/sound.properties
```

Configuration Information

The default installation of OpenJDK uses the ALSA provider. You have to specify the PulseAudio provider in the `sound.properties` file, as the *root* user:

```
cat >> ${JAVA_HOME}/jre/lib/sound.properties << "EOF"
# Begin PulseAudio provider additions:

javax.sound.sampled.Clip=org.classpath.icedtea.pulseaudio.PulseAudioClip
javax.sound.sampled.SourceDataLine=org.classpath.icedtea.pulseaudio.PulseAudioSourceDataLine
javax.sound.sampled.TargetDataLine=org.classpath.icedtea.pulseaudio.PulseAudioTargetDataLine

# End PulseAudio provider additions
EOF
```

Contents

Installed Program: None.
Installed Libraries: libicedtea-sound.so and icedtea-sound.jar.
Installed Directories: None.

Short Descriptions

`libicedtea-sound.so`   contains the sound provider(s) bindings.

Last updated on 2014-09-18 22:41:15 -0700

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-7.6 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

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/liba52

Installation of Liba52

Install liba52 by running the following commands:

```
./configure --prefix=/usr \
            --mandir=/usr/share/man \
            --enable-shared \
            --disable-static \
```

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.

Last updated on 2014-09-16 13:49:04 -0700

Libao-1.2.0

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-7.6 platform.

Package Information

- Download (HTTP): **http://downloads.xiph.org/releases/ao/libao-1.2.0.tar.gz**
- Download MD5 sum: 9f5dd20d7e95fd0dd72df5353829f097
- Download size: 456 KB
- Estimated disk space required: 3.9 MB
- Estimated build time: less than 0.1 SBU

Libao Dependencies

Optional

X Window System, ALSA-1.0.28, and PulseAudio-5.0

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/libao

Installation of Libao

Install libao by running the following commands:

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

```
make install &&
install -v -m644 README /usr/share/doc/libao-1.2.0
```

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

Installed Programs: None
Installed Libraries: libao.so and plugins under /usr/lib/ao/plugins-4
Installed Directories:/usr/include/ao, /usr/lib/ao and /usr/share/doc/libao-1.2.0

Short Descriptions

`libao.so`   provides functions for programs wishing to output sound over supported platforms.

Last updated on 2014-09-18 14:33:53 -0700

---

libass-0.11.2

Introduction to libass

libass is a portable subtitle renderer for the ASS/SSA (Advanced Substation Alpha/Substation Alpha) subtitle format that allows for more advanced subtitles than the conventional SRT and similar formats.

This package is known to build and work properly using an LFS-7.6 platform.

Package Information

- Download (HTTP): **https://github.com/libass/libass/releases/download/0.11.2/libass-0.11.2.tar.xz**
- Download MD5 sum: 701b761934de0eff7d45f58d7d13eaf6
- Download size: 292 KB
- Estimated disk space required: 4.1 MB
- Estimated build time: less 0.1 SBU

libass Dependencies

Required

FreeType-2.5.3 and FriBidi-0.19.6

Recommended

Fontconfig-2.11.1

Optional

Harfbuzz-0.9.35 and **Enca**

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/libass

Installation of libass

Install libass by running the following commands:

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

```
make install
```

Command Explanations

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

--disable-fontconfig: Use this switch if you didn't install Fontconfig.

Contents

Installed Programs: None
Installed Library: libass.so
Installed Directory: /usr/include/ass

Short Descriptions

libass.so   provides the functions used to render ASS/SSA subtitle format.

Last updated on 2014-09-11 23:27:59 -0700

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-7.6 platform.

Package Information

- Download (HTTP): **http://pkgs.fedoraproject.org/repo/pkgs/libcanberra/libcanberra-0.30.tar.xz/34cb7e4430afaf6f447c4ebdb9b42072/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-1.3.4

Recommended

alsa-lib-1.0.28, GStreamer-1.4.1 and GTK+-3.12.2

Optional

GTK+-2.24.24, GTK-Doc-1.20, PulseAudio-5.0 and **tdb**

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/libcanberra

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:

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: canberra-boot and canberra-gtk-play
Installed Libraries: libcanberra-gtk.so, libcanberra-gtk3.so and libcanberra.so
Installed Directories: /usr/lib/libcanberra-0.30, /usr/share/doc/libcanberra and /usr/share/gtk-doc/html/libcanberra

Short Descriptions

`canberra-gtk-play`	is an application used for playing sound events.
`libcanberra-gtk.so`	contains the libcanberra bindings for GTK+ 2.
`libcanberra-gtk3.so`	contains the libcanberra bindings for GTK+ 3.
`libcanberra.so`	contains the libcanberra API functions.

Last updated on 2014-09-14 14:01:57 -0700

libdiscid-0.6.1

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-7.6 platform.

Package Information

- Download (HTTP): **http://ftp.musicbrainz.org/pub/musicbrainz/libdiscid/libdiscid-0.6.1.tar.gz**
- Download (FTP): **ftp://ftp.musicbrainz.org/pub/musicbrainz/libdiscid/libdiscid-0.6.1.tar.gz**
- Download MD5 sum: 98c4b281780707e6b446cc526a825e7a
- Download size: 358 KB
- Estimated disk space required: 2.7 MB
- Estimated build time: 0.1 SBU

Optional

Doxygen-1.8.8

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/libdiscid

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

Installed Programs: None

Short Descriptions

libdiscid.so   contains the DiscID API functions.

Last updated on 2014-09-18 14:33:53 -0700

libdvdcss-1.3.0

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-7.6 platform.

Package Information

- Download (HTTP): **http://www.videolan.org/pub/libdvdcss/1.3.0/libdvdcss-1.3.0.tar.bz2**
- Download MD5 sum: 7f0fdb3ff91d638f5e45ed7536f7eb67
- Download size: 348 KB
- Estimated disk space required: 3.6 MB
- Estimated build time: less than 0.1 SBU

libdvdcss Dependencies

Optional (to Create Documentation)

Doxygen-1.8.8

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/libdvdcss

Installation of libdvdcss

Install libdvdcss by running the following commands:

```
./configure --prefix=/usr    \
            --disable-static \
            --docdir=/usr/share/doc/libdvdcss-1.3.0 &&
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: None
Installed Library: libdvdcss.so
Installed Directories: /usr/include/dvdcss and /usr/share/doc/libdvdcss-1.3.0

Short Descriptions

libdvdcss.so   provides the functionality that is required for transparent DVD access with CSS decryption.

Last updated on 2014-09-17 11:48:47 -0700

Libdvdread-5.0.0

This package is known to build and work properly using an LFS-7.6 platform.

Package Information

- Download (HTTP): **http://download.videolan.org/pub/videolan/libdvdread/5.0.0/libdvdread-5.0.0.tar.bz2**
- Download MD5 sum: 20b964a3fb290b8df45c6b25d37411de
- Download size: 372 KB
- Estimated disk space required: 4.9 MB
- Estimated build time: less than 0.1 SBU

User Notes: *http://wiki.linuxfromscratch.org/blfs/wiki/libdvdread*

Installation of Libdvdread

Install libdvdread by running the following commands:

```
./configure --prefix=/usr    \
            --disable-static \
            --docdir=/usr/share/doc/libdvdread-5.0.0 &&
make
```

This package does not come with a test suite.

Now, as the *root* user:

```
make install
```

Contents

Installed Programs: dvdread-config
Installed Library: libdvdread.so
Installed Directory: /usr/include/dvdread

Short Descriptions

`libdvdread.so`   provides functionality required to access DVDs.

Last updated on 2014-09-15 22:13:43 -0700

Libdvdnav-5.0.1

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-7.6 platform.

Package Information

- Download (HTTP): **http://download.videolan.org/pub/videolan/libdvdnav/5.0.1/libdvdnav-5.0.1.tar.bz2**
- Download MD5 sum: 81e30fb57eaf9f61aa6513a7bd85bd74
- Download size: 348 KB
- Estimated disk space required: 7.2 MB
- Estimated build time: less than 0.1 SBU

Libdvdnav Dependencies

Required

libdvdread-5.0.0

User Notes: *http://wiki.linuxfromscratch.org/blfs/wiki/libdvdnav*

```
./configure --prefix=/usr --docdir=/usr/share/doc/libdvdnav-5.0.1 &&
make
```

This package does not come with a test suite.

Now, as the *root* user:

```
make install
```

Contents

Installed Programs: dvdnav-config
Installed Library: libdvdnav.so and libdvdnavmini.so
Installed Directory: /usr/include/dvdnav

Short Descriptions

`libdvdnav.so`	DVD navigation library.
`libdvdnavmini.so`	DVD navigation mini library.

Last updated on 2014-09-16 10:29:57 -0700

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-7.6 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, SDL-1.2.15, and X Window System

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/libdv

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-static`: This switch prevents the static libraries being installed.

Contents

Installed Programs: dubdv, dvconnect, and encodedv
Installed Library: libdv.so
Installed Directories: /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.

Last updated on 2014-09-16 13:49:04 -0700

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-7.6 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

Additional Downloads

- Required patch: **http://www.linuxfromscratch.org/patches/blfs/7.6/libmad-0.15.1b-fixes-1.patch**

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/libmad

Installation of libmad

Install libmad by running the following commands:

```
patch -Np1 -i ../libmad-0.15.1b-fixes-1.patch               &&
sed "s@AM_CONFIG_HEADER@AC_CONFIG_HEADERS@g" -i configure.ac &&
touch NEWS AUTHORS ChangeLog                                &&
autoreconf -fi                                              &&

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

```
Name: mad
Description: MPEG audio decoder
Requires:
Version: 0.15.1b
Libs: -L${libdir} -lmad
Cflags: -I${includedir}
EOF
```

Command Explanations

`touch NEWS AUTHORS ChangeLog`: Prevent autoreconf from returning an error.

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

Contents

Installed Programs: None
Installed Library: libmad.so
Installed Directories: None

Short Descriptions

`libmad.so`   is a MPEG audio decoder library.

Last updated on 2014-09-16 13:49:04 -0700

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-7.6 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

User Notes: *http://wiki.linuxfromscratch.org/blfs/wiki/libmpeg2*

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:

Command Explanations

`sed -i ...`: This `sed` fixes problems with recent GCC compilers.

Contents

Installed Programs: corrupt_mpeg2, extract_mpeg2 and mpeg2dec
Installed Libraries: libmpeg2.{so,a} and libmpeg2convert.{so,a}
Installed Directories:/usr/include/mpeg2dec and /usr/share/doc/mpeg2dec-0.5.1

Short Descriptions

extract_mpeg2	extracts MPEG video streams from a multiplexed stream.
mpeg2dec	decodes MPEG1 and MPEG2 video streams.
libmpeg2.{so,a}	contains API functions used to decode MPEG video streams.
libmpeg2convert.{so,a}	contains API functions used for color conversions of MPEG video streams.

Last updated on 2014-09-16 13:49:04 -0700

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-7.6 platform.

Package Information

- Download (HTTP): **http://ftp.musicbrainz.org/pub/musicbrainz/historical/libmusicbrainz-2.1.5.tar.gz**
- Download (FTP): **ftp://ftp.musicbrainz.org/pub/musicbrainz/historical/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/7.6/libmusicbrainz-2.1.5-missing-includes-1.patch**

libmusicbrainz Dependencies

Optional to Build the Python Bindings

Python-2.7.8

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/libmusicbrainz

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
```

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.

Last updated on 2014-09-16 13:49:04 -0700

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-7.6 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/7.6/libmusicbrainz-5.0.1-build_system-1.patch**

libmusicbrainz Dependencies

Required

CMake-3.0.1 and neon-0.30.0

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/libmusicbrainz5

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 &&
```

This package does not come with a test suite.

Now, as the *root* user:

```
make install
```

Contents

Installed Programs: None
Installed Library: libmusicbrainz5.so
Installed Directory: /usr/include/libmusicbrainz5

Short Descriptions

libmusicbrainz5.so   contains API functions for accessing the MusicBrainz database.

Last updated on 2014-09-17 21:56:07 -0700

libogg-1.3.2

Introduction to libogg

The libogg package contains the Ogg file structure. This is useful for creating (encoding) or playing (decoding) a single physical bit stream.

This package is known to build and work properly using an LFS-7.6 platform.

Package Information

- Download (HTTP): **http://downloads.xiph.org/releases/ogg/libogg-1.3.2.tar.xz**
- Download (FTP): **ftp://downloads.xiph.org/pub/xiph/releases/ogg/libogg-1.3.2.tar.xz**
- Download MD5 sum: 5c3a34309d8b98640827e5d0991a4015
- Download size: 400 KB
- Estimated disk space required: 4 MB
- Estimated build time: less than 0.1 SBU

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/libogg

Installation of libogg

Install libogg by running the following commands:

```
./configure --prefix=/usr --docdir=/usr/share/doc/libogg-1.3.2 --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

Installed Programs: None
Installed Library: libogg.so
Installed Directories: /usr/include/ogg and /usr/share/doc/libogg-1.3.2

Short Descriptions

libogg.so   provides the functions required for programs to read or write Ogg formatted bit streams.

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-7.6 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)

Additional Downloads

- Required patch: **http://www.linuxfromscratch.org/patches/blfs/7.6/libquicktime-1.2.4-ffmpeg2-1.patch**

libquicktime Dependencies

Optional

alsa-lib-1.0.28, Doxygen-1.8.8, FAAC-1.28, FAAD2-2.7, FFmpeg-2.3.3, GTK+-2.24.24, LAME-3.99.5, libdv-1.0.0, libjpeg-turbo-1.3.1, libpng-1.6.13, libvorbis-1.3.4, **Schroedinger**, x264-20140818-2245, and Xorg Libraries

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/libquicktime

Installation of libquicktime

Install libquicktime by running the following commands:

```
patch -Np1 -i ../libquicktime-1.2.4-ffmpeg2-1.patch &&

./configure --prefix=/usr      \
            --enable-gpl       \
            --without-doxygen \
            --docdir=/usr/share/doc/libquicktime-1.2.4
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

`--enable-gpl`: Changes the licence to GPL. This enables some extra plugins, such as FAAC, FAAD2, and x264.

`--without-doxygen`: This is necessary if you do not have Doxygen, omit this if installed.

`--with-libdv`: Build with libdv support. Not enabled by default.

Contents

Installed Programs: libquicktime_config, lqtplay, lqtremux, lqt_transcode, qt2text, qtdechunk, qtdump, qtinfo, qtrechunk, qtstreamize, and qtyuv4toyuv
Installed Libraries: libquicktime.so and several plugin codec libraries
Installed Directories: /usr/include/lqt, /usr/lib/libquicktime, and /usr/share/doc/libquicktime-1.2.4

Short Descriptions

`lqt_transcode`	is a command-line program used to encode video and/or audio files from one format to another.
`qtdechunk`	can take movies containing rgb frames and write them out as ppm images.
`qtrechunk`	concatenates input frames into a QuickTime movie.
`qtyuv4toyuv`	is used to write a YUV4 encoded movie as a planar YUV 4:2:0 file.
`libquicktime.so`	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.

Last updated on 2014-09-18 14:33:53 -0700

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-7.6 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)

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/libsamplerate

Installation of libsamplerate

Install libsamplerate by running the following commands:

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

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

Now, as the *root* user:

```
make htmldocdir=/usr/share/doc/libsamplerate-0.1.8 install
```

Command Explanations

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

Contents

Installed Program: sndfile-resample
Installed Library: libsamplerate.so
Installed Directory: /usr/share/doc/libsamplerate-0.1.8

Short Descriptions

`sndfile-resample`	is a sample rate converter using libsndfile for file I/O.

Last updated on 2014-09-16 13:49:04 -0700

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-7.6 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-1.0.28, FLAC-1.3.0, libogg-1.3.2, libvorbis-1.3.4 and SQLite-3.8.6

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/libsndfile

Installation of libsndfile

Install libsndfile by running the following commands:

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

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

Now, as the *root* user:

```
make htmldocdir=/usr/share/doc/libsndfile-1.0.25 install
```

Command Explanations

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

Contents

Installed Programs: 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

Installed Library: libsndfile.so

Installed Directory: /usr/share/doc/libsndfile-1.0.25

Short Descriptions

sndfile-cmp	compares two audio files.
sndfile-concat	concatenates two or more audio files.
sndfile-convert	converts a sound files from one format to another.
sndfile-deinterleave	splits a multi-channel into multiple single channel files.
sndfile-info	displays information about a sound file.
sndfile-interleave	converts multiple single channel files into a multi-channel file.
sndfile-metadata-get	retrieves metadata from a sound file.
sndfile-metadata-set	sets metadata in a sound file.
sndfile-play	plays a sound file.
libsndfile.so	contains the libsndfile API functions.

Last updated on 2014-09-11 23:27:59 -0700

---

libtheora-1.1.1

...Foundation.

This package is known to build and work properly using an LFS-7.6 platform.

Package Information

- Download (HTTP): **http://downloads.xiph.org/releases/theora/libtheora-1.1.1.tar.xz**
- Download MD5 sum: 9eeabf1ad65b7f41533854a59f7a716d
- Download size: 1.4 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-1.3.2

Recommended

libvorbis-1.3.4

Optional

SDL-1.2.15 and libpng-1.6.13 (both to build the example players), Doxygen-1.8.8, texlive-20140525, **BibTex**, and **Transfig** (all four to build the API documentation), and Valgrind-3.10.0

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/Libtheora

Installation of libtheora

Install libtheora by running the following commands:

```
sed -i 's/png_\(sizeof\)/\1/g' examples/png2theora.c &&
./configure --prefix=/usr --disable-static &&
make
```

If you wish to run the tests, issue: `make check`.

Now, as the *root* user:

```
make install
```

If you wish to install the examples (so that you can hack on `theora`), install them as the *root* user:

```
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 installation of static versions of the libraries.

Contents

Installed Programs: None, unless you installed the examples
Installed Libraries: libtheora.so, libtheoraenc.so, and libtheoradec.so
Installed Directories: /usr/include/theora and /usr/share/doc/libtheora-1.1.1

Short Descriptions

`libtheora*.so`   libraries provide the functions to read and write video files.

Last updated on 2014-09-10 09:45:01 -0700

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-7.6 platform.

Package Information

- Download (HTTP): **http://downloads.xiph.org/releases/vorbis/libvorbis-1.3.4.tar.xz**
- Download MD5 sum: 55f2288055e44754275a17c9a2497391
- Download size: 1.1 MB
- Estimated disk space required: 15 MB
- Estimated build time: 0.1 SBU

libvorbis Dependencies

Required

libogg-1.3.2

Optional

Doxygen-1.8.8 and texlive-20140525 (specifically, pdflatex and htlatex) to build the PDF documentation

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/Libvorbis

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-1.3.4
```

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

Installed Programs: None
Installed Libraries: libvorbis.so, libvorbisenc.so and libvorbisfile.so
Installed Directories: /usr/include/vorbis and /usr/share/doc/libvorbis-1.3.4

Short Descriptions

`libvorbis.so`   provides the functions used to read and write sound files.

Last updated on 2014-09-10 09:45:01 -0700

---

libvpx-v1.3.0

Introduction to libvpx

This package, from the WebM project, provides the reference implementations of the VP8 Codec, used in most current html5 video, and of the next-generation VP9 Codec.

- Download (HTTP): **http://anduin.linuxfromscratch.org/sources/other/libvpx-v1.3.0.tar.xz**
- Download MD5 sum: 528cb52934d9a731dfc0a2853b1e260d
- Download size: 1.8 MB
- Estimated disk space required: 32 MB (without the documentation)
- Estimated build time: 0.8 SBU

The libvpx tarballs are no longer generated by the maintainers. To build from source, the libvpx developers recommend using current git. The source tarball shown above was created by the BLFS team by pulling a git version, and removing .git, .gitattributes and .gitignore. BLFS made no changes to the existing source files.

libvpx Dependencies

Required

yasm-1.3.0 (compiling with NASM-2.11.05 is currently broken) and Which-2.20 (so `configure` can find yasm)

Optional

Doxygen-1.8.8 and PHP-5.6.0 (to build the documentation).

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/libvpx

Installation of libvpx

Install libvpx by running the following commands:

```
sed -i 's/cp -p/cp/' build/make/Makefile &&
chmod -v 644 vpx/*.h &&
mkdir ../libvpx-build &&
cd ../libvpx-build &&
../libvpx-v1.3.0/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

`sed ... && chmod ...`: These commands correct ownership and permissions of installed files.

`mkdir ../libvpx-build && cd ../libvpx-build`: The libvpx developers recommend building in a dedicated build directory.

`--disable-vp8`: This switch prevents building of VP8 codec support.

`--disable-vp9`: This switch prevents building of VP9 codec support.

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

Contents

Installed Programs: vp8_scalable_patterns, vp9_spatial_scalable_encoder, vpxdec and vpxenc
Installed Libraries: libvpx.so
Installed Directories: /usr/include/vpx

Short Descriptions

vpxdec	is the WebM Project VP8 and VP9 decoder.
vpxenc	is the WebM project VP8 and VP9 encoder.
libvpx.so	provides functions to use the VP8 and VP9 video codecs.

Last updated on 2014-09-11 23:27:59 -0700

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-7.6 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/7.6/opal-3.10.10-ffmpeg2-1.patch**

Opal Dependencies

Required

Ptlib-2.10.10

Optional

Celt, FFmpeg-2.3.3, **GSM**, **ISDN4Linux**, libtheora-1.1.1, OpenJDK-1.7.0.65/IcedTea-2.5.2, Ruby-2.1.2, **Spandsp**, Speex-1.2rc1, and x264-20140818-2245

User Notes: *http://wiki.linuxfromscratch.org/blfs/wiki/opal*

Installation of Opal

Install Opal by running the following commands:

```
patch -Np1 -i ../opal-3.10.10-ffmpeg2-1.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

Installed Programs: None
Installed Libraries: libopal.so and libopal_s.a
Installed Directories: /usr/include/opal and /usr/lib/opal-3.10.10

Short Descriptions

`libopal.so`   contains the Opal API functions.

Last updated on 2014-09-18 22:41:15 -0700

Opus-1.1

Introduction to Opus

Opus is a lossy audio compression format developed by the Internet Engineering Task Force (IETF) that is particularly suitable for interactive speech and audio transmission over the Internet. This package provides the Opus development

- Download (HTTP): **http://downloads.xiph.org/releases/opus/opus-1.1.tar.gz**
- Download MD5 sum: c5a8cf7c0b066759542bc4ca46817ac6
- Download size: 831 KB
- Estimated disk space required: 16 MB
- Estimated build time: 0.2 SBU (additional 0.5 SBU for tests)

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/Opus

Installation of Opus

Install Opus 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

Installed Programs: None
Installed Library: libopus.so
Installed Directory: /usr/include/opus

Short Descriptions

`libopus.so`   provides the functions used to read and write Opus format.

Last updated on 2014-09-11 23:27:59 -0700

PulseAudio-5.0

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-7.6 platform.

Package Information

- Download (HTTP): **http://freedesktop.org/software/pulseaudio/releases/pulseaudio-5.0.tar.xz**
- Download MD5 sum: c43749838612f4860465e83ed62ca38e
- Download size: 1.4 MB
- Estimated disk space required: 82 MB
- Estimated build time: 1.0 SBU

PulseAudio Dependencies

Required

JSON-C-0.12 and libsndfile-1.0.25

Optional

[Avahi-0.6.31](), [BlueZ-5.23]() (runtime), [Check-0.9.14](), [ConsoleKit-0.4.6]() (runtime), [GConf-3.2.6](), [GTK+-3.12.2](), [libsamplerate-0.1.8](), [SBC-1.2]() (Bluetooth support), [Valgrind-3.10.0](), **[FFTW]()**, **[JACK]()**, **[libasyncns]()**, **[LIRC]()**, **[ORC]()**, **[TDB]()**, **[WebRTC AudioProcessing]()** and **[XEN]()**

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/pulseaudio

Installation of PulseAudio

Install PulseAudio by running the following commands:

```
find . -name "Makefile.in" | xargs sed -i "s|(libdir)/@PACKAGE@|(libdir)/pulse|" &&
./configure --prefix=/usr          \
            --sysconfdir=/etc       \
            --localstatedir=/var    \
            --disable-bluez4        \
            --disable-rpath         \
            --with-module-dir=/usr/lib/pulse/modules &&
make
```

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

Now, as the *root* user:

```
make install
```

While still as the *root* user, remove the D-Bus configuration file for the system wide daemon to avoid creating unnecessary system users and groups:

```
rm /etc/dbus-1/system.d/pulseaudio-system.conf
```

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`.

`--disable-bluez4`: This switch disables support for BlueZ version 4 in favour of BlueZ version 5 since the latter also installs compatibility library for the earlier version.

`--disable-rpath`: This switch prevents linker from adding a hardcoded runtime path to the installed programs and libraries.

`--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-5.0/modules`.

Configuring PulseAudio

Config Files

There are system wide configuration files: `/etc/pulse/daemon.conf`, `/etc/pulse/client.conf`, `/etc/pulse/default.pa`, and user configuration files with the same names in `~/.config/pulse`. User configuration files take precedence over system wide ones.

Configuration Information

The default configuration files allow to set up a working installation, except that you need to remove a reference to Console-Kit if it is not installed. For example, issue the following command as the *root* user:

```
sed '/load-module module-console-kit/s/^/#/' \
               -i /etc/pulse/default.pa
```

You may also have to configure the audio system. You may start pulseaudio in command line mode using `pulseaudio -c`. You can then list various informations and change some settings. See `man pulse-cli-syntax`.

Contents

Installed Programs: esdcompat, pacat, pacmd, pactl, padsp, pamon (symlink), paplay (symlink), parec (symlink), parecord (symlink), pasuspender, pax11publish, pulseaudio, start-pulseaudio-kde and start-

Short Descriptions

esdcompat	is the PulseAudio ESD wrapper script.
pacat	Plays back or records raw or encoded audio streams on a PulseAudio sound server.
pacmd	is a tool used to reconfigure a PulseAudio sound server during runtime.
pactl	is used to control a running PulseAudio sound server.
padsp	is the PulseAudio OSS Wrapper.
pamon	is a symbolic link to `pacat`.
paplay	is used to play audio files on a PulseAudio sound server.
parec	is a symbolic link to `pacat`.
parecord	is a symbolic link to `pacat`.
pasuspender	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.
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.

Last updated on 2014-09-16 13:49:04 -0700

SBC-1.2

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-7.6 platform.

Package Information

* Download (HTTP): **http://www.kernel.org/pub/linux/bluetooth/sbc-1.2.tar.xz**
* Download (FTP): **ftp://www.kernel.org/pub/linux/bluetooth/sbc-1.2.tar.xz**
* Download MD5 sum: ec65c444ad4c32aa85702641045b19e9
* Download size: 248 KB
* Estimated disk space required: 2.9 MB
* Estimated build time: less than 0.1 SBU

SBC Dependencies

Optional

libsndfile-1.0.25

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/sbc

Installation of SBC

Install SBC by running the following commands:

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

This package does not come with a test suite.

Now, as the *root* user:

Command Explanations

--disable-tester This disables the SBC tester. Remove it if you have installed the optional libsndfile package.

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

Contents

Installed Programs: sbcdec, sbcenc, and sbcinfo
Installed Library: libsbc.so
Installed Directory: /usr/include/sbc

Short Descriptions

libsbc.so   contains the SBC API functions.

Last updated on 2014-09-16 13:49:04 -0700

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-7.6 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-1.0.28, PulseAudio-5.0 NASM-2.11.05, X Window System, GLU-9.0.0, AAlib-1.4rc5, Pth-2.0.7, **DirectFB**, **GGI**, **SVGAlib-1.9.5** (**patched**), **libcaca** and **PicoGUI**

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/sdl

Installation of SDL

Install SDL by running the following commands:

```
sed -i '/_XData32/s:register long:register _Xconst long:' src/video/x11/SDL_x11sym.h &&

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

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

`sed -i ...`: This command fixes compilation with libX11-1.6.0

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

Configuring SDL

Configuration Information

As with most libraries, there is no configuration to do, save that the library directory, i.e., /opt/lib or /usr/local/lib should appear in /etc/ld.so.conf so that `ldd` can find the shared libraries. After checking that this is the case, `/sbin/ldconfig` should be run while logged in as *root*.

Contents

Installed Program: sdl-config
Installed Libraries: libSDL.so and libSDLmain.a
Installed Directories:/usr/include/SDL and /usr/share/doc/SDL-1.2.15

Short Descriptions

sdl-config	determines the compile and linker flags that should be used to compile and link programs that use `libSDL`.
libSDL.so	library provides low level access to audio, keyboard, mouse, joystick, 3D hardware via OpenGL, and 2D frame buffer across multiple platforms.

Last updated on 2014-09-11 23:27:59 -0700

SoundTouch-1.8.0

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-7.6 platform.

Package Information

- Download (HTTP): **http://www.surina.net/soundtouch/soundtouch-1.8.0.tar.gz**
- Download MD5 sum: d02c6c91cb13901ca273a2b4b143ce41
- Download size: 104 KB
- Estimated disk space required: 6.1 MB
- Estimated build time: 0.1 SBU

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/soundtouch

Installation of SoundTouch

Install SoundTouch by running the following commands:

```
sed "s@AM_CONFIG_HEADER@AC_CONFIG_HEADERS@g" -i configure.ac &&
./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-1.8.0 install
```

`sed "s@AM_CONFIG_HEADER@AC_CONFIG_HEADERS@g" -i configure.ac`: This sed fixes some issues with Automake 1.13 and later.

Contents

Installed Program: soundstrech
Installed Library: libSoundTouch.so
Installed Directories: /usr/include/soundtouch and /usr/share/doc/soundtouch-1.8.0

Short Descriptions

`libSoundTouch.so`   contains SoundTouch API functions.

Last updated on 2014-09-22 11:20:08 -0700

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-7.6 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-1.3.2

Optional

Valgrind-3.10.0

User Notes: *http://wiki.linuxfromscratch.org/blfs/wiki/speex*

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

Contents

Installed Programs: speexdec and speexenc

Short Descriptions

speexdec	decodes a Speex file and produces a WAV or raw file.
speexenc	encodes a WAV or raw files using Speex.
libspeex.so	provides functions for the audio encoding/decoding programs.
libspeexdsp.so	is a speech processing library that goes along with the Speex codec.

Last updated on 2014-09-11 23:27:59 -0700

Taglib-1.9.1

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-7.6 platform.

Package Information

- Download (HTTP): **https://github.com/taglib/taglib/releases/download/v1.9.1/taglib-1.9.1.tar.gz**
- Download MD5 sum: 0d35df96822bbd564c5504cb3c2e4d86
- Download size: 644 KB
- Estimated disk space required: 10 MB
- Estimated build time: 0.4 SBU

Taglib Dependencies

Required

CMake-3.0.1

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/taglib

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

Installed Programs: taglib-config
Installed Libraries: libtag.so and libtag_c.so
Installed Directories: /usr/include/taglib

Last updated on 2014-09-15 22:13:43 -0700

x264-20140818-2245

Introduction to x264

x264 package provides a library for encoding video streams into the H.264/MPEG-4 AVC format.

This package is known to build and work properly using an LFS-7.6 platform.

- Download MD5 sum: 9694ad08fc6fbb7110e2a963de336035
- Download size: 612 KB
- Estimated disk space required: 8.8 MB
- Estimated build time: 0.2 SBU

x264 Dependencies

Recommended

  [yasm-1.3.0](#)

User Notes: ***http://wiki.linuxfromscratch.org/blfs/wiki/x264***

Installation of x264

Install x264 by running the following commands:

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

This package does not come with a test suite.

Now, as the *root* user:

```
make install
```

Command Explanations

--disable-cli: This switch disables building the command-line encoder which is redundant since it requires FFmpeg for most of the input formats.

--disable-asm: Use this switch if you didn't install yasm.

Contents

Installed Programs: None
Installed Library: libx264.so
Installed Directory: None

Short Descriptions

libx264.so   provides the functions used to encode video streams into the H.264/MPEG-4 AVC format.

Last updated on 2014-09-11 23:27:59 -0700

---

xine-lib-1.2.6

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-7.6 platform.

Package Information

- Download (HTTP): **http://downloads.sourceforge.net/xine/xine-lib-1.2.6.tar.xz**
- Download (FTP): **ftp://mirror.ovh.net/gentoo-distfiles/distfiles/xine-lib-1.2.6.tar.xz**
- Download MD5 sum: 02ee3c2380273989b4b016903209e05e
- Download size: 4.8 MB
- Estimated disk space required: 121 MB (additional 123 MB to install API documentation)
- Estimated build time: 1.4 SBU (additional 0.1 SBU to install API documentation)

X Window System, FFmpeg-2.3.3, and at least one of: ALSA-1.0.28, PulseAudio-5.0 or **JACK**

Optional

AAlib-1.4rc5, FAAD2-2.7, FLAC-1.3.0, gdk-pixbuf-2.30.8, GLU-9.0.0, ImageMagick-6.8.9-7, liba52-0.7.4, libdvdnav-5.0.1, libmad-0.15.1b, libmng-2.0.2, libtheora-1.1.1, libva-1.3.1, libvdpau-0.8, libvorbis-1.3.4, libvpx-1.3.0, MesaLib-10.2.7, Samba-4.1.11, SDL-1.2.15, Speex-1.2rc1, Doxygen-1.8.8 (to create the API documentation), **DirectFB**, **libbluray**, **libcaca**, **libdca**, **libFAME**, **libmodplug**, **musepack**, **VCDImager**, **Video4Linux**, and **WavPack**,

User Notes: *http://wiki.linuxfromscratch.org/blfs/wiki/xine-lib*

Installation of Xine Libraries

Install Xine Libraries by running the following commands:

```
./configure --prefix=/usr      \
            --disable-vcd      \
            --docdir=/usr/share/doc/xine-lib-1.2.6 &&
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
```

> ### Note
>
> When installing, the Makefile does some additional linking. If you do not have Xorg in /usr, the LIBRARY_PATH variable needs to be defined for the root user. If using sudo to assume root, use the -E option to pass your current environment variables for the install process.

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-1.2.6/api &&
install -v -m644   doc/api/* \
                   /usr/share/doc/xine-lib-1.2.6/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-1.2.6: This switch causes the documentation to be installed into a versioned directory instead of the default /usr/share/doc/xine-lib.

Contents

Installed Programs: xine-config and xine-list-1.2
Installed Libraries: libxine.so and numerous plugin modules and video extensions under /usr/lib/xine/plugins/2.4
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-1.2.6

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.

Last updated on 2014-09-13 17:48:40 -0700

Introduction to XviD

XviD is an MPEG-4 compliant video CODEC.

This package is known to build and work properly using an LFS-7.6 platform.

Package Information

- Download (HTTP): **http://downloads.xvid.org/downloads/xvidcore-1.3.3.tar.gz**
- Download MD5 sum: 8ecddfe488cb3a82d792fc7efbf51d62
- Download size: 800 KB
- Estimated disk space required: 8.1 MB
- Estimated build time: 0.1 SBU

XviD Dependencies

Optional

yasm-1.3.0

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/xvid

Installation of XviD

> **Note**
>
> This package tarball expands to `xvidcore`, not the expected `xvidcore-1.3.3`.

Install XviD by running the following commands:

```
cd build/generic &&
sed -i 's/^LN_S=@LN_S@/& -f -v/' platform.inc.in &&
./configure --prefix=/usr &&
make
```

This package does not come with a test suite.

Now, as the `root` user:

```
sed -i '/libdir.*STATIC_LIB/ s/^/#/' Makefile &&
make install &&

chmod -v 755 /usr/lib/libxvidcore.so.4.3 &&

install -v -m755 -d /usr/share/doc/xvidcore-1.3.3/examples &&
install -v -m644 ../../doc/* /usr/share/doc/xvidcore-1.3.3 &&
install -v -m644 ../../examples/* \
    /usr/share/doc/xvidcore-1.3.3/examples
```

Command Explanations

`sed -i 's/^LN_S=@LN_S@/& -f -v/' platform.inc.in`: Fix error during `make install` if reintalling or upgrading.

`sed -i '/libdir.*STATIC_LIB/ s/^/#/' Makefile`: This command disables installing the static library.

Contents

Installed Programs: None
Installed Library: libxvidcore.so
Installed Directory: /usr/share/doc/xvidcore-1.3.3

Short Descriptions

`libxvidcore.so`   provides functions to encode and decode most MPEG-4 video data.

Last updated on 2014-09-11 23:27:59 -0700

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.

Mpg123-1.20.1

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-7.6 platform.

Package Information

- Download (HTTP): **http://downloads.sourceforge.net/mpg123/mpg123-1.20.1.tar.bz2**
- Download MD5 sum: 1b3e8765aa608e306ede1ec507b67b23
- Download size: 844 KB
- Estimated disk space required: 13 MB
- Estimated build time: 0.2 SBU

Mpg123 Dependencies

Recommended

alsa-lib-1.0.28

Optional

OpenAL, PulseAudio-5.0, **JACK**, **PortAudio** and SDL-1.2.15

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/mpg123

Installation of Mpg123

Install Mpg123 by running the following commands:

```
./configure --prefix=/usr --with-module-suffix=.so &&
make
```

This package does not come with a test suite.

Now, as the *root* user:

```
make install
```

Command Explanations

--with-module-suffix=.so: This switch tells `mpg123` to load modules with `.so` extension which is useful if you don't want to keep `.la` files.

Contents

Installed Programs: mpg123, mpg123-id3dump, mpg123-strip, and out123
Installed Library: libmpg123.so and several under /usr/lib/mpg123/
Installed Directory: /usr/lib/mpg123

Short Descriptions

`mpg123`	is used for playing MP3 files via the console.
`mpg123-id3dump`	Tool to dump ID3 meta data from MPEG audio files using libmpg123
`mpg123-strip`	Extract only MPEG frames from a stream using libmpg123 (stdin to stdout)
`out123`	play raw PCM audio to an output device
`libmpg123.so`	contains the Mpg123 API functions.

Introduction to Vorbis Tools

The Vorbis Tools package contains command-line tools useful for encoding, playing or editing files using the Ogg CODEC.

This package is known to build and work properly using an LFS-7.6 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-1.3.4

Optional (required to build the *ogg123* program)

libao-1.2.0

Optional

cURL-7.37.1, FLAC-1.3.0, **libkate**, and Speex-1.2rc1

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/vorbistools

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-1.4.0/ogg123rc-example .

Contents

Short Descriptions

ogg123	is a command-line audio player for Ogg Vorbis streams.
oggdec	is a simple decoder which converts Ogg Vorbis files into PCM audio files (WAV or raw).
oggenc	is an encoder that turns raw, WAV or AIFF files into an Ogg Vorbis stream.
ogginfo	prints information stored in an audio file.
vcut	splits a file into two files at a designated cut point.
vorbiscomment	is an editor that changes information in the audio file metadata tags.

Last updated on 2014-09-10 09:45:01 -0700

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-7.6 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-2.11.05

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/lame

Installation of LAME

First, if you are using i686, fix a compile problem inroduced by gcc-4.9.0:

```
sed -i -e '/xmmintrin\.h/d' configure
```

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

`sed -i -e '/xmmintrin\.h/d' configure` : with gcc-4.9.0, 32-bit i686 builds fail in `xmm_quantize_sub.c` with an error message `error: inlining failed in call to always_inline '_mm_loadu_ps'`. This sed makes it appear as if `xmmintrin.h` is not present. Do not use this on other versions of gcc, or on x86_64.

`--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-2.11.05 to compile optimized assembly routines.

Installed Library: libmp3lame.so
Installed Directories: /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.

Last updated on 2014-09-11 23:27:59 -0700

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-7.6 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/7.6/cdparanoia-III-10.2-gcc_fixes-1.patch**

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/cdparanoia

Installation of CDParanoia

> **Note**
>
> This package does not support parallel build.

Install CDParanoia by running the following commands:

```
patch -Np1 -i ../cdparanoia-III-10.2-gcc_fixes-1.patch &&
./configure --prefix=/usr --mandir=/usr/share/man &&
make -j1
```

This package does not come with a test suite.

Now, as the *root* user:

```
make install &&
chmod -v 755 /usr/lib/libcdda_*.so.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

Short Descriptions

`cdparanoia`	is used for 'ripping' an audio-cd. Ripping is the process of digitally extracting music from an audio CD.
`libcdda_interface.` `{so,a}`	contains functions used by `cdparanoia`, as well as other packages, which can automatically identify if a CD device is CDDA compatible.
`libcdda_paranoia.` `{so,a}`	contains functions used by `cdparanoia`, as well as other packages, which provide data verification, synchronization, error handling and scratch reconstruction capability.

Last updated on 2014-09-14 13:18:45 -0700

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-7.6 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-1.9.4 and Sharutils-4.14

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/freetts

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:

```
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 commands builds everything, including the class libraries, tools and demos.

`cp -v -R bin ...; install -v -m644 speech.properties`: These two commands install the demonstration programs. Optionally copy the `speech.properties` file to `~/speech.properties` if you don't want to make it available system-wide.

`cp -v -R tools ...`: This installs the voice data import utilities. See the `README.html` files in the `tools/` subdirectories for information and instructions about using the tools.

`cp -v -R mbrola ...`: This installs the `mbrola.jar` file, required if you use the **MBROLA** voices.

`cp -v -R demo ...`: This installs the sources and documentation for the demonstration programs.

For additional information and documentation about the FreeTTS project, visit the main web page at **http://freetts.sourceforge.net**.

Testing the Installation

Test the installation using the following command:

```
java -jar /opt/freetts/lib/freetts.jar \
    -text "This is a test of the FreeTTS speech synthesis system"
```

Depending on the setup of your audio drivers and software, you may have to add the `-streaming` switch to the command as shown below:

```
java -jar /opt/freetts/lib/freetts.jar -streaming \
    -text "This is a test of the FreeTTS speech synthesis system"
```

Contents

Installed Programs: None
Installed Libraries: /opt/freetts-1.2.2/lib/*.jar
Installed Directory: /opt/freetts-1.2.2

Audacious-3.5.1

Introduction to Audacious

Audacious is a GTK+ based audio player.

This package is known to build and work properly using an LFS-7.6 platform.

Package Information

- Download (HTTP): **http://distfiles.audacious-media-player.org/audacious-3.5.1.tar.bz2**
- Download MD5 sum: 728df3e3f133782d2bb92e23fbbc6f55
- Download size: 440 KB
- Estimated disk space required: 14 MB
- Estimated build time: 0.2 SBU

Additional Downloads

Required Plugins

- Download (HTTP): **http://distfiles.audacious-media-player.org/audacious-plugins-3.5.1.tar.bz2**
- Download MD5 sum: 0eeb7f8f0183f4189ff1b564e9719cf8
- Download size: 1.7 MB
- Estimated disk space required: 41 MB
- Estimated build time: 0.5 SBU

Audacious Dependencies

Required

GTK+-3.12.2, libxml2-2.9.1 (plugins), Xorg build environment (plugins), and X Window System (runtime)

Recommended

ALSA-1.0.28 and D-Bus-1.8.8

Optional

Valgrind-3.10.0, PCRE-8.35 or **Oniguruma** and **libguess**

Optional (for Plugins)

cURL-7.37.1, neon-0.30.0 (for online mpg3 and ogg radio), LAME-3.99.5, FLAC-1.3.0, libvorbis-1.3.4, FAAD2-2.7, FFmpeg-2.3.3, SDL-1.2.15, mpg123-1.20.1, libnotify-0.7.6, PulseAudio-5.0, libsndfile-1.0.25, libsamplerate-0.1.8, **LIRC**, **libcdio** (both libcdio and libcdio-paranoia are needed to play CDs), **libcddb** (to identify CDs), **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**

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/audacious

Installation of Audacious

Install Audacious by running the following commands (you may wish to change the stamp to another string):

```
TPUT=/bin/true ./configure --prefix=/usr \
                           --with-buildstamp="BLFS" &&
make
```

This package does not come with a test suite.

Now, as the *root* user:

```
make install
```

Install the required plugins package by unpacking the tarball, changing into the newly created directory, and issuing the following commands:

```
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+-2.24.24 or GTK+-3.12.2 installed (for the icon cache) and desktop-file-utils-0.22 (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.

--with-buildstamp: This switch appends the given text to the version string.

--disable-mp3: Use this for the plugins if you have not installed mpg123 and do not wish to play mp3 files.

--enable-valgrind: Allow better Valgrind leak checks.

Configuring Audacious

If you prefer the old, smaller Winamp/XMMS interface, click on View> Interface> Winamp Classic Interface.

Contents

Installed Programs: audacious and audtool
Installed Libraries: libaudcore.so, libaudgui.so, libaudtag.so, and several plugin libraries under /usr/lib/audacious/ sub-directories
Installed Directories: /usr/include/audacious, /usr/include/libaudcore, /usr/include/libaudgui, /usr/lib/audacious and /usr/share/audacious

Short Descriptions

`audacious`	is a GTK+2 port of XMMS based on the Beep Media Player .
`audtool`	is a small tool to modify the behavior of a running `audacious` instance.

Last updated on 2014-09-13 17:48:40 -0700

Amarok-2.8.0

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-7.6 platform.

Package Information

- Download (HTTP): **http://download.kde.org/stable/amarok/2.8.0/src/amarok-2.8.0.tar.bz2**

- Download size: 30.1 MB
- Estimated disk space required: 223 MB
- Estimated build time: 9.2 SBU

Amarok Dependencies

Required

kdelibs-4.14.1, MariaDB-10.0.13 or **MySQL**, and taglib-1.9.1

Recommended

FFmpeg-2.3.3

Optional

cURL-7.37.1 (for MP3tunes integration), libxml2-2.9.1 (for MP3tunes integration), OpenSSL-1.0.1i (for MP3tunes integration), QJson-0.8.1, **nepomuk-core**, **Taglib-extras**, **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), **qtscript-qt**, and **Google Mock** (for tests)

User Notes: *http://wiki.linuxfromscratch.org/blfs/wiki/amarok*

Installation of Amarok

> ### Note
>
> Amarok depends strongly on $KDE_PREFIX. If a new version of KDE is installed in a different location (for instance installing kde in a versioned directory of /opt), then this package will need to be reinstalled.

Install Amarok by running the following commands:

```
mkdir build &&
cd    build &&

cmake -DCMAKE_INSTALL_PREFIX=$KDE_PREFIX \
      -DCMAKE_BUILD_TYPE=Release         \
      -DKDE4_BUILD_TESTS=OFF             \
      -Wno-dev .. &&
make
```

Now, as the *root* user:

```
make install
```

Command Explanations

-DKDE4_BUILD_TESTS=OFF: This switch disables the integrated tests. The test suite requires Google Mock.

Contents

Installed Programs: amarok, amarok_afttagger, amarokcollectionscanner, amarokpkg, and amzdownloader
Installed Libraries: 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 Directories: several in $KDE_PREFIX/share

Short Descriptions

amarok   Is a powerful music player and organizer built on top of KDE development platform.

Last updated on 2014-09-18 13:07:49 -0700

pnmixer-0.5.1

The Pnmixer package provides a lightweight volume control with a tray icon.

This package is known to build and work properly using an LFS-7.6 platform.

Package Information

- Download (HTTP): **https://github.com/downloads/nicklan/pnmixer/pnmixer-0.5.1.tar.gz**
- Download (FTP):
- Download MD5 sum: 2288af95ab280721b39b7c33601d5dd4
- Download size: 135 KB
- Estimated disk space required: 2.3 MB
- Estimated build time: less than 0.1 SBU

Pnmixer Dependencies

Required

alsa-utils-1.0.28 and GTK+-2.24.24

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/pnmixer

Installation of Pnmixer

Install Pnmixer by running the following commands:

```
./autogen.sh --prefix=/usr &&
make
```

This package does not have a testsuite.

Now, as the *root* user:

```
make install
```

Contents

Installed Program: pnmixer
Installed Libraries: None
Installed Directories: /usr/share/pnmixer

Short Descriptions

pnmixer   is a lightweight volume control that sits in a tray.

Last updated on 2014-09-10 09:45:01 -0700

Chapter 41. 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-2.3.3

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-7.6 platform.

Package Information

- Download size: 7.2 MB
- Estimated disk space required: 128 MB (additional 857 MB for docs and 1871 MB to run the FATE tests)
- Estimated build time: 3.3 SBU (additional 0.9 SBU for docs and 4.5 SBU to run the FATE tests, after sample files are downloaded)

FFmpeg Dependencies

Recommended

yasm-1.3.0, libass-0.11.2, fdk-aac-0.1.3, LAME-3.99.5, libtheora-1.1.1, libvorbis-1.3.4, libvpx-1.3.0, and x264-20140818-2245

Recommended for desktop use

X Window System, alsa-lib-1.0.28, SDL-1.2.15, libva-1.3.1 and libvdpau-0.8 (with the corresponding driver package)

Optional

FAAC-1.28, FreeType-2.5.3, libwebp-0.4.1, OpenJPEG-1.5.2, PulseAudio-5.0, Speex-1.2rc1, XviD-1.3.3, OpenSSL-1.0.1i, Fontconfig-2.11.1, GnuTLS-3.3.7, Opus-1.1, **frei0r**, **HEVC/H.265**, **LADSPA**, **libssh**, **ZVBI**, **libaacplus**, **libbluray**, **libcaca**, **libcelt**, **libcdio**, **libdc1394**, **Flite**, **GSM**, **libiec61883**, **libilbc**, **libmodplug**, **libnut** (Git checkout), **OpenCore AMR**, **OpenCV**, **librtmp**, **Schroedinger**, **TwoLAME**, **Video4Linux**, **vo-aaenc**, **vo-amrwbenc**, **libxavs** (SVN checkout), **OpenAL**, **texi2html** (to build HTML documentation), and **x265 (H.265/MPEG-H HEVC)**

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/ffmpeg

Installation of FFmpeg

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        \
            --disable-debug        \
            --enable-libass        \
            --enable-libfdk-aac    \
            --enable-libmp3lame    \
            --enable-libtheora     \
            --enable-libvorbis     \
            --enable-libvpx        \
            --enable-libx264       \
            --enable-x11grab       &&
make &&
gcc tools/qt-faststart.c -o tools/qt-faststart
```

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-20140525 installed and wish to build PDF and Postscript versions of the documentation, issue the following commands:

```
sed -i '$s/$/\n\n@bye/' doc/{git-howto,nut,fate}.texi          &&
sed -i '/machine:i386/ s/\\/@backslashchar{}/g' doc/platform.texi &&

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-1.8.8 installed and wish to create the API documentation (takes about 350 MB of space), issue the command `doxygen doc/Doxyfile`.

To properly test the installation you must have rsync-3.1.1 installed and follow the instructions for the **FFmpeg Automated Testing Environment** (FATE). First, about 872 MB of sample files used to run FATE are downloaded with

The `fate-suite` directory is created and the files are downloaded there. That command actually runs `rsync -vrltLW --timeout=60 --contimeout=60 rsync://fate-suite.ffmpeg.org/fate-suite/ fate-suite/` command, thus you may want to compress and keep this directory for testing again, in another system, or when a new version of ffmpeg is launched. Then, you unpack the sample files in the source directory, and run, again, the `make` command above, to sync with the repository. Now, the download size and time are drastically reduced. Estimated values in "Package Information" do not include the download SBU. Next, FATE is executed, with the commands (you obtain a number of tests greater than 1900):

```
make fate SAMPLES=fate-suite/ | tee ../fate.log &&
grep ^TEST ../fate.log | wc -l
```

Now, as the `root` user:

```
make install &&
install -v -m755    tools/qt-faststart /usr/bin &&
install -v -m755 -d /usr/share/doc/ffmpeg &&
install -v -m644    doc/*.txt \
                    /usr/share/doc/ffmpeg
```

If HTML documentation was built, issue the following command to install it:

```
install -v -m644 doc/*.html \
                 /usr/share/doc/ffmpeg
```

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/api                       &&
cp -vr doc/doxy/html/* /usr/share/doc/ffmpeg/api                    &&
find /usr/share/doc/ffmpeg/api -type f -exec chmod -c 0644 "{}" ";" &&
find /usr/share/doc/ffmpeg/api -type d -exec chmod -c 0755 "{}" ";"
```

Command Explanations

`sed -i ... configure`: This command adds the ALSA library to the Flite `LDFLAGS` variable and enables the discovery of Flite.

`sed -i ... texi`: Fix some .texi files for documentation builds.

`find ... ";"`: Fix permissions of documentation files and directories.

`--enable-libfreetype`: Enables Freetype support.

`--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.

`--disable-debug`: Disables building debugging symbols into the programs and libraries.

`--enable-libass`: Enables ASS/SSA subtitle format rendering via `libass`.

`--enable-libfdk-aac`: Enables currently the highest-quality AAC audio encoding via `libfdk-aac`.

`--enable-libmp3lame`: Enables MP3 audio encoding via `libmp3lame`.

`--enable-libvorbis --enable-libtheora`: Enables Theora video encoding via `libvorbis` and `libtheora`.

`--enable-libvorbis --enable-libvpx`: Enables WebM encoding via `libvorbis` and `libvpx`.

`--enable-libx264`: Enables high-quality H.264/MPEG-4 AVC encoding via `libx264`.

`--enable-x11grab`: Enables X11 grabbing.

`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.

the output from `./configure --help` for complete information about enabling dependency packages.

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

Installed Programs: ffmpeg, ffplay, ffprobe, ffserver, and qt-faststart

Installed Libraries: libavcodec.so, libavdevice.so, libavfilter.so, libavformat.so, libavutil.so, libpostproc.so, libswresample, and libswscale.so

Installed Directories: /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

Short Descriptions

`ffmpeg`	is a command-line tool to convert video files, network streams and input from a TV card to several video formats.
`ffplay`	is a very simple and portable media player using the `ffmpeg` libraries and the SDL library.
`ffprobe`	gathers information from multimedia streams and prints it in a human and machine-readable fashion.
`ffserver`	is a streaming server for everything that `ffmpeg` could use as input (files, streams, TV card input, webcam, etc).
`qt-faststart`	moves the index file to the front of quicktime (mov/mp4) videos.
`libavcodec.so`	is a library containing the FFmpeg codecs (both encoding and decoding).
`libavdevice.so`	is the FFmpeg device handling library.
`libavfilter.so`	is a library of filters that can alter video or audio between the decoder and the encoder (or output).
`libavformat.so`	is a library containing the file formats handling (mux and demux code for several formats) used by `ffplay` as well as allowing the generation of audio or video streams.
`libavutil.so`	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.

Last updated on 2014-09-11 23:27:59 -0700

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-7.6 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)

- Required patch: **http://www.linuxfromscratch.org/patches/blfs/7.6/MPlayer-1.1.1-live_fixes-1.patch**

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-1.3.0

Recommended

GTK+-2.24.24 and libvdpau-0.8

Optional Input Drivers and Libraries

CDParanoia-III-10.2, libdvdread-5.0.0, libdvdnav-5.0.1, libdvdcss-1.3.0, Samba-4.1.11, **libbluray**, **libcdio**, **LIVE555 Streaming Media**, **RTMPDump**, **TiVo vstream client**, and **XMMS**

Optional Audio Output Drivers and Libraries

ALSA-1.0.28, PulseAudio-5.0, SDL-1.2.15, **JACK**, **NAS**, and **OpenAL**

Optional Video Output Drivers and Libraries

AAlib-1.4rc5, giflib-5.1.0, libjpeg-turbo-1.3.1, libmng-2.0.2, libpng-1.6.13, OpenJPEG-1.5.2, **DirectFB**, **libcaca**, and **SVGAlib**

Optional CODECs

FAAC-1.28, FAAD2-2.7, LAME-3.99.5, liba52-0.7.4, libdv-1.0.0, libmad-0.15.1b, libtheora-1.1.1, libvpx-1.3.0, LZO-2.08, mpg123-1.20.1, Speex-1.2rc1, XviD-1.3.3, x264-20140818-2245, **CrystalHD**, **Dirac**, **GSM**, **libdca**, **libnut**, **libmpcdec**, **OpenCore Adaptive Multi Rate**, **Schroedinger**, and **TwoLAME**

Optional Miscellaneous Dependencies

Fontconfig-2.11.1, FreeType-2.5.3, FriBidi-0.19.6, UnRar-5.1.7, and libxslt-1.1.28, docbook-xml-4.5 and docbook-xsl-1.78.1 (all three required to build the HTML documentation), and **Enca**, **LADSPA**, **libbs2b**, and **LIRC** (and **LIRC Client Daemon**)

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/mplayer

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.

```
sed -i 's:libsmbclient.h:samba-4.0/&:'      configure stream/stream_smb.c &&
sed -i 's/EGifCloseFile(new_gif/&, NULL/'   libvo/vo_gif89a.c            &&
sed -i 's/DGifCloseFile(priv->gif/&, NULL/' libmpdemux/demux_gif.c       &&


./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+-2.24.24 or GTK+-3.12.2 installed (for the icon cache) and desktop-file-utils-0.22 (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

`sed -i 's:libsmbclient.h:samba-4.0 ...`: Include support for Samba 4.

`sed -i 's/EGifCloseFile(new_gif ...` and `sed -i 's/DGifCloseFile(priv->gif ...`: Fix building with new versions of giflib.

--enable-gui: This option builds the GUI interface into `mplayer`.

--enable-menu: This option is set to enable the on-screen display.

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

Installed Programs: gmplayer, mplayer and mencoder
Installed Libraries: None
Installed Directories: /etc/mplayer, /usr/lib/mplayer, /usr/share/mplayer and /usr/share/doc/mplayer

Short Descriptions

`gmplayer`	is a symlink to `mplayer` which brings up the GTK+ 2 frontend of MPlayer.
`mplayer`	is the main MPlayer video player.
`mencoder`	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)

Last updated on 2014-09-18 22:41:15 -0700

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-7.6 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/7.6/transcode-1.1.7-ffmpeg2-1.patch**

Transcode Dependencies

Required

FFmpeg-2.3.3

Recommended

alsa-lib-1.0.28, LAME-3.99.5, libdvdread-5.0.0, libmpeg2-0.5.1, and Xorg Libraries

libquicktime-1.2.4, libtheora-1.1.1, libvorbis-1.3.4, libxml2-2.9.1, LZO-2.06, **MJPEG Tools**, **PVM3**, SDL-1.2.15, **Video4Linux**, x264-20140818-2245, and XviD-1.3.3

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.

When building with --enable-freetype2 configure switch, fix the code to find the header locations for FreeType-2.5.x (x > 0):

```
sed -i "s:#include <freetype/ftglyph.h>:#include FT_GLYPH_H:" filter/subtitler/load_font.c
```

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-ffmpeg2-1.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 ... filter/subtitler/load_font.c`: Fixes header locations for new FreeType-2.5.x (x > 0).

`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

Installed Programs: avifix, aviindex, avimerge, avisplit, avisync, tccat, tcdecode, tcdemux, tcextract, tcmodinfo, tcmp3cut, tcprobe, tcscan, tcxmlcheck, tcxpm2rgb, tcyait, and transcode

Installed Libraries: None

Installed Directories: /usr/lib/transcode and /usr/share/doc/transcode-1.1.7

Short Descriptions

avifix	fixes the header of an AVI file.
aviindex	writes a text file describing the index of an AVI file.
avimerge	merges AVI files of the same format. Do not try to merge AVI files of different formats, it will most likely result in errors (and format means same bitrates, too!).
avisplit	splits AVI files into multiple files.
avisync	can shift audio in AVI files for better synchronizing of the audio and video data signal.
tccat	concatenates input files using the input plugins of Transcode . This is useful for extracting VOB (Video OBject) files.
tcdecode	is used to decode input files to raw video and PCM audio streams.
	demultiplexes (separates) audio/video input that contains multiple streams, e.g., VOB files.

tcmp3cut	is a tool which can cut MP3 streams at milliseconds positions.
tcprobe	prints information about the input file format.
tcscan	performs several measurements on the given input data.
tcxmlcheck	checks information in a SMIL input file.
transcode	is the encoder's user interface that handles the plugins and other programs, being the glue between the modules. There are several well documented usage examples on both the homepage and the documentation included in the package.

Last updated on 2014-09-14 13:18:45 -0700

VLC-2.1.5

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-7.6 platform.

Package Information

- Download (HTTP): **http://download.videolan.org/pub/videolan/vlc/2.1.5/vlc-2.1.5.tar.xz**
- Download (FTP): **ftp://ftp.videolan.org/pub/videolan/vlc/2.1.5/vlc-2.1.5.tar.xz**
- Download MD5 sum: 3941b561f590cc95ca5e795213cba2f2
- Download size: 19 MB
- Estimated disk space required: 494 MB (additional 1 MB for the tests)
- Estimated build time: 4.7 SBU (additional less than 0.1 SBU for the tests)

VLC Dependencies

Recommended

alsa-lib-1.0.28, FFmpeg-2.3.3, liba52-0.7.4, libgcrypt-1.6.2 libmad-0.15.1b, Lua-5.2.3, and X Window System,

Optional features and packages

D-Bus-1.8.8

Optional input plugins

libdv-1.0.0, libdvdcss-1.3.0, libdvdread-5.0.0, libdvdnav-5.0.1, Samba-4.1.11, **libbluray**, **libdc1394**, **libcddb**, **libproxy**, **Live555**, **OpenCV**, **Video4Linux**, and **VCDImager** (requires **libcdio**)

Optional mux/demux plugins

libogg-1.3.2, **Game Music Emu**, **libdvbpsi**, **libshout**, **libmatroska** (requires **libebml**), **libmodplug**, **Musepack**, and **sidplay-libs**,

Optional codec plugins

FAAD2-2.7, FLAC-1.3.0, libass-0.11.2, libmpeg2-0.5.1, libpng-1.6.13, libtheora-1.1.1, libva-1.3.1, libvorbis-1.3.4, Opus-1.1, Speex-1.2rc1, x264-20140818-2245, **Dirac**, **FluidSynth**, **libdca**, **libkate**, **libtiger**, **OpenMAX**, **Schroedinger**, **Tremor**, **Twolame**, and **Zapping VBI**

Optional video plugins

AAlib-1.4rc5, Fontconfig-2.11.1, FreeType-2.5.3, FriBidi-0.19.6, librsvg-2.40.3, libvdpau-0.8, SDL-1.2.15 (with **SDL_image**), and **libcaca**

Optional audio plugins

PulseAudio-5.0, libsamplerate-0.1.8, and **JACK**

Optional visualisations and video filter plugins

Goom and **projectM**

Optional service discovery plugins

Avahi-0.6.31, **libmtp** and **libupnp**

Miscellaneous options

GnuTLS-3.3.7, libnotify-0.7.6, libxml2-2.9.1, taglib-1.9.1, and xdg-utils-1.1.0-rc2 (runtime)

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/vlc

Installation of VLC

Install VLC by running the following commands:

```
sed -i 's:libsmbclient.h:samba-4.0/&:' modules/access/smb.c &&
./bootstrap                                             &&
./configure --prefix=/usr                               &&
make
```

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

Now, as the *root* user:

> **Note**
>
> If the XORG_PREFIX is not /usr, make sure the LIBRARY_PATH environment variable is set properly when doing the install, For example: `sudo make LIBRARY_PATH=$XORG_PREFIX/lib ... install`.

```
make docdir=/usr/share/doc/vlc-2.1.5 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+-2.24.24 or GTK+-3.12.2 installed (for the icon cache) and desktop-file-utils-0.22 (for the desktop cache) and issue the following commands as the *root* user:
>
> ```
> gtk-update-icon-cache &&
> update-desktop-database
> ```

Command Explanations

`sed -i ...`: This sed fixes compilation with Samba 4.

`./bootstrap`: This command calls autoreconf to generate m4 macros and prepare Makefiles.

`--disable-lua`: Use this switch if you don't have Lua installed.

`--disable-mad`: Use this switch if you don't have libmad installed.

`--disable-avcodec --disable-swscale`: Use these switches if you don't have FFmpeg installed.

`--disable-a52`: Use this switch if you don't have liba52 installed.

`--disable-xcb`: Use this switch if you don't have X Window System installed.

`--disable-alsa`: Use this switch if you don't have ALSA installed.

`--disable-libgcrypt`: Use this switch if you don't have libgcrypt installed.

> There are many options to VLC's `configure` command. Check the `configure --help` output for a complete list.

Contents

Installed Programs: cvlc, nvlc, qvlc, rvlc, svlc, vlc and vlc-wrapper
Installed Libraries: libvlccore.so, libvlc.so and several plugins in /usr/lib/vlc/plugins
Installed Directories: /usr/include/vlc, /usr/lib/vlc, /usr/share/vlc and /usr/share/doc/vlc-2.1.5

Short Descriptions

`cvlc`	is a script to run VLC with the dummy interface.
`nvlc`	is a script to run VLC with the ncurses interface.
`qvlc`	is a script to run VLC with the Qt interface.
`rvlc`	is a script to run VLC with a command line interface.
`svlc`	is a script to run VLC with the skins interface.
`vlc`	is the VLC media player.
`vlc-wrapper`	is a wrapper to drop privileges with VLC .

Last updated on 2014-09-13 17:48:40 -0700

xine-ui-0.99.9

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-7.6 platform.

Package Information

- Download (HTTP): **http://downloads.sourceforge.net/xine/xine-ui-0.99.9.tar.xz**
- Download MD5 sum: a6d00381b5c8b7aec1a7a3fbf84f01ce
- Download size: 1.7 MB
- Estimated disk space required: 26 MB
- Estimated build time: 0.3 SBU

Xine User Interface Dependencies

Required

xine-lib-1.2.6 and shared-mime-info-1.3

Optional

cURL-7.37.1, AAlib-1.4rc5, **LIRC**, and **libcaca**

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/xine-ui

Installation of Xine User Interface

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 docsdir=/usr/share/doc/xine-ui-0.99.9 install
```

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+-2.24.24](#) or [GTK+-3.12.2](#) installed (for the icon cache) and [desktop-file-utils-0.22](#) (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-0.99.9: This parameter causes the Xine UI documentation to be installed in the versioned directory `/usr/share/doc/xine-ui-0.99.9`, rather that 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-0.99.9/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

Installed Programs: aaxine, cacaxine, fbxine, xine, xine-bugreport, xine-check, and xine-remote
Installed Libraries: None
Installed Directories: /usr/share/xine and /usr/share/doc/xine-ui-0.99.9

Short Descriptions

`aaxine`	is an ASCII art video player which utilizes AAlib as the frontend for the xine Libraries.
`cacaxine`	is a color ASCII art video player which utilizes CACA as the frontend for the xine Libraries.
`fbxine`	is a frame buffer interface to the xine Libraries.
`xine`	is a multimedia player designed to play MPEG streams (audio and video), MPEG elementary streams (MP3), MPEG transport streams, Ogg files, AVI files, ASF files, some Quicktime files, VCDs and DVDs.
`xine-bugreport`	produces a terse system description and guides you through the process of reporting a bug.
`xine-check`	tests the `xine` video player installation for common problems. It tests the operating system settings, installation of plugins, CD/DVD drive settings and video support parameters.
`xine-remote`	is a tool to connect to a `xine` remote control server.

Last updated on 2014-09-13 17:48:40 -0700

Chapter 42. 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

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-7.6 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-1.2.0, libvorbis-1.3.4, libmad-0.15.1b, and LAME-3.99.5 (required to build `toc2mp3`)

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/cdrdao

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.

Last updated on 2014-09-18 14:33:53 -0700

dvd+rw-tools-7.1

Introduction to dvd+rw-tools

This package is known to build and work properly using an LFS-7.6 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-1.3.8, or the `growisofs` command will not function properly, rendering the entire package useless.

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/dvd+rw-tools

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: None

Installed Directory: /usr/share/doc/dvd+rw-tools-7.1

Short Descriptions

`growisofs`   is a combined `mkisofs` frontend/DVD recording program.

Last updated on 2014-09-18 14:33:53 -0700

K3b-2.0.2

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-7.6 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/7.6/k3b-2.0.2-ffmpeg2-1.patch**

K3b Dependencies

Required

kde-runtime-4.14.1, libkcddb-4.14.1, 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-2.3.3, libdvdread-5.0.0, libjpeg-turbo-1.3.1, and taglib-1.9.1

Optional

FLAC-1.3.0, LAME-3.99.5, libmad-0.15.1b, libsndfile-1.0.25, libvorbis-1.3.4, libmusicbrainz-2.1.5, **Musepack (libmpcdec)**, and **VCDImager**

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/k3b

Installation of K3b

Install K3b by running the following commands:

```
patch -Np1 -i ../k3b-2.0.2-ffmpeg2-1.patch &&

mkdir build &&
cd    build &&

cmake -DCMAKE_INSTALL_PREFIX=$KDE_PREFIX \
      -DSYSCONF_INSTALL_DIR=/etc/kde     \
      -Wno-dev ..  &&
make
```

This package does not come with a test suite.

Now, as the *root* user:

```
make install
```

Contents

doc/HTML/en/k3b

Short Descriptions

k3b   is the graphical CD/DVD program.

k3bsetup   is a script used to launch the k3bsetup2 KControlModule for setting up the CD/DVD hardware and
               device files on your system.

Last updated on 2014-09-18 22:41:15 -0700

---

libburn-1.3.8

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-7.6 platform.

Package Information

- Download (HTTP): **http://files.libburnia-project.org/releases/libburn-1.3.8.tar.gz**
- Download MD5 sum: ecee98ecd1c24e9d7e92b605e61a2ef2
- Download size: 948 KB
- Estimated disk space required: 14 MB
- Estimated build time: 0.2 SBU

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/libburn

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

Installed Program: cdrskin
Installed Library: libburn.so
Installed Directory: /usr/include/libburn

Short Descriptions

cdrskin   burns preformatted data to CD, DVD, and BD via libburn .

libburn.so   contains the libburn API functions.

Last updated on 2014-09-16 10:29:57 -0700

---

libisoburn-1.3.8

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-7.6 platform.

Package Information

- Download size: 1.1 MB
- Estimated disk space required: 15 MB with Tk (additional 2 MB to generate HTML documentation)
- Estimated build time: 0.2 SBU with Tk

libisoburn Dependencies

Required

[libburn-1.3.8](#) and [libisofs-1.3.8](#)

Optional

[Doxygen-1.8.8](#) (to generate HTML documentation) and [Tk-8.6.2](#) (for `xorriso-tcltk`)

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/libisoburn

Installation of libisoburn

Install libisoburn by running the following commands:

```
./configure --prefix=/usr           \
            --disable-static        \
            --enable-pkg-check-modules &&
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-1.3.8 &&
install -v -m644 doc/html/* /usr/share/doc/libisoburn-1.3.8
```

Command Explanations

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

`--enable-pkg-check-modules`: Enable pkg-config check for libburn and libisofs.

Contents

Installed Programs: osirrox, xorrecord, xorriso, xorrisofs and xorriso-tcltk
Installed Library: libisoburn.so
Installed Directories: /usr/include/libisoburn and /usr/share/doc/libisoburn-1.3.8

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 that provides a mkisofs type user interface.
`libisoburn.so`	contains the libisoburn API functions.

Last updated on 2014-09-16 10:29:57 -0700

libisofs-1.3.8

This package is known to build and work properly using an LFS-7.6 platform.

Package Information

- Download (HTTP): **http://files.libburnia-project.org/releases/libisofs-1.3.8.tar.gz**
- Download MD5 sum: 7fea3aa98038a90cec6a5779e0e05eb5
- Download size: 784 KB
- Estimated disk space required: 9.8 MB
- Estimated build time: 0.2 SBU

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/libisofs

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

Installed Programs: None
Installed Library: libisofs.so
Installed Directory: /usr/include/libisofs

Short Descriptions

`libisofs.so`   contains the libisofs API functions.

Last updated on 2014-09-16 10:29:57 -0700

SimpleBurn-1.6.5

Introduction to SimpleBurn

SimpleBurn is a minimalistic application for burning and extracting CDs and DVDs.

This package is known to build and work properly using an LFS-7.6 platform.

Package Information

- Download (HTTP): **http://simpleburn.tuxfamily.org/IMG/bz2/simpleburn-1.6.5.tar.bz2**
- Download MD5 sum: de658ab5af00e7bcb1e948d5c45da7b9
- Download size: 44 KB
- Estimated disk space required: 1.7 MB
- Estimated build time: 0.1 SBU

SimpleBurn Dependencies

Required

CMake-3.0.1 and GTK+-2.24.24

Recommended

FLAC-1.3.0, mpg123-1.20.1, vorbis-tools-1.4.0, LAME-3.99.5, MPlayer-1.1.1, **normalize**, **libcdio**, **mpg321**, **cdrtools**, and **cdrkit**

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/simpleburn

Installation of SimpleBurn

Install SimpleBurn by running the following commands:

```
mkdir build &&
cd    build &&

cmake -DCMAKE_BUILD_TYPE=Release  \
      -DCMAKE_INSTALL_PREFIX=/usr \
      -DBURNING=LIBBURNIA .. &&
make
```

This package does not come with a test suite.

Now, as the *root* user:

```
make install
```

All optical devices are not accessible for any user except *root* and members of the *cdrom* group. Add any users that might use the optical devices to that group:

```
usermod -a -G cdrom <username>
```

Command Explanations

-DBURNING=LIBBURNIA: This switch changes the burning suite from the default cdrtools.

Contents

Installed Programs: simpleburn, simpleburn-abort-operation, simpleburn-blank-media, simpleburn-burn-audio, simpleburn-burn-data, simpleburn-burning-suite, simpleburn-burn-iso, simpleburn-copy-audio, simpleburn-copy-data, simpleburn-extract-audio, simpleburn-extract-iso, simpleburn-gauges, simpleburn-get-datasize, simpleburn-media-detection, simpleburn-ripdvd-detection, and simpleburn-ripdvd-encoding

Installed Libraries: None

Installed Directories: /usr/share/doc/simpleburn-1.6.5 and /usr/share/simpleburn

Short Descriptions

simpleburn   is the graphical program.

Last updated on 2014-09-18 22:41:15 -0700

Part XIII. Printing, Scanning and Typesetting

Chapter 43. Printing

This chapter contains spooling printer management systems and ghostscript applications to render PostScript for display on terminals or paper.

Cups-1.7.5

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-7.6 platform.

- Download MD5 sum: 5d893edc2957005f78e2b2423fdace2e
- Download size: 8.4 MB
- Estimated disk space required: 64 MB (additional 25 MB for the tests)
- Estimated build time: 0.6 SBU (additional 4.1 SBU for the tests)

Additional Downloads

- Required patch: **http://www.linuxfromscratch.org/patches/blfs/7.6/cups-1.7.5-blfs-1.patch**
- Optional patch: **http://www.linuxfromscratch.org/patches/blfs/7.6/cups-1.7.5-content_type-1.patch**

Cups Dependencies

Recommended

Colord-1.2.3, D-Bus-1.8.8, and libusb-1.0.19

Optional

Avahi-0.6.31, GnuTLS-3.3.7 (if you have it installed, then libgcrypt-1.6.2 is required) or OpenSSL-1.0.1i, libpaper-1.1.24+nmu3, Linux-PAM-1.1.8, MIT Kerberos V5-1.12.2, OpenJDK-1.7.0.65/IcedTea-2.5.2, PHP-5.6.0, Python-2.7.8, and xdg-utils-1.1.0-rc2

Required (Runtime)

cups-filters-1.0.58

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/cups

Kernel Configuration

> **Note**
>
> There used to be a conflict between the Cups libusb backend and the usblp kernel driver. This is no longer the case and cups will work with both of these enabled.

If you want to use the kernel usblp driver (for example, if you wish to use escputil from Gutenprint-5.2.10) enable the following options in your kernel configuration and recompile the kernel:

```
Device Drivers  --->
  USB support  --->
    OHCI HCD (USB 1.1) support: Y or M
    UHCI HCD (most Intel and VIA) support: Y or M
    USB Printer support: Y or M
```

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: Y or M
  Character devices  --->
    Parallel printer support: Y or M
```

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 didn't install [xdg-utils-1.1.0-rc2](#), 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.

If you need to access a remote Cups print server, use the following patch:

```
patch -Np1 -i ../cups-1.7.5-content_type-1.patch
```

Install Cups by running the following commands:

```
patch -Np1 -i ../cups-1.7.5-blfs-1.patch &&
aclocal -I config-scripts &&
autoconf -I config-scripts &&

CC=gcc \
./configure --libdir=/usr/lib                \
            --with-rcdir=/tmp/cupsinit        \
            --with-docdir=/usr/share/cups/doc \
            --with-system-groups=lpadmin      &&
make
```

To test the results, issue: `make -k check`. An already active graphical session with bus address is necessary to run the tests. A small number of tests fail for unknown reasons.

Now, as the *root* user:

```
make install &&
rm -rf /tmp/cupsinit &&
ln -svfn ../cups/doc /usr/share/doc/cups-1.7.5
```

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**
>
> If you reinstall or update Cups, commands above break [cups-filters-1.0.58](#), which needs, therefore, to be reinstalled.

> **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+-2.24.24](#) or [GTK+-3.12.2](#) installed and issue the following command as the *root* user:
>
> ```
> gtk-update-icon-cache
> ```

Command Explanations

`CC=gcc`: This environment variable ensures that gcc is used if clang is installed. The build fails with the clang compiler.

`--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-1.0.19](#), but wish to use the kernel usblp driver.

Configuring Cups

Config Files

`/etc/cups/*`

Configuration Information

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-9.14 to convert PostScript to raster images and a driver (e.g., from Gutenprint-5.2.10) 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-20140919 package:

```
make install-cups
```

Contents

Installed Programs: accept, cancel, cupsaccept, cupsaddsmb, cups-config, cupsctl, cupsd, cupsdisable, cupsenable, cupsfilter, cupsreject, cupstestdsc, cupstestppd, ippfind, ipptool, lp, lpadmin, lpc, lpinfo, lpmove, lpoptions, lppasswd, lpq, lpr, lprm, lpstat, ppdc, ppdhtml, ppdi, ppdmerge, ppdpo and reject

Installed Libraries: libcupscgi.so, libcupsimage.so, libcupsmime.so, libcupsppdc.so and libcups.so

Installed Directories: /etc/cups, /usr/include/cups, /usr/lib/cups, /usr/share/cups, /usr/share/doc/cups-1.7.5, /var/cache/cups, /var/log/cups, /var/run/cups and /var/spool/cups

Short Descriptions

`accept`	instructs the printing system to accept print jobs to the specified destinations.
`cancel`	cancels existing print jobs from the print queues.
`cupsaddsmb`	exports printers to the Samba software for use with Windows clients.
`cups-config`	is a Cups program configuration utility.
`cupsctl`	updates or queries the cupsd.conf file for a server.
`cupsd`	is the scheduler for the Common Unix Printing System.
`cupsfilter`	is a front-end to the Cups filter subsystem which allows you to convert a file to a specific format.
`cupstestdsc`	tests the conformance of PostScript files.
`cupstestppd`	tests the conformance of PPD files.
`ippfind`	finds internet printing protocol printers.
`ipptool`	sends IPP requests to the specified URI and tests and/or displays the results.
`lp`	submits files for printing or alters a pending job.
`lpadmin`	configures printer and class queues provided by Cups.
`lpc`	provides limited control over printer and class queues provided by Cups.
`lpinfo`	lists the available devices or drivers known to the Cups server.
`lpmove`	moves the specified job to a new destination.
`lpoptions`	displays or sets printer options and defaults.
`lppasswd`	adds, changes or deletes passwords in the Cups digest password file `passwd.md5`.
`lpq`	shows the current print queue status on the named printer.
`lpr`	submits files for printing.
`lprm`	cancels print jobs that have been queued for printing.
`lpstat`	displays status information about the current classes, jobs, and printers.
`ppdc`	compiles PPDC source files into one or more PPD files.

ppdmerge	merges two or more PPD files into a single, multi-language PPD file.
ppdpo	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.
reject	instructs the printing system to reject print jobs to the specified destinations.
libcups.so	contains the Cups API functions.

Last updated on 2014-09-11 20:34:26 -0700

cups-filters-1.0.58

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-7.6 platform.

Package Information

- Download (HTTP): **http://www.openprinting.org/download/cups-filters/cups-filters-1.0.58.tar.xz**
- Download MD5 sum: 9b6d607b4041e5ee9a8787e7585a8e9e
- Download size: 1.3 MB
- Estimated disk space required: 33 MB (additional 2 MB for the tests)
- Estimated build time: 0.3 SBU

CUPS Filters Dependencies

Required

Cups-1.7.5, GLib-2.40.0, IJS-0.35, Little CMS-2.6, Poppler-0.26.4 and Qpdf-5.1.2

Recommended

libjpeg-turbo-1.3.1, libpng-1.6.13 and LibTIFF-4.0.3

Optional

Avahi-0.6.31, PHP-5.6.0 (use of this might be broken) and **acroread**

Required (Runtime)

ghostscript-9.14 (Needed for PostScript printers), or Gutenprint-5.2.10 (for supported printers), or other printer drivers

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/cups-filters

Installation of CUPS Filters

Install CUPS Filters by running the following commands:

```
./configure --prefix=/usr                        \
            --sysconfdir=/etc                    \
            --localstatedir=/var                 \
            --docdir=/usr/share/doc/cups-filters-1.0.58 \
            --without-rcdir                      \
            --with-gs-path=/usr/bin/gs           \
            --with-pdftops-path=/usr/bin/gs      \
            --disable-static                     &&
make
```

To test the results, issue: `make check 2>&1 >testlog`.

Now, as the *root* user:

```
make install
```

--with-gs-path=/usr/bin/gs: This switch defines the path to the GhostScript binary in case ghostscript-9.14 is not installed at build time.

--with-pdftops-path=/usr/bin/gs: This switch defines the path to the GhostScript binary in case ghostscript-9.14 is not installed at build time.

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

`make check 2>&1 >testlog`: the testsuite dumps a stream of bytes into the input buffer after it finishes. Sending the output to a file keeps the history usable, but some debug information will still appear on the screen.

--with-test-path=VALUE : if you wish to run the tests, but you do not have the default `/usr/share/fonts/dejavu/DejaVuSans.ttf` use this switch to specify where `DejaVuSans.ttf` (or perhaps some other text TTF font - untested) is located.

Contents

Installed Programs: ttfread and cups-browsed
Installed Libraries: libcupsfilters.so and libfontembed.so
Installed Directories: /usr/include/cupsfilters, /usr/include/fontembed, /usr/lib/cups/backend, /usr/lib/cups/filter, /usr/share/cups/banners, /usr/share/cups/charsets, /usr/share/cups/data, /usr/share/doc/cups-filters-1.0.58 and /usr/share/ppd/cupsfilters

Short Descriptions

`libcupsfilters.so`   contains CUPS Filters API functions.

Last updated on 2014-09-11 20:34:26 -0700

---

ghostscript-9.14

Introduction to Ghostscript

Ghostscript is a versatile processor for PostScript data with the ability to render PostScript to different targets. It used to be part of the cups printing stack, but is no longer used for that.

This package is known to build and work properly using an LFS-7.6 platform.

Package Information

- Download (HTTP): **http://downloads.ghostscript.com/public/ghostscript-9.14.tar.bz2**
- Download MD5 sum: 75f2e8ab8891d052ade9b64eb4eb5294
- Download size: 30 MB
- Estimated disk space required: 212 MB (includes installing libgs.so, add 5 MB if the fonts are installed)
- Estimated build time: 2.3 SBU (includes building and installing libgs.so)

Additional Downloads

If you wish, you can download additional fonts.

Standard Fonts

- Download (HTTP): **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

FreeType-2.5.3, libjpeg-turbo-1.3.1, libpng-1.6.13, LibTIFF-4.0.3, and Little CMS-2.6

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, and libpng:

```
sed -i 's/ZLIBDIR=src/ZLIBDIR=$includedir/' configure.ac configure &&
rm -rf expat freetype lcms2 jpeg libpng
```

Compile Ghostscript:

```
rm -rf zlib &&
./configure --prefix=/usr --disable-compile-inits \
 --enable-dynamic --with-system-libtiff &&
make
```

> **Note**
>
> The shared library depends on GTK+-2.24.24. It is only used in external programs like ImageMagick-6.8.9-7.

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 Window System terminal):

```
bin/gs -Ilib -IResource/Init -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 make the documentation accessible from the normal place:

```
ln -sfv ../ghostscript/9.14/doc /usr/share/doc/ghostscript-9.14
```

If you have downloaded any fonts, unpack them 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 &&
fc-cache -v /usr/share/ghostscript/fonts/
```

Command Explanations

--disable-compile-inits: This option makes `gs` and `libgs.so` slightly smaller.

--with-system-libtiff: Remove this option if you've not installed LibTIFF-4.0.3.

`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-9.14/doc ...` : This puts a symbolic link to the documentation where it is expected to be found.

--disable-cups: this option will save a tiny amount of space by not linking `gs` and `libgs.so` to the Cups-1.7.5 libraries if you have installed those.

Contents

Installed Programs:	dvipdf, eps2eps, font2c, gs, gsbj, gsc (from soinstall), gsdj, gsdj500, gslj, gslp, gsnd, gsx (from soinstall), lprsetup.sh, pdf2dsc, pdf2ps, pf2afm, pfbtopfa, pphs, printafm, ps2ascii, ps2epsi, ps2pdf, ps2pdf12, ps2pdf13, ps2pdf14, ps2pdfwr, ps2ps, ps2ps2, unix-lpr.sh, and wftopfa
Installed Library:	libgs.so and /usr/lib/ghostscript/9.14/X11.so
Installed Directories:	/usr/include/ghostscript, /usr/lib/ghostscript, /usr/share/ghostscript, and /usr/share/doc/ghostscript-9.14

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.

Last updated on 2014-09-17 02:51:54 -0700

Gutenprint-5.2.10

Introduction to Gutenprint

The Gutenprint (formerly Gimp-Print) package contains high quality drivers for many brands and models of printers for use with ghostscript-9.14, Cups-1.7.5, **Foomatic**, and the GIMP-2.0. See a list of supported printers at **http://gutenprint.sourceforge.net/p_Supported_Printers.php**.

This package is known to build and work properly using an LFS-7.6 platform.

Package Information

- Download (HTTP): **http://downloads.sourceforge.net/gimp-print/gutenprint-5.2.10.tar.bz2**
- Download MD5 sum: 9ff027103bafac419c37e19da75163ae
- Download size: 6.0 MB
- Estimated disk space required: 73 MB
- Estimated build time: 0.5 SBU

Gutenprint Dependencies

Recommended

Cups-1.7.5, and Gimp-2.8.14

Optional

Foomatic, IJS-0.35

Optional (to Regenerate Documentation)

ImageMagick-6.8.9-7, texlive-20140525, Doxygen-1.8.8, and DocBook-utils-0.6.14

User Notes: *http://wiki.linuxfromscratch.org/blfs/wiki/gutenprint*

If you intend to use escputil with a USB connected Epson Stylus printer for commands such as `--ink-level` which need to access the raw device, you must enable the kernel's usblp driver. Enable the following options in your kernel configuration and recompile the kernel:

```
Device Drivers  --->
  USB support  --->
    OHCI HCD (USB 1.1) support: Y or M
    UHCI HCD (most Intel and VIA) support: Y or M
    USB Printer support: Y or M
```

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-5.2.10/api/gutenprint{,ui2} &&
install -v -m644    doc/gutenprint/html/* \
                    /usr/share/doc/gutenprint-5.2.10/api/gutenprint &&
install -v -m644    doc/gutenprintui2/html/* \
                    /usr/share/doc/gutenprint-5.2.10/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

Installed Programs: cups-calibrate, cups-genppd.5.2, cups-genppdupdate, escputil, ijsgutenprint.5.2 (if compiled using ijs), and testpattern

Installed Libraries: libgutenprint.so, libgutenprintui2.so and optionally, various CUPS filters and backend drivers under /usr/lib/gutenprint/5.2/modules/

Installed Directories: /usr/include/gutenprint, /usr/include/gutenprintui2, /usr/lib/gutenprint, /usr/share/doc/gutenprint-5.2.10 and /usr/share/gutenprint

Short Descriptions

`cups-calibrate`	calibrates the color output of printers using the Gutenprint, CUPS or ESP Print Pro drivers.
`escputil`	is a command line utility to perform various maintenance tasks on Epson Stylus inkjet printers.
`ijsgutenprint.5.2`	is a Ghostscript driver for HP inkjet and laserjet printers.

Last updated on 2014-09-11 20:34:26 -0700

This chapter contains scanning applications which allow you to convert printed documents into formatted documents readable by other applications.

SANE-1.0.24

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-7.6 platform.

Back Ends Package Information

- Download (HTTP): **http://fossies.org/linux/misc//sane-backends-1.0.24.tar.gz**
- Download MD5 sum: 1ca68e536cd7c1852322822f5f6ac3a4
- Download size: 5.6 MB
- Estimated disk space required: 97 MB
- Estimated build time: 1 SBU

Front Ends Package Information

- Download (HTTP): **http://alioth.debian.org/frs/download.php/file/1140/sane-frontends-1.0.14.tar.gz**
- Download (FTP): **ftp://ftp2.sane-project.org/pub/sane/sane-frontends-1.0.14.tar.gz**
- Downlaod 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-1.7.5, libjpeg-turbo-1.3.1, LibTIFF-4.0.3, libusb-1.0.19, **Net-SNMP**, **libieee1284**, **libgphoto2**, **Video4Linux**, and texlive-20140525

Optional (Front Ends)

X Window System, GTK+-2.24.24, and Gimp-2.8.14

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/sane

Kernel Configuration, Drivers and Additional Packages

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-1.0.19 package. For HP devices, you may need **hplip**. 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*

> **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.

For a USB scanner, if you are linking to libusb-1.0.19, include the configure switch --enable-libusb_1_0. Install SANE-backends by running the following commands:

```
./configure --prefix=/usr                                   \
            --sysconfdir=/etc                               \
            --localstatedir=/var                            \
            --with-docdir=/usr/share/doc/sane-backend-1.0.24 \
            --with-group=scanner                            &&
make                                                        &&
exit
```

If you want to test the results, some files need to be fixed:

```
sed -i -e 's/Jul 31 07:52:48/Oct  7 08:58:33/'      \
       -e 's/1.0.24git/1.0.24/'                     \
       testsuite/tools/data/db.ref                  \
       testsuite/tools/data/html-mfgs.ref           \
       testsuite/tools/data/usermap.ref             \
       testsuite/tools/data/html-backends-split.ref \
       testsuite/tools/data/udev+acl.ref            \
       testsuite/tools/data/udev.ref
```

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
```

With the scanner on, run `scanimage -L` and the name and location of the device should appear. Of course, you need the device drivers configured, in order to run this test.

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-0.999. 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 xscanimage-icon-48x48-2.png \
    /usr/share/sane
```

If GIMP was linked into the build and you wish GIMP to use `xscanimage` as a scanning plugin, issue the following command as the *root* user:

```
ln -v -s ../../../../bin/xscanimage /usr/lib/gimp/2.0/plug-ins
```

menu or Ctrl-N. After that, it is enabled.

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.

If you want to access a network scanner, include two lines in `net.conf`, as *root* user (make sure to replace <server_ip> by the actual value, below):

```
cat >> /etc/sane.d/net.conf << "EOF"
connect_timeout = 60
<server_ip>
EOF
```

On the server side, include the client ip in the access list of `/etc/sane.d/saned.conf`, restart the `saned` daemon, and make sure the firewall, if any, is open to the client.

Frontend Configuration

If you use a desktop environment like Gnome or KDE you may wish to create a `xscanimage.desktop` file so that xscanimage appears in the panel's menus. As the *root* user:

```
mkdir -pv /usr/share/{applications,pixmaps}                 &&

cat > /usr/share/applications/xscanimage.desktop << "EOF" &&
[Desktop Entry]
Encoding=UTF-8
Name=XScanImage - Scanning
Comment=Acquire images from a scanner
Exec=xscanimage
Icon=xscanimage
Terminal=false
Type=Application
Categories=Application;Graphics
EOF

ln -svf ../sane/xscanimage-icon-48x48-2.png /usr/share/pixmaps/xscanimage.png
```

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

Contents

Back Ends:

Installed Programs: gamma4scanimage, sane-config, saned, sane-find-scanner, and scanimage
Installed Libraries: libsane.so and numerous scanner backend modules
Installed Directories: /etc/sane.d, /usr/include/sane, /usr/lib/sane, /usr/share/sane, and /usr/share/doc/sane-1.0.24

Front Ends:

Installed Programs: scanadf, xcam, and xscanimage
Installed Library: GIMP plugin embedded in `xscanimage`
Installed Directories: None

Short Descriptions

`gamma4scanimage`	creates a gamma table in the format expected by `scanimage`.
`sane-config`	is a tool used to determine the compiler and linker flags that should be used to compile and link SANE .
`saned`	is the SANE daemon that allows remote clients to access image acquisition devices available on the local host.
`sane-find-scanner`	is a command-line tool to find SCSI and USB scanners and determine their device files. Its primary purpose is to make sure that scanners can be detected by SANE backends.
`scanadf`	is a command-line interface to control image acquisition devices which are equipped with an automatic document feeder (ADF).
`scanimage`	is a command line interface for scanning from image acquisition devices such as flatbed scanners or cameras. It is also used to list the available backend devices.
`xcam`	is a graphical camera front end for SANE .
`xscanimage`	is a graphical user interface for scanning.
`libsane.so`	is the application programming interface that is used to communicate between frontends and backends.
`libsane-*.so`	modules are backend scanning library plugins used to interface with scanning devices. See **http://www.sane-project.org/sane-supported-devices.html** for a list of supported backends.

Last updated on 2014-09-20 08:52:44 -0700

XSane-0.999

Introduction to XSane

XSane is another front end for SANE-1.0.24. 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-7.6 platform.

Package Information

- Download (HTTP): **http://www.xsane.org/download/xsane-0.999.tar.gz**
- Download MD5 sum: 9927f21e1ab6ba96315e7f0e30746deb
- Download size: 2.9 MB
- Estimated disk space required: 23 MB
- Estimated build time: 0.2 SBU

XSane Dependencies

Required

GTK+-2.24.24 and SANE-1.0.24 (back ends)

Optional

Installation of XSane

Install XSane by running the following commands:

```
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-0.999 install &&
ln -v -s ../../doc/xsane-0.999 /usr/share/sane/xsane/doc
```

A browser of your choice can be used to get inline help, using the following command, as the *root* user:

```
ln -v -s <browser> /usr/bin/netscape
```

> ### Note
>
> Be sure to replace <browser> with the browser of your choice on your system.

Alternatively, if the environment variable BROWSER is set to the browser you want to use, eg, BROWSER="/usr/bin/firefox", the first time you run `xsane`, it will be recorded in ~/.sane/xsane/xsane.rc. If you wish to change it, edit this file, or remove it, and use the instructions above, so that a new one is created.

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-0.999 /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

Installed Program: xsane
Installed Libraries: None
Installed Directory: /usr/share/doc/xsane-0.999 and /usr/share/sane/xsane

Short Descriptions

`xsane`   is a graphical user-interface to control an image acquisition device such as a flatbed scanner.

Last updated on 2014-09-20 08:52:44 -0700

Chapter 45. 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

- 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/7.6/sgml-common-0.6.3-manpage-1.patch**

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/sgml-common

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 docdir=/usr/share/doc install &&

install-catalog --add /etc/sgml/sgml-ent.cat \
    /usr/share/sgml/sgml-iso-entities-8879.1986/catalog &&

install-catalog --add /etc/sgml/sgml-docbook.cat \
    /etc/sgml/sgml-ent.cat
```

Update Hint

Remove the above catalog items prior to upgrading (as the `root` user) with:

```
install-catalog --remove /etc/sgml/sgml-ent.cat \
    /usr/share/sgml/sgml-iso-entities-8879.1986/catalog &&

install-catalog --remove /etc/sgml/sgml-docbook.cat \
    /etc/sgml/sgml-ent.cat
```

Configuring SGML Common

Config Files

`/etc/sgml/sgml.conf`

Configuration Information

No change in this file is necessary.

Contents

Installed Directories: /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.

Last updated on 2014-09-12 12:02:55 -0700

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-7.6 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

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/sgml-dtd-3

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 &&
```

```
       /etc/sgml/sgml-docbook.cat
```

Command Explanations

`sed -i -e '/ISO 8879/d' docbook.cat`: This command removes the ENT definitions from the catalog file.

`sed -i -e 's|DTDDECL "-//OASIS//DTD Docbook V3.1//EN"|SGMLDECL|g' docbook.cat`: This command replaces the DTDDECL catalog entry, which is not supported by Linux SGML tools, with the SGMLDECL catalog entry.

Configuring DocBook SGML DTD

Config Files

```
/etc/sgml/catalog
```

Configuration Information

The above installation script updates the catalog.

Using only the most current 3.x version of DocBook SGML DTD requires the following (perform as the *root* user):

```
cat >> /usr/share/sgml/docbook/sgml-dtd-3.1/catalog << "EOF"
  -- Begin Single Major Version catalog changes --

PUBLIC "-//Davenport//DTD DocBook V3.0//EN" "docbook.dtd"

  -- End Single Major Version catalog changes --
EOF
```

Contents

Installed Programs: None
Installed Libraries: None
Installed Files: SGML DTD and MOD files
Installed Directory: /usr/share/sgml/docbook/sgml-dtd-3.1

Short Descriptions

SGML DTD files	contain a document type definition which defines the element types and the attribute lists that can be used in the corresponding SGML files.
SGML MOD files	contain components of the document type definition that are sourced into the DTD files.

Last updated on 2014-09-12 12:02:55 -0700

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-7.6 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

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

Installed Programs: None
Installed Libraries: None
Installed Files: SGML DTD and MOD files
Installed Directory: /usr/share/sgml/docbook/sgml-dtd-4.5

Short Descriptions

```
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-7.6 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

xmlto-0.0.26

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/opensp

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`.

--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

Installed Programs: onsgmls, osgmlnorm, ospam, ospcat, ospent, osx, and the SP equivalent symlinks: nsgmls, sgml2xml, sgmlnorm, spam, spcat, spent, and sx

Installed Library: libosp.so and the SP equivalent symlink: libsp.so

Installed Directories: /usr/include/OpenSP, /usr/share/doc/OpenSP, and /usr/share/sgml/OpenSP-1.5.2

Short Descriptions

`onsgmls`	is used to process SGML files.
`osgmlnorm`	prints on the standard output a normalized document instance for the SGML document contained in the concatenation of the entities with system identifiers .nf and .fi.
`ospam`	is a markup stream editor.
`ospcat`	prints effective system identifiers found in the catalogs.
`ospent`	provides access to OpenSP 's entity manager.
`osx`	is an SGML normalizer or used to convert SGML files to XML files.
`nsgmls`	is a symlink to `onsgmls`.
`sgml2xml`	is a symlink to `osx`.
`sgmlnorm`	is a symlink to `osgmlnorm`.
`spam`	is a symlink to `ospam`.
`spcat`	is a symlink to `ospcat`.
`spent`	is a symlink to `ospent`.
`sx`	is a symlink to `osx`.
libosp.so	contains functions required by the OpenSP programs to parse, validate and manipulate SGML and XML files.
libsp.so	is a symlink to libosp.so.

Last updated on 2014-09-12 12:02:55 -0700

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-7.6 platform.

Package Information

- Download (HTTP): **http://downloads.sourceforge.net/openjade/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

Installation of OpenJade

First fix a compilation problem identified in gcc-4.6 and later:

```
patch -Np1 -i ../openjade-1.3.2-gcc_4.6-1.patch
```

Now 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/ause Getopt::Std;' msggen.pl
```

Install OpenJade by running the following commands:

```
./configure --prefix=/usr                        \
            --mandir=/usr/share/man              \
            --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

```
                    /usr/share/sgml/openjade-1.3.2/catalog
```

This configuration is only necessary if you intend to use OpenJade to process the BLFS XML files through DSSSL Stylesheets.

Contents

Installed Programs: openjade and the Jade equivalent symlink, jade
Installed Libraries: libogrove.so, libospgrove.so, libostyle.so, and the Jade equivalent symlinks: libgrove.so, libspgrove.so, and libstyle.so
Installed Directory: /usr/share/sgml/openjade-1.3.2

Short Descriptions

openjade   is a DSSSL engine used for transformations.

jade   is a symlink to openjade.

Last updated on 2014-09-12 12:02:55 -0700

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-7.6 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

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/docbook-dsssl

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-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

Installed Program: collateindex.pl
Installed Libraries: None
Installed Files: DSSSL stylesheets
Installed Directory: /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.

Last updated on 2014-09-12 12:02:55 -0700

DocBook-utils-0.6.14

Introduction to DocBook-utils

This package is known to build and work properly using an LFS-7.6 platform.

Package Information

- 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/7.6/docbook-utils-0.6.14-grep_fix-1.patch**

DocBook-utils Dependencies

Required

OpenJade-1.3.2, docbook-dsssl-1.79, and docbook-3.1

Optional (Runtime Dependencies Only)

SGMLSpm-1.1 (for conversion to man and texinfo), and Lynx-2.8.8rel.2 or Links-2.8 or w3m-0.5.3 (for conversion to ASCII text)

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/docbook-utils

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 --mandir=/usr/share/man       &&
make
```

This package does not come with a test suite.

Now, as the *root* user:

```
make docdir=/usr/share/doc 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 -svf 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.

`docdir=/usr/share/doc`: This option is placed on the `make install` line because is is not recognized by `configure`.

Installed Libraries: None

Installed Directories: /usr/share/doc/docbook-utils-0.6.14 and /usr/share/sgml/docbook/utils-0.6.14

Installed Symlinks: db2dvi, db2html, db2man, db2pdf, db2ps, db2rtf, db2tex, db2texi, and db2txt

Short Descriptions

`docbook2*`	are simple one-line wrapper scripts to `jw`. They are provided as easy-to-remember names used to convert DocBook or other SGML files to the respective format.
`db2*`	are symlinks pointing at the respectively named `docbook2*` commands, created to satisfy some program's use of these names.
`jw`	is a script used to convert DocBook or other SGML files to various output formats. It hides most of OpenJade's complexity and adds comfortable features.
`sgmldiff`	is used to compare two SGML files and only return the differences in the markup. This is especially useful to compare files that should be identical except for language differences in the content.

Last updated on 2014-09-12 12:02:55 -0700

Chapter 46. 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-7.6 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

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/docbook

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 &&
```

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 &&
xmlcatalog --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 &&
xmlcatalog --noout --add "public" \
    "-//OASIS//ELEMENTS DocBook XML Information Pool V4.5//EN" \
    "file:///usr/share/xml/docbook/xml-dtd-4.5/dbpoolx.mod" \
    /etc/xml/docbook &&
xmlcatalog --noout --add "public" \
    "-//OASIS//ELEMENTS DocBook XML Document Hierarchy V4.5//EN" \
    "file:///usr/share/xml/docbook/xml-dtd-4.5/dbhierx.mod" \
    /etc/xml/docbook &&
xmlcatalog --noout --add "public" \
    "-//OASIS//ELEMENTS DocBook XML HTML Tables V4.5//EN" \
    "file:///usr/share/xml/docbook/xml-dtd-4.5/htmltblx.mod" \
    /etc/xml/docbook &&
xmlcatalog --noout --add "public" \
    "-//OASIS//ENTITIES DocBook XML Notations V4.5//EN" \
    "file:///usr/share/xml/docbook/xml-dtd-4.5/dbnotnx.mod" \
    /etc/xml/docbook &&
xmlcatalog --noout --add "public" \
    "-//OASIS//ENTITIES DocBook XML Character Entities V4.5//EN" \
    "file:///usr/share/xml/docbook/xml-dtd-4.5/dbcentx.mod" \
    /etc/xml/docbook &&
xmlcatalog --noout --add "public" \
    "-//OASIS//ENTITIES DocBook XML Additional General Entities V4.5//EN" \
    "file:///usr/share/xml/docbook/xml-dtd-4.5/dbgenent.mod" \
    /etc/xml/docbook &&
xmlcatalog --noout --add "rewriteSystem" \
    "http://www.oasis-open.org/docbook/xml/4.5" \
    "file:///usr/share/xml/docbook/xml-dtd-4.5" \
    /etc/xml/docbook &&
xmlcatalog --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

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

Installed Programs: None
Installed Libraries: None
Installed Files: DTD, MOD and ENT files
Installed Directories: /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.

Last updated on 2014-09-10 06:19:10 -0700

docbook-xsl-1.78.1

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-7.6 platform.

Package Information

- Download (HTTP): **http://downloads.sourceforge.net/docbook/docbook-xsl-1.78.1.tar.bz2**
- Download MD5 sum: 6dd0f89131cc35bf4f2ed105a1c17771
- Download size: 4.8 MB
- Estimated disk space required: 49 MB (includes installing optional documentation)
- Estimated build time: less than 0.1 SBU

Additional Downloads

- Download MD5 sum: 77b63a06db2db2b692dcb96c2c64dc45
- Download size: 1.0 MB

DocBook XSL Stylesheets Dependencies

Required

libxml2-2.9.1

Optional

Ruby-2.1.2 (to utilize the "epub" stylesheets)

User Notes: *http://wiki.linuxfromscratch.org/blfs/wiki/docbook-xsl*

Installation of DocBook XSL Stylesheets

If you downloaded the optional documentation tarball, unpack it with the following command:

```
tar -xf ../docbook-xsl-doc-1.78.1.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-1.78.1 &&

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-1.78.1 &&

ln -s VERSION /usr/share/xml/docbook/xsl-stylesheets-1.78.1/VERSION.xsl &&

install -v -m644 -D README \
                    /usr/share/doc/docbook-xsl-1.78.1/README.txt &&
install -v -m644    RELEASE-NOTES* NEWS* \
                    /usr/share/doc/docbook-xsl-1.78.1
```

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-1.78.1
```

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/1.78.1" \
           "/usr/share/xml/docbook/xsl-stylesheets-1.78.1" \
    /etc/xml/catalog &&

xmlcatalog --noout --add "rewriteURI" \
           "http://docbook.sourceforge.net/release/xsl/1.78.1" \
           "/usr/share/xml/docbook/xsl-stylesheets-1.78.1" \
    /etc/xml/catalog &&

xmlcatalog --noout --add "rewriteSystem" \
```

```
xmlcatalog --noout --add "rewriteURI" \
          "http://docbook.sourceforge.net/release/xsl/current" \
          "/usr/share/xml/docbook/xsl-stylesheets-1.78.1" \
    /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

Installed Programs: None
Installed Libraries: None
Installed Directories: /usr/share/xml/docbook/xsl-stylesheets-1.78.1 and /usr/share/doc/docbook-xsl-1.78.1

Last updated on 2014-09-10 06:19:10 -0700

Itstool-2.0.2

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-7.6 platform.

Package Information

- Download (HTTP): **http://files.itstool.org/itstool/itstool-2.0.2.tar.bz2**
- Download MD5 sum: d472d877a7bc49899a73d442085b2f93
- Download size: 96 KB
- Estimated disk space required: 784 KB
- Estimated build time: less than 0.1 SBU

Itstool Dependencies

Required

docbook-xml-4.5 and Python-2.7.8

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/itstool

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
```

Installed Libraries: None
Installed Directory: /usr/share/itstool

Short Descriptions

itstool   is used to create translated XML files.

Last updated on 2014-09-14 12:09:32 -0700

xmlto-0.0.26

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-7.6 platform.

Package Information

- Download (HTTP): **https://fedorahosted.org/releases/x/m/xmlto/xmlto-0.0.26.tar.bz2**
- Download MD5 sum: c90a47c774e0963581c1ba57235f64f4
- Download size: 120 KB
- Estimated disk space required: 1.4 MB
- Estimated build time: less than 0.1 SBU

xmlto Dependencies

Required

docbook-xml-4.5, docbook-xsl-1.78.1, and libxslt-1.1.28

Optional (for DVI, PDF, and postscript backend post-processing)

dblatex, **PassiveTeX**, and fop-1.1

Optional (for text backend post-processing)

One of w3m-0.5.3, Links-2.8, or Lynx-2.8.8rel.2

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/xmlto

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

Installed Programs: xmlif and xmlto
Installed Libraries: None
Installed Directory: /usr/share/xmlto

Short Descriptions

xmlif   is a conditional processing instructions for XML.

xmlto   applies an XSL stylesheet to an XML document.

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-7.6 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

Recommended

PSUtils-p17, and Cups-1.7.5 (otherwise, a2ps will use the `cat >/dev/lp0` command instead of `lpr` for sending its output to the printer)

Optional

ghostscript-9.14, libpaper-1.1.24+nmu3, texlive-20140525, X Window System, **Adobe Reader**, and **Ghostview**

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/A2PS

Installation of a2ps

Install a2ps by running the following commands:

```
autoconf &&
sed -i -e "s/GPERF --version |/& head -n 1 |/" \
       -e "s|/usr/local/share|/usr/share|" configure &&

./configure --prefix=/usr  \
    --sysconfdir=/etc/a2ps \
    --enable-shared        \
    --with-medium=letter   &&
make                       &&
touch doc/*.info
```

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

```
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              &&
pushd /usr/share/a2ps/afm     &&
  ./make_fonts_map.sh        &&
  mv fonts.map.new fonts.map &&
popd
```

Command Explanations

`autoconf`: This command is used to recreate the `configure` script. This is required because there is an issue in the mktime test which causes the `configure` script to hang for 60 seconds and then report that there is no working mktime 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.

`touch doc/*.info`: This command avoids trying to regenerate the info files. This is an older package and the current .texi files will produce errors preventing `make install` from working properly.

Configuring a2ps

Config Files

`/etc/a2ps/a2ps.cfg, /etc/a2ps/a2ps-site.cfg`

Configuration Information

Information about configuring a2ps can be found in the comments contained in the above files, and also by running `info a2ps`.

Contents

Installed Programs: a2ps, card, composeglyphs, fixnt, fixps, ogonkify, pdiff, psmandup, psset, and texi2dvi4a2ps
Installed Libraries: liba2ps.{so,a} and filter data
Installed Directories: /etc/a2ps and /usr/share/a2ps

Short Descriptions

`a2ps`	is a filter, utilized primarily by printing scripts, that converts standard input or supported files to PostScript.
`card`	prints a reference card of a given program's options.
`composeglyphs`	creates a composite font program.
`fixnt`	is supposed to fix the problems in the PostScript files generated by the Microsoft PostScript driver under Windows NT (3.5 and 4.0).
`fixps`	tries to fix common PostScript problems that break postprocessing.
`ogonkify`	provides international support for Postscript by performing various munging of PostScript files related to printing in different languages.
`pdiff`	produces a pretty comparison between files.
`psmandup`	tries to produce a version of a given PostScript file to print in manual duplex.
`psset`	produces a version of a given PostScript file with a protected call to the PostScript operator 'setpagedevice'. Typical use is making a file print duplex, or on the manual tray, etc.

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-7.6 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: 3acc242b829adacabcaf28533f049afd
- Download size: 1.3 MB
- Estimated disk space required: 14 MB
- Estimated build time: 0.1 SBU

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/Enscript

Installation of Enscript

Install Enscript by running the following commands:

```
./configure --prefix=/usr              \
            --sysconfdir=/etc/enscript \
            --localstatedir=/var        \
            --with-media=Letter &&
make &&

pushd docs &&
  makeinfo --plaintext -o enscript.txt enscript.texi &&
popd
```

If you have texlive-20140525 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/*.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.

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.

Last updated on 2014-09-20 12:05:45 -0700

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-7.6 platform.

Package Information

- Download (HTTP): **http://pkgs.fedoraproject.org/repo/pkgs/psutils/psutils-p17.tar.gz/b161522f3bd1507655326afa7db4a0ad/psutils-p17.tar.gz**
- Download MD5 sum: b161522f3bd1507655326afa7db4a0ad
- Download size: 68 KB
- Estimated disk space required: 740 KB
- Estimated build time: less than 0.1 SBU

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/psutils

Installation of PSUtils

Install PSUtils by running the following commands:

```
sed 's@/usr/local@/usr@g' Makefile.unix > Makefile &&
make
```

This package does not come with a test suite.

Now, as the *root* user:

```
make install
```

Command Explanations

`sed 's@/usr/local@/usr@g' Makefile.unix > Makefile`: This command creates a `Makefile` that installs the program to the `/usr` prefix instead of the `/usr/local` prefix.

Contents

Installed Programs: epsffit, extractres, fixdlsrps, fixfmps, fixmacps, fixpsditps, fixpspps, fixscribeps, fixtpps, fixwfwps, fixwpps, fixwwps, getafm, includeres, psbook, psmerge, psnup, psresize, psselect, pstops, and showchar

Installed Libraries: None

Installed Directories: /usr/share/psutils

Sometimes `psnup` and other utilities from this package produce PostScript files that don't conform to Adobe's DSC standard. CUPS may print them incorrectly. On the other hand, CUPS has builtin replacements for most commands from this package. For example, to print a document 2-up, you can issue this command:

epsffit	fits an EPSF file to a given bounding box.
psbook	rearranges pages into signatures.
psnup	puts multiple pages per physical sheet of paper.
psresize	alters the document paper size.
psselect	selects pages and page ranges.
pstops	performs general page rearrangements and selection.
scripts	the remaining commands are scripts that perform specific functions described in their respective man pages.

Last updated on 2014-09-20 12:05:45 -0700

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-7.6 platform.

Package Information

- Download (HTTP): **http://anduin.linuxfromscratch.org/sources/BLFS/conglomeration/epdfview/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/7.6/epdfview-0.1.8-fixes-1.patch**

ePDFView Dependencies

Required

Poppler-0.26.4 and GTK+-2.24.24

Optional

Cups-1.7.5

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/epdfview

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-1.7.5

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

Short Descriptions

`epdfview`   is a Gtk+-2 program for viewing PDF documents.

Last updated on 2014-09-10 18:59:51 -0700

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-7.6 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
  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
  4a906db35612f668aeef2c0606d7075b
  3.4 MB

fop Dependencies

Required

apache-ant-1.9.4

Optional

JUnit-4.11 (to run tests), X Window System (to run tests), **JIMI SDK**, **XMLUnit**, **JAI Image I/O Tools**, **JEuclid**, **PMD** (requires **Jaxen**), and **Forrest** (Forrest used only to build the documentation)

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/fop

Installation of fop

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:

```
        cp -v jai-1_1_3/lib/libmlib_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/libmlib_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/javadocs .
```

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`. You must run the tests from an X-window using a GL-aware Xorg server or some of the JUnit tests will hang.

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"`.

To include the `fop` script in your path, update your personal or system-wide profile with the following:

> **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 `.leval` 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.

Last updated on 2014-09-20 12:05:45 -0700

---

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-7.6 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

Additional Downloads

- Required patch: **http://www.linuxfromscratch.org/patches/blfs/7.6/paps-0.6.8-freetype_fix-1.patch**

paps Dependencies

Required

Pango-1.36.7

Optional

Doxygen-1.8.8

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/Paps

Installation of paps

Install paps by running the following commands:

```
patch -Np1 -i ../paps-0.6.8-freetype_fix-1.patch &&
./configure --prefix=/usr --mandir=/usr/share/man &&
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

```
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.

Last updated on 2014-09-11 20:34:26 -0700

Chapter 48. Typesetting

This chapter includes applications that create output equivalent to typesetting.

install-tl-unx

Introduction to TeX Live and its installer

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.

It is necessary to use a binary installer for the first install. This will provide the programs, the scripts, and a lot of supporting files and documentation. After that, you can rebuild the programs from source by following the instructions for texlive-20140525 and biber-1.8. The installer is updated frequently, so its md5sum will change if it is newer than what is shown below. Newer versions of the installer are expected to work with these instructions, for so long as they install to a `2014/` directory.

This package is known to build and work properly using an LFS-7.6 platform.

Package Information

* Download (HTTP): **http://mirror.ctan.org/systems/texlive/tlnet/install-tl-unx.tar.gz**
* Download MD5 sum: f5b1e909d5c2380cefd2cda83d288c00 (at 20140628)
* Download size: 3.2 MB
* Estimated disk space required: 3.8 GB
* Estimated build time: varies, depending on network speed and traffic

Recommended (at runtime)

The binaries are mostly linked to static libraries such as `libc.a`, but a few of the programs and several scripts will fail if the following packages are not present.

ghostscript-9.14 is dynamically loaded by dvisvgm, which is used by asy.

Xorg Libraries and libxcb-1.11 are needed for inimf, mf, pdfclose, pdfopen and xdvixaw. But if you are using asy, or using TeX to create a PDF file, you will need an X Window System (for PDF files, this is to support a PDF viewer of your choice, for example epdfview-0.1.8).

the optional non-wide-character ncurses library (for "some binary-only application") from the bottom of the Ncurses page in LFS is needed for xindy.run which is used by xindy

If you are building on 32-bit x86, the binary version of asy needs **FFTW**, GLU-9.0.0 and **libreadline-5.2** : this only requires `libreadline.so.5.2` which can be manually copied from the `shm/` directory after running `configure` and `make` and then symlinked as `libreadline.so.5`.

Python-2.7.8 is used by many scripts.

Ruby-2.1.2 is used by some scripts, mostly within mtx_context which is part of conTeXt.

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/tl-installer

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.

As with any other package, unpack the installer and change into its directory, install-tl-<CCYYMMDD>. This directory name changes when the installer is updated, so replace <CCYYMMDD> by the correct directory name.

> **Note**
>
> The distribution binaries installed below use static linking for general linux system libraries. Additional libraries or interpreters 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 have been 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 3.8 gigabytes of disk space. The time to complete the download 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. The programs are always installed in an <ARCH>-linux subdirectory and on 32-bit x86 this is always i386-linux. For x86_64 and i?86 we can generate this as $TEXARCH:

```
export TEXARCH=$(uname -m | sed -e 's/i.86/i386/' -e 's/$/-linux/') &&
cat >> /etc/profile.d/extrapaths.sh << EOF
pathappend /usr/share/man                    MANPATH
pathappend /opt/texlive/2014/texmf-dist/doc/man  MANPATH
pathappend /usr/share/info                   INFOPATH
pathappend /opt/texlive/2014/texmf-dist/doc/info INFOPATH
pathappend /opt/texlive/2014/bin/$TEXARCH
EOF
unset TEXARCH
```

> **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 binary installation is complete.

Command Explanations

./install-tl --location http://mirror.aut.ac.nz/CTAN/systems/texlive/tlnet/: use a variation of this if you wish to use a different mirror, e.g. because you are in New Zealand but the installer chooses to use an Australian mirror. The list of mirrors is at http://ctan.org/mirrors.

Contents

Installed Programs: Over 300 binaries and symlinks to scripts
Installed Libraries: None
Installed Directories: /opt/texlive

Short Descriptions

TeX programs   The programs included in TeX are too numerous to individually list. Please refer to the individual program HTML and PDF pages in the installation directory's 2014/doc.html file, or the various html, man, or pdf files within the subdirectories of 2014/texmf-dist/.

Last updated on 2014-09-20 00:07:29 -0700

A binary version of the TeX Live package is installed at install-tl-unx. Here, we use that to rebuild the compiled programs from source.

This package is known to build and work properly using an LFS-7.6 platform.

Package Information

- Download (FTP): **ftp://tug.org/texlive/historic/2014/texlive-20140525-source.tar.xz**
- Download MD5 sum: 09ee265ff51637827559affc7304078c
- Download size: 40 MB
- Estimated disk space required: 555 MB
- Estimated build time: 8.4 SBU

TeX Live Dependencies

Required

install-tl-unx or a previous version of TeX Live (untested, you would need to alter the configure switches which refer to 2014 so that it overwrites your existing installation, or else copy everything to the location for the current year), and Clisp-2.49 (to build `xindy` which is an index processor for multi-lingual index creation)

Recommended

ghostscript-9.14 (for dvisvgm - used by asymptote which provides a mathematical coordinate-based framework for technical drawing), X Window System

The source ships with its own versions of *many* libraries, and will use them unless it is forced to use the system versions. The following are recommended so that the system version will be used: Fontconfig-2.11.1, FreeType-2.5.3, GC-7.4.2, Graphite2-1.2.4, Harfbuzz-0.9.35 (linked to graphite2), ICU-53.1, libpaper-1.1.24+nmu3, libpng-1.6.13, Poppler-0.26.4

Optional

The source ships with its own versions of several libraries which are either not under active development, or only used for limited functionality. If you install these, as with some other optional dependencies in this book you will need to tell `configure` to use the system versions. **GD**, **t1lib**, **ZZIPlib**, **TECkit**

Runtime dependencies

Some (re-installed) scripts will use Python-2.7.8 or Ruby-2.1.2.

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/texlive

Installation of TeX Live

These instructions will overwrite the corresponding files from the binary installer. As with the installer, change x86_64-linux to whatever matches your architecture.

Please note that installing from source will recompile the binary programs and recreate the `man` and `info` files. It will also overwrite the scripts - some of these may be older versions than those from the newer installer. It will *not* recreate any of the following: the more than 200 symlinks in the x86_64-linux directory (some are alternate names, many are pointers to the scripts), html files, PDF files, licenses, README files, two config files (`texmf.cnf` and `texmfcnf.lua`), nor the many package and font files in `texmf-dist` and `texmf-var`, nor the files recording the actions of the installer, and the `ls-R` files listing what was originally installed.

Asy and the rest of asymptote is by default not rebuilt, so we have to separately run `configure` and `make` in its directory.

```
mkdir texlive-build &&
cd texlive-build    &&

../configure                                      \
    --prefix=/opt/texlive/2014                    \
    --bindir=/opt/texlive/2014/bin/x86_64-linux   \
    --datarootdir=/opt/texlive/2014               \
    --includedir=/usr/include                     \
    --infodir=/opt/texlive/2014/texmf-dist/doc/info \
    --libdir=/usr/lib                             \
    --mandir=/opt/texlive/2014/texmf-dist/doc/man \
```

```
        --with-system-freetype2                  \
        --with-system-graphite2                  \
        --with-system-harfbuzz                   \
        --with-system-icu                        \
        --with-system-libgs                      \
        --with-system-libpng                     \
        --with-system-pixman                     \
        --with-system-poppler                    \
        --with-system-xpdf                       \
        --with-system-zlib                       \
        --with-banner-add=" - BLFS"              \
        --enable-xindy                           \
        --enable-xindy-rules                     \
        --enable-xindy-doc                       \
        --with-clisp-runtime=system
```

Asymptote has to be separately configured. It ships with its own copy of the gc source tarball, and will only use the system version if that local source is removed.

```
pushd ../utils/asymptote &&
rm -v gc-7.4.0.tar.gz &&

echo "ac_cv_lib_m_sqrt=yes"     >config.cache &&
echo "ac_cv_lib_z_deflate=yes" >>config.cache &&

./configure LIBS="-ltirpc "                       \
    --prefix=/opt/texlive/2014/                    \
    --bindir=/opt/texlive/2014/bin/x86_64-linux    \
    --enable-texlive-build                         \
    --datarootdir=/opt/texlive/2014/texmf-dist     \
    --infodir=/opt/texlive/2014/texmf-dist/doc/info \
    --mandir=/opt/texlive/2014/texmf-dist/doc/man  \
    --cache-file=config.cache &&
popd &&

make &&
make -C ../utils/asymptote
```

To test the results, issue: `make -k check && make -C utils/asymptote check`.

Now, as the *root* user:

```
make install &&
make -C ../utils/asymptote install
```

One part of the package remains to be rebuilt: [biber-1.8](#).

Command Explanations

--prefix=, --bindir=, --datarootdir=, --infodir=, --mandir= ... : these switches ensure that the files installed from source will overwrite the corresponding files previously installed by install-tl.

--includedir=, --libdir= ... : these switches ensure that the libraries will be found at runtime, and that programs can be compiled against them.

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

--enable-shared: Use shared versions of `libkpathsea` and `libptexenc`.

--with-system-...: Unless this parameter is used, the included versions of these libraries will be statically compiled into the programs which need them. If you decided not to install a recommended library, omit the corresponding switches.

--with-system-xpdf: Uniquely, this parameter has a non-standard meaning, it tells `configure` to use the system-installed poppler headers and library. Again, omit this if you have not installed poppler.

echo "ac_cv_lib_m_sqrt=yes" ... LIBS="-ltirpc " >config.cache, ... --cache-file=config.cache : The configure scripts in TeX Live are uncommon. Asymptote not only has to be separately configured and built, the configure script fails to find the shared `libtirpc.so`. Passing that in LIBS breaks the tests for (static) libm and (shared) libz, so we have to fix things up, in much the same way as when cross-compiling.

--without-x: use this (and omit the configure and make in `utils/asymptote` if you do not have Xorg installed.

Contents

Short Descriptions

`TeX programs`	The programs included in TeX are too numerous to individually list. Please refer to the individual program HTML and PDF pages in the installation directory's `2014/doc.html` file, or the various html, man, or pdf files within the subdirectories of `2014/texmf-dist/`.
`libkpathsea.so`	(kpathsearch) exists to look up a file in a list of directories.
`libptexenc.so`	is a library for Japanese pTeX (publishing TeX).

Last updated on 2014-09-19 14:19:42 -0700

---

biblatex-biber-1.8

Introduction to biber

Biber is a BibTeX replacement for users of biblatex, written in Perl. Unusually, the tarball itself is called just biblatex-biber.tar.gz but it will extract to a versioned directory. Please ensure you download it from the correct versioned directory at sourceforge, the 1.9 version is broken as-shipped.

This package is known to build and work properly using an LFS-7.6 platform.

Package Information

- Download (HTTP): **http://sourceforge.net/projects/biblatex-biber/files/biblatex-biber/1.8/biblatex-biber.tar.gz**
- Download (FTP):
- Download MD5 sum: 26b2134291ddd7851973a6c385e5545c
- Download size: 2.0 MB
- Estimated disk space required: 14 MB
- Estimated build time: less than 0. SBU (0.3 SBU to run the tests)

Biber Dependencies

Required

autovivification-0.12 Business::ISBN-2.07 Business::ISMN-1.11 Business::ISSN-0.91 Data::Compare-1.24 Date::Simple-3.03 Encode::EUCJPASCII-0.03 Encode::HanExtra-0.23 Encode::JIS2K-0.02 File::Slurp-9999.19 IPC::Run3-0.048 Log::Log4perl-1.44 libwww-perl-6.08 List::AllUtils-0.08 Regexp::Common-2013031301 Text::BibTeX-0.69 Unicode::Collate-1.07 (only if your version of perl is less than 5.20.0) Unicode::LineBreak-2014.06 XML::LibXML::Simple-0.94 XML::LibXSLT-1.92 and XML::Writer-0.625

Recommended

Readonly::XS-1.05, and File::Which-1.09 (to run the testsuite)

Required (at runtime)

texlive-20140525

> **Note**
>
> It is possible to install (all) missing dependencies automatically. Begin by running `perl ./Build.PL` and then when it prompts you, become the root user and run `./Build installdeps`

User Notes: http://wiki.linuxfromscratch.org/blfs/wiki/biber

Installation of Biber

Install Biber by running the following commands:

```
perl ./Build.PL &&
./Build.PL
```

To test the results, enter: `./Build test`

Contents

Installed Programs: biber
Installed Library: None
Installed Directory: /usr/lib/site_perl/5.*/Biber

Short Descriptions

biber   is used for producing bibliographies in LaTeX documents.

Last updated on 2014-09-10 18:59:51 -0700

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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

Compact Disc Digital Audio

CIFS
Common Internet File System
See Also SMB .

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

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

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

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 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

RADIUS
  Remote Authentication Dial-In User Service

RAM
  Random Access Memory

RARP
  Reverse Address Resolution Protocol

RCS
  Revision Control System

RFC
  Request For Comments

RGB

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

Universal Character Set

UDF
Universal Disk Format

UID
User IDentity

UDP
User Datagram Protocol

UI
User Interface

UML
Unified Modelling Language

URL
Uniform Resource Locator

USB
Universal Serial Bus

USR
Upstream Ready

UTF
UCS Transformation Format

UUCP
Unix-to-Unix Copy Protocol

VCD
Video Compact Disk

VESA
Video Electronics Standards Association

VGA
Video Graphics Array

VNC
Virtual Network Computer

VOB
Video OBject

VOIP
Voice Over IP

W3C
World Wide Web Consortium

WAV
Waveform Audio

WWW
World Wide Web

XDMCP
XDisplay Manager Control Protocol

XM
FastTracker Module

XML
eXtensible Markup Language

XSL
eXtensible Style Language

XSLT
eXtensible Style Language Transformation

XSM
X/Open System Management

XMMS
XMultiMedia System

YP
Yellow Pages

YUV
Luminance-Bandwidth-Chrominance

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kdeplasma-addons:	Kdeplasma-addons-4.14.1
keyutils:	keyutils-1.5.9
kfilemetadata:	Kfilemetadata-4.14.1
kmix:	Kmix-4.14.1
konsole:	Konsole-4.14.1
LAME:	LAME-3.99.5
ldns:	ldns-1.6.17
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libassuan:	libassuan-2.1.2
libatasmart:	libatasmart-0.19
libatomic_ops:	libatomic_ops-7.4.2
libburn:	libburn-1.3.8
libcanberra:	libcanberra-0.30
libcap:	libcap-2.24 with PAM
libcroco:	libcroco-0.6.8
libdaemon:	libdaemon-0.14
libdbusmenu-qt:	libdbusmenu-qt-0.9.2
libdiscid:	libdiscid-0.6.1
libdrm:	libdrm-2.4.56
Libdv:	Libdv-1.0.0
libdvdcss:	libdvdcss-1.3.0
Libdvdnav:	Libdvdnav-5.0.1
Libdvdread:	Libdvdread-5.0.0
libepoxy:	libepoxy-1.2
libESMTP:	libESMTP-1.0.6
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libgcrypt:	libgcrypt-1.6.2
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Libglade:	libglade-2.6.4
libgpg-error:	libgpg-error-1.13
libgsf:	libgsf-1.14.30
libgtop:	libgtop-2.30.0
libgusb:	libgusb-0.1.6
libical:	libical-1.0
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libisoburn:	libisoburn-1.3.8
libisofs:	libisofs-1.3.8
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libkexiv2:	libkexiv2-4.14.1
Libksba:	Libksba-1.3.0
liblinear:	liblinear-1.94
Libmad:	libmad-0.15.1b
Libmng:	libmng-2.0.2
libmpeg2:	libmpeg2-0.5.1
libmusicbrainz:	libmusicbrainz-2.1.5
libmusicbrainz:	libmusicbrainz-5.0.1
libndp:	libndp-1.4
libnice:	libnice-0.1.7
libnl:	libnl-3.2.25
libnotify:	libnotify-0.7.6
Libogg:	libogg-1.3.2
libpaper:	libpaper-1.1.24+nmu3
libpcap:	libpcap-1.6.2
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libva:	libva-1.3.1
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libwebp:	libwebp-0.4.1
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libXau:	libXau-1.0.8
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libxklavier:	libxklavier-5.3
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logrotate:	Logrotate-3.8.7
lsb_release:	lsb_release-1.4
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LXAppearance:	LXAppearance-0.5.6
lxappearance-obconf:	lxappearance-obconf-0.2.2
lxde-common:	lxde-common-0.5.6
lxde-icon-theme:	lxde-icon-theme-0.5.1
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LXInput:	LXInput-0.3.3
lxmenu-data:	lxmenu-data-0.1.4
LXPanel:	LXPanel-0.7.0
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Lynx:	Lynx-2.8.8rel.2
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NetworkManager:	NetworkManager-0.9.10.0
newt:	newt-0.52.17
NFS Utilities:	NFS-Utils-1.3.0
Nmap:	Nmap-6.47
notification-daemon:	notification-daemon-0.7.6
NPAPI-SDK:	NPAPI-SDK-0.27.2
NSPR:	NSPR-4.10.7
NSS:	NSS-3.17
ntfs-3g:	ntfs-3g-2014.2.15
ntp:	ntp-4.2.6p5
obex-data-server:	obex-data-server-0.4.6
okular:	Okular-4.14.1
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Openbox:	openbox-3.5.2
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OpenJPEG:	OpenJPEG-1.5.2
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p11-kit:	p11-kit-0.20.6
p7zip:	p7zip-9.20.1
Pango:	Pango-1.36.7
Pangomm:	Pangomm-2.34.0
paps:	paps-0.6.8
Parole:	Parole-0.5.4
Parted:	parted-3.2
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pciutils:	pciutils-3.2.1
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phonon-backend-vlc:	Phonon-backend-vlc-0.8.0
PHP:	PHP-5.6.0
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Pixman:	Pixman-0.32.6
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Poppler:	Poppler-0.26.4
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strigicmd:	Strigi-0.7.8 -- description
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stunbdc:	libnice-0.1.7 -- description
stund:	libnice-0.1.7 -- description
stunnel:	stunnel-5.03 -- description
stunnel3:	stunnel-5.03 -- description
sudo:	Sudo-1.8.10p3 -- description
sudoedit:	Sudo-1.8.10p3 -- description
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svlc:	VLC-2.1.5 -- description
svn:	Subversion-1.8.10 -- description
svnadmin:	Subversion-1.8.10 -- description
svndumpfilter:	Subversion-1.8.10 -- description
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svnmucc:	Subversion-1.8.10 -- description
svnrdump:	Subversion-1.8.10 -- description
svnserve:	Subversion-1.8.10 -- description
svnsync:	Subversion-1.8.10 -- description
svnversion:	Subversion-1.8.10 -- description
swig:	SWIG-3.0.2 -- description
sx:	OpenSP-1.5.2 -- description
sxpm:	Xorg Libraries -- description
symcryptrun:	GnuPG-2.0.26 -- description
synclient:	Xorg Synaptics Driver-1.8.0 -- description
syndaemon:	Xorg Synaptics Driver-1.8.0 -- description
tab2space:	HTML Tidy-cvs_20101110 -- description
tccat:	Transcode-1.1.7 -- description
tcdecode:	Transcode-1.1.7 -- description
tcdemux:	Transcode-1.1.7 -- description
tcextract:	Transcode-1.1.7 -- description
tclsh:	Tcl-8.6.2 -- description
tclsh8.6:	Tcl-8.6.2 -- description

tcsn:	Tcsh-6.18.01 -- description
tcxmlcheck:	Transcode-1.1.7 -- description
tdbbackup:	Samba-4.1.11 -- description
tdbdump:	Samba-4.1.11 -- description
tdbtool:	Samba-4.1.11 -- description
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testsaslauthd:	Cyrus SASL-2.1.26 -- description
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text2pcap:	Wireshark-1.12.1 -- description
thumbnail:	LibTIFF-4.0.3 -- description
Thunar:	Thunar-1.6.3 -- description
thunar:	Thunar-1.6.3 -- description
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thunar-volman:	thunar-volman-0.8.0 -- description
thunar-volman-settings:	thunar-volman-0.8.0 -- description
thunderbird:	Thunderbird-31.1.1 -- description
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tiff2pdf:	LibTIFF-4.0.3 -- description
tiff2ps:	LibTIFF-4.0.3 -- description
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tiffcmp:	LibTIFF-4.0.3 -- description
tiffcp:	LibTIFF-4.0.3 -- description
tiffcrop:	LibTIFF-4.0.3 -- description
tiffdiff:	Little CMS-1.19 -- description
tiffdither:	LibTIFF-4.0.3 -- description
tiffdump:	LibTIFF-4.0.3 -- description
tiffgt:	LibTIFF-4.0.3 -- description
tifficc:	Little CMS-1.19 -- description
tiffinfo:	LibTIFF-4.0.3 -- description
tiffmedian:	LibTIFF-4.0.3 -- description
tiffset:	LibTIFF-4.0.3 -- description
tiffsplit:	LibTIFF-4.0.3 -- description
tificc:	Little CMS-2.6 -- description
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tknewsbiff:	Expect-5.45 -- description
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tmrdemo:	JasPer-1.900.1 -- description
tnameserv:	OpenJDK-1.7.0.65/IcedTea-2.5.2 -- description
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ulockmgr_server:	Fuse-2.9.3 -- description
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us428control:	alsa-tools-1.0.28 -- description
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usbhid-dump:	usbutils-007 -- description
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watchgnupg:	GnuPG-2.0.26 -- description
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wpa_gui:	wpa_supplicant-2.2 -- description
wpa_passphrase:	wpa_supplicant-2.2 -- description
wpa_supplicant:	wpa_supplicant-2.2 -- description
wrjpgcom:	libjpeg-turbo-1.3.1 -- description
wsgen:	OpenJDK-1.7.0.65/IcedTea-2.5.2 -- description
wsimport:	OpenJDK-1.7.0.65/IcedTea-2.5.2 -- description
wtpt:	Little CMS-1.19 -- description
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xfce4-display-settings:	xfce4-settings-4.10.1 -- description
xfce4-keyboard-settings:	xfce4-settings-4.10.1 -- description
xfce4-kiosk-query:	libxfce4util-4.10.1 -- description
xfce4-mime-settings:	xfce4-settings-4.10.1 -- description
xfce4-mixer:	xfce4-mixer-4.10.0 -- description
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xfce4-notifyd-config:	xfce4-notifyd-0.2.4 -- description
xfce4-panel:	xfce4-panel-4.10.1 -- description
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xfce4-terminal:	xfce4-terminal-0.6.3 -- description
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xfconf-query:	Xfconf-4.10.0 -- description
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xfdesktop-settings:	Xfdesktop-4.10.2 -- description
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xfs_metadump:	xfsprogs-3.2.1 --	description
xfs_mkfile:	xfsprogs-3.2.1 --	description
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xfs_quota:	xfsprogs-3.2.1 --	description
xfs_repair:	xfsprogs-3.2.1 --	description
xfs_rtcp:	xfsprogs-3.2.1 --	description
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xfwm4-tweaks-settings:	Xfwm4-4.10.1 --	description
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xine:	xine-ui-0.99.9 --	description
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xine-remote:	xine-ui-0.99.9 --	description
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xkill:	Xorg Applications --	description
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xrandr:	Xorg Applications --	description
xrdb:	Xorg Applications --	description
xrefresh:	Xorg Applications --	description
xsane:	XSane-0.999 --	description
xscanimage:	SANE-1.0.24 --	description
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xsetwacom:	Xorg Wacom Driver-0.25.0 --	description
xslt-config:	libxslt-1.1.28 --	description
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Xvnc:	Tigervnc-1.3.1 --	description
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zipinfo:	UnZip-6.0 -- description
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about.jar:	IcedTea-Web-1.5.1 -- description
ant-*.jar:	apache-ant-1.9.4 -- description
ati_drv.so:	Xorg ATI Driver-7.4.0 -- description
cirrus_drv.so:	Xorg Cirrus Driver-1.5.2 -- description
udev.so:	dhcpcd-6.4.3 -- description
evdev_drv.so:	Xorg Evdev Driver-2.9.0 -- description
fbdev_drv.so:	Xorg Fbdev Driver-0.4.4 -- description
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intel_drv.so:	Xorg Intel Driver-2.99.916 -- description
junit-4.11.jar:	JUnit-4.11 -- description
liba52.so:	Liba52-0.7.4 -- description
libaa.{so,a}:	AAlib-1.4rc5 -- description
libabiword-3.0.so:	AbiWord-3.0.0 -- description
libadwaita.so:	gnome-themes-standard-3.12.0 -- description
libagg.so:	agg-2.5 -- description
libaggfontfreetype.so:	agg-2.5 -- description
libaggplatformsdl.so:	agg-2.5 -- description
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libapr-1.so:	Apr-1.5.1 -- description
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libasound.so:	alsa-lib-1.0.28 -- description
libasound_module_pcm_a52.so:	alsa-plugins-1.0.28 -- description
libasound_module_pcm_jack.so:	alsa-plugins-1.0.28 -- description
libasound_module_pcm_oss.so:	alsa-plugins-1.0.28 -- description
libasound_module_pcm_pulse.so:	alsa-plugins-1.0.28 -- description
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libassuan.so:	libassuan-2.1.2 -- description
libatasmart.so:	libatasmart-0.19 -- description
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libatk-bridge-2.0.so:	at-spi2-atk-2.12.1 -- description
libatkmm-1.6.so:	Atkmm-2.22.7 -- description
libatomic_ops.so:	libatomic_ops-7.4.2 -- description
libaudiofile.so:	AudioFile-0.3.6 -- description
libavcodec.so:	FFmpeg-2.3.3 -- description
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libavfilter.so:	FFmpeg-2.3.3 -- description
libavformat.so:	FFmpeg-2.3.3 -- description
libavutil.so:	FFmpeg-2.3.3 -- description
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libbrasero-burn3.so:	Brasero-3.10.0 -- description
libbrasero-media3.so:	Brasero-3.10.0 -- description
libbrasero-utils3.so:	Brasero-3.10.0 -- description
libburn.so:	libburn-1.3.8 -- description
libcacard.so:	qemu-2.1.0 -- description
libcairo.so:	Cairo-1.12.16 -- description
libcairo-gobject.so:	Cairo-1.12.16 -- description
libcairo-script-interpreter.so:	Cairo-1.12.16 -- description
libcairomm-1.0.so:	Cairomm-1.10.0 -- description
libcanberra.so:	libcanberra-0.30 -- description
libcanberra-gtk.so:	libcanberra-0.30 -- description
libcanberra-gtk3.so:	libcanberra-0.30 -- description
libcap.{so,a}:	libcap-2.24 with PAM -- description
libcdda_interface.{so,a}:	CDParanoia-III-10.2 -- description
libcdda_paranoia.{so,a}:	CDParanoia-III-10.2 -- description
libcdt.so:	Graphviz-2.38.0 -- description
libcgraph.so:	Graphviz-2.38.0 -- description
libcheck.so:	Check-0.9.14 -- description

libclutter-gtk-1.0.so:	clutter-gtk-1.4.4 -- description
libcogl.so:	Cogl-1.18.2 -- description
libcogl-gles2.so:	Cogl-1.18.2 -- description
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libcolord.so:	Colord-1.2.3 -- description
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libcrack.so:	CrackLib-2.9.1 -- description
libcroco-0.6.so:	libcroco-0.6.8 -- description
libcrypto.{so,a}:	OpenSSL-1.0.1i -- description
libcups.so:	Cups-1.7.5 -- description
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libcurl.so:	cURL-7.37.1 -- description
libdaemon.so:	libdaemon-0.14 -- description
libdbus-1.so:	D-Bus-1.8.8 -- description
libdbus-glib-1.so:	dbus-glib-0.102 -- description
libdconf.so:	DConf-0.20.0 -- description
libdconf-dbus-1.so:	DConf-0.20.0 -- description
libdevmapper.so:	LVM2-2.02.111 -- description
libdiscid.so:	libdiscid-0.6.1 -- description
libdmx.so:	Xorg Libraries -- description
libdrm.so:	libdrm-2.4.56 -- description
libdrm_intel.so:	libdrm-2.4.56 -- description
libdrm_nouveau.so:	libdrm-2.4.56 -- description
libdrm_radeon.so:	libdrm-2.4.56 -- description
libdv.{so,a}:	Libdv-1.0.0 -- description
libdvdcss.so:	libdvdcss-1.3.0 -- description
libdvdnav.so:	Libdvdnav-5.0.1 -- description
libdvdnavmini.so:	Libdvdnav-5.0.1 -- description
libdvdread.so:	Libdvdread-5.0.0 -- description
libecpg.{so,a}:	PostgreSQL-9.3.5 -- description
libecpg_compat.{so,a}:	PostgreSQL-9.3.5 -- description
libenchant.{so,a}:	enchant-1.6.0 -- description
libepoxy.so:	libepoxy-1.2 -- description
libesmtp.{so,a}:	libESMTP-1.0.6 -- description
libesmtp SASL plugins:	libESMTP-1.0.6 -- description
ebvdev.so:	Libevdev 1.2.2 -- description
libexempi.so:	Exempi-2.2.2 -- description
libexif.so:	libexif-0.6.21 -- description
libexo-1.so:	Exo-0.10.2 -- description
libexpect5.45.so:	Expect-5.45 -- description
libexslt.so:	libxslt-1.1.28 -- description
libfaac.so:	FAAC-1.28 -- description
libfaad.so:	FAAD2-2.7 -- description
libfdk-aac.so:	fdk-aac-0.1.3 -- description
libffi.so:	libffi-3.1 -- description
libFLAC{,++}.so:	FLAC-1.3.0 -- description
libfltk.so:	FLTK-1.3.2 -- description
libfm.so:	libfm-1.2.2.1 -- description
libfm-extra.so:	libfm-extra-1.2.2.1 -- description
libfontconfig.so:	Fontconfig-2.11.1 -- description
libfontenc.so:	Xorg Libraries -- description
libfreetype.so:	FreeType-2.5.3 -- description
libfribidi.so:	FriBidi-0.19.6 -- description
libFS.so:	Xorg Libraries -- description
libfuse.so:	Fuse-2.9.3 -- description
libgailutil-3.so:	GTK+-3.12.2 -- description
libgarcon-1.so:	Garcon-0.3.0 -- description
libgbm.so:	MesaLib-10.2.7 -- description
libgc.so:	GC-7.4.2 -- description
libgccpp.so:	GC-7.4.2 -- description
libgck-1.so:	Gcr-3.12.2 -- description
libgconf-2.so:	GConf-3.2.6 -- description
libgcr-3.so:	Gcr-3.12.2 -- description
libgcrypt.so:	libgcrypt-1.6.2 -- description
libgdk-3.so:	GTK+-3.12.2 -- description
libgdk-x11-2.0.so:	GTK+-2.24.24 -- description
libgdkmm-2.4.so:	Gtkmm-2.24.4 -- description
libgdkmm-3.0.so:	Gtkmm-3.12.0 -- description
libgdk_pixbuf-2.0.so:	gdk-pixbuf-2.30.8 -- description
libgdk_pixbuf_xlib-2.0.so:	gdk-pixbuf-2.30.8 -- description
libgee.so:	libgee-0.6.8 -- description
libgegl-0.2.so:	gegl-0.2.0 -- description
libgeoclue.so:	GeoClue-0.12.0 -- description
libgif.so:	giflib-5.1.0 -- description
libgimp-2.0.so:	Gimp-2.8.14 -- description
libgimpbase-2.0.so:	Gimp-2.8.14 -- description
libgimpcolor-2.0.so:	Gimp-2.8.14 -- description

libgimpui-2.0.so:	Gimp-2.8.14 -- description
libgimpwidgets-2.0.so:	Gimp-2.8.14 -- description
libgiomm-2.4.so:	GLibmm-2.40.0 -- description
libgirepository-1.0.so:	gobject-introspection-1.40.0 -- description
libgjs.so:	Gjs-1.40.1 -- description
libEGL.so:	MesaLib-10.2.7 -- description
libglade-2.0.so:	libglade-2.6.4 -- description
libGLES2.so:	MesaLib-10.2.7 -- description
libGLESv1_CM.so:	MesaLib-10.2.7 -- description
libglibmm-2.4.so:	GLibmm-2.40.0 -- description
libGLU.so:	MesaLib-10.2.7 -- description
libglut.so:	Freeglut-2.8.1 -- description
libgmime-2.6.so:	GMime-2.6.20 -- description
libgnashplugin.so:	gnash-0.8.10 -- description
libgnome-desktop-3.so:	gnome-desktop-3.12.2 -- description
libgnutls.so:	GnuTLS-3.3.7 -- description
libgoffice-0.10.so:	GOffice-0.10.17 -- description
libgpg-error.so:	libgpg-error-1.13 -- description
libgpgme.so:	GPGME-1.5.1 -- description
libgpgme-pthread.so:	GPGME-1.5.1 -- description
libgpm.{so,a}:	GPM-1.20.7 -- description
libgport.a:	PostgreSQL-9.3.5 -- description
libgraphite2.so:	Graphite2-1.2.4 -- description
libgrilo.so:	Grilo-0.2.11 -- description
libgrlnet.so:	Grilo-0.2.11 -- description
libgrlpls.so:	Grilo-0.2.11 -- description
libgs.so:	ghostscript-9.14 -- description
libgsf-1.so:	libgsf-1.14.30 -- description
libgsl.so:	Gsl-1.16 -- description
libgslcblas.so:	Gsl-1.16 -- description
libgssapi_krb5.so:	MIT Kerberos V5-1.12.2 -- description
libgstbase-1.0.so:	GStreamer-1.4.1 -- description
libgstcheck-1.0.so:	GStreamer-1.4.1 -- description
libgstcontroller-1.0.so:	GStreamer-1.4.1 -- description
libgstnet-1.0.so:	GStreamer-1.4.1 -- description
libgstreamer-1.0.so:	GStreamer-1.4.1 -- description
libgtk-3.so:	GTK+-3.12.2 -- description
libgtk-x11-2.0.so:	GTK+-2.24.24 -- description
libgtkmm-2.4.so:	Gtkmm-2.24.4 -- description
libgtkmm-3.0.so:	Gtkmm-3.12.0 -- description
libgtksourceview-2.0.so:	gtksourceview-2.10.5 -- description
libgtksourceview-3.0.so:	gtksourceview-3.12.3 -- description
libgtop-2.0.so:	libgtop-2.30.0 -- description
libgucharmap_2_90.so:	Gucharmap-3.12.1 -- description
libgudev-1.0.so:	Udev Extras (from eudev) -- description
libgusb.so:	libgusb-0.1.6 -- description
libgvc.so:	Graphviz-2.38.0 -- description
libgvfscommon.so:	Gvfs-1.20.3 -- description
libhandle.so:	xfsprogs-3.2.1 -- description
libharfbuzz.so:	Harfbuzz-0.9.35 -- description
libical.{so,a}:	libical-1.0 -- description
libicalss.{so,a}:	libical-1.0 -- description
libicalvcal.{so,a}:	libical-1.0 -- description
libICE.so:	Xorg Libraries -- description
libicedtea-sound.so:	IcedTea-Sound-1.0.1 -- description
libicudata.so:	ICU-53.1 -- description
libicui18n.so:	ICU-53.1 -- description
libicuio.so:	ICU-53.1 -- description
libicule.so:	ICU-53.1 -- description
libiculx.so:	ICU-53.1 -- description
libicutest.so:	ICU-53.1 -- description
libicutu.so:	ICU-53.1 -- description
libicuuc.so:	ICU-53.1 -- description
libidn.so:	libidn-1.29 -- description
libijs.so:	IJS-0.35 -- description
libImlib2.so:	Imlib2-1.4.6 -- description
libinproctrace.so:	GDB-7.8 -- description
libisoburn.so:	libisoburn-1.3.8 -- description
libisofs.so:	libisofs-1.3.8 -- description
libiw.so:	Wireless Tools-29 -- description
libjasper.so:	JasPer-1.900.1 -- description
libjavascriptcoregtk-1.0.so:	WebKitGTK+-2.4.5 -- description
libjavascriptcoregtk-3.0.so:	WebKitGTK+-2.4.5 -- description
libjpeg.so:	libjpeg-turbo-1.3.1 -- description
libjson.so:	JSON-C-0.12 -- description
libjson-c.so:	JSON-C-0.12 -- description
libjson-glib-1.0.so:	JSON-GLib-1.0.2 -- description

libkeyutils.so:	keyutils-1.5.9 -- description	
libkms.so:	libdrm-2.4.56 -- description	
libkpathsea.so:	texlive-20140525 -- description	
libkrad.so:	MIT Kerberos V5-1.12.2 -- description	
libkrb5.so:	MIT Kerberos V5-1.12.2 -- description	
libksba.{so,a}:	Libksba-1.3.0 -- description	
liblber.so:	OpenLDAP-2.4.39 -- description	
liblcms.so:	Little CMS-1.19 -- description	
liblcms2.so:	Little CMS-2.6 -- description	
libldap.so:	OpenLDAP-2.4.39 -- description	
libldap_r.so:	OpenLDAP-2.4.39 -- description	
libldns.so:	ldns-1.6.17 -- description	
liblinear.so:	liblinear-1.94 -- description	
libLLVM-3.5.0.so:	LLVM-3.5.0 -- description	
liblua.so:	Lua-5.2.3 -- description	
liblzo2.so:	LZO-2.08 -- description	
libmad.so:	libmad-0.15.1b -- description	
libmenu-cache.so:	menu-cache-0.7.0 -- description	
libmng.so:	libmng-2.0.2 -- description	
libmozjs-17.0.so:	JS-17.0.0 -- description	
libmozjs-24.so:	JS-24.2.0 -- description	
libmp3lame.so:	LAME-3.99.5 -- description	
libmp4v2.so:	FAAC-1.28 -- description	
libmpeg2.{so,a}:	libmpeg2-0.5.1 -- description	
libmpeg2convert.{so,a}:	libmpeg2-0.5.1 -- description	
libmpg123.so:	Mpg123-1.20.1 -- description	
libmtdev.so:	mtdev-1.1.5 -- description	
libmusicbrainz.{so,a}:	libmusicbrainz-2.1.5 -- description	
libmusicbrainz5.so:	libmusicbrainz-5.0.1 -- description	
libnautilus-extension.so:	Nautilus-3.12.2 -- description	
libneon.so:	neon-0.30.0 -- description	
libnetapi.so:	Samba-4.1.11 -- description	
libnice.so:	libnice-0.1.7 -- description	
libnl*-3.so:	libnl-3.2.25 -- description	
libnm-glib.so:	NetworkManager-0.9.10.0 -- description	
libnm-glib-vpn.so:	NetworkManager-0.9.10.0 -- description	
libnm-gtk.so:	network-manager-applet-0.9.10.0 -- description	
libnm-util.so:	NetworkManager-0.9.10.0 -- description	
libnotify.so:	libnotify-0.7.6 -- description	
libnspr4.so:	NSPR-4.10.7 -- description	
libnss_winbind.so:	Samba-4.1.11 -- description	
libnss_wins.so:	Samba-4.1.11 -- description	
libntfs-3g.so:	ntfs-3g-2014.2.15 -- description	
libobrender.so:	openbox-3.5.2 -- description	
libobt.so:	openbox-3.5.2 -- description	
libogg.so:	libogg-1.3.2 -- description	
libopal.so:	Opal-3.10.10 -- description	
libopenobex.so:	OpenOBEX-1.7.1 -- description	
libOpenVG.so:	MesaLib-10.2.7 -- description	
libopus.so:	Opus-1.1 -- description	
libOSMesa.so:	MesaLib-10.2.7 -- description	
libosp.so:	OpenSP-1.5.2 -- description	
libp11-kit.so:	p11-kit-0.20.6 -- description	
libpam.so:	Linux-PAM-1.1.8 -- description	
libpango-1.0.so:	Pango-1.36.7 -- description	
libpangomm-1.4.so:	Pangomm-2.34.0 -- description	
libpaper.so:	libpaper-1.1.24+nmu3 -- description	
libparted.so:	parted-3.2 -- description	
libpathplan.so:	Graphviz-2.38.0 -- description	
pcap-config:	libpcap-1.6.2 -- description	
libpci.so:	pciutils-3.2.1 -- description	
libpciaccess.so:	Xorg Libraries -- description	
libpeas-1.0.so:	libpeas-1.10.1 -- description	
libpeas-gtk-1.0.so:	libpeas-1.10.1 -- description	
libpgtypes.{so,a}:	PostgreSQL-9.3.5 -- description	
libpixbufloader-svg.so:	librsvg-2.40.3 -- description	
libpixman-1.so:	Pixman-0.32.6 -- description	
libplc4.so:	NSPR-4.10.7 -- description	
libplds4.so:	NSPR-4.10.7 -- description	
libpng.so:	libpng-1.6.13 -- description	
libpolkit-agent-1.so:	Polkit-0.112 -- description	
libpolkit-gobject-1.so:	Polkit-0.112 -- description	
libpoppler.so:	Poppler-0.26.4 -- description	
libpoppler-cpp.so:	Poppler-0.26.4 -- description	
libpoppler-glib.so:	Poppler-0.26.4 -- description	
libpoppler-qt4.so:	Poppler-0.26.4 -- description	
libpoppler-qt5.so:	Poppler-0.26.4 -- description	

libpt.so:	PtLib-2.10.10 -- description
libptexenc.so:	texlive-20140525 -- description
libpth.so:	Pth-2.0.7 -- description
libqca.so:	Qca-2.0.3 -- description
libqjson.so:	QJson-0.8.1 -- description
libqpdf.so:	Qpdf-5.1.2 -- description
libquicktime.so:	libquicktime-1.2.4 -- description
libraptor2.so:	Raptor-2.0.14 -- description
librarian.{so,a}:	Rarian-0.8.1 -- description
librep.so:	Librep-0.92.3 -- description
librsvg-2.so:	librsvg-2.40.3 -- description
libruby.so:	Ruby-2.1.2 -- description
libsane.so:	SANE-1.0.24 -- description
libsane-*.so:	SANE-1.0.24 -- description
libsasl2.so:	Cyrus SASL-2.1.26 -- description
libsbc.so:	SBC-1.2 -- description
libSDL.so:	SDL-1.2.15 -- description
libsecret-1.so:	libsecret-0.18 -- description
libsensors.so:	lm_sensors-3.3.5 -- description
libserf-1.so:	Serf-1.3.7 -- description
libsgutils2.so:	sg3_utils-1.39 -- description
libsigc-2.0.so:	libsigc++-2.3.2 -- description
libsigsegv.so:	libsigsegv-2.10 -- description
libSM.so:	Xorg Libraries -- description
libsmbclient.so:	Samba-4.1.11 -- description
libsmbsharemodes.so:	Samba-4.1.11 -- description
libsndfile.so:	libsndfile-1.0.25 -- description
libSoundTouch.so:	SoundTouch-1.8.0 -- description
libsoup-2.4.so:	libsoup-2.46.0 -- description
libsoup-gnome-2.4.so:	libsoup-2.46.0 -- description
libsp.so:	OpenSP-1.5.2 -- description
libspeex.so:	Speex-1.2rc1 -- description
libspeexdsp.so:	Speex-1.2rc1 -- description
libsqlite3.so:	SQLite-3.8.6 -- description
libssl.{so,a}:	OpenSSL-1.0.1i -- description
libstartup-notification-1.so:	startup-notification-0.12 -- description
libstunnel.so:	stunnel-5.03 -- description
libsvn_*-1.so:	Subversion-1.8.10 -- description
libswresample.so:	FFmpeg-2.3.3 -- description
libswscale.so:	FFmpeg-2.3.3 -- description
libtalloc.so:	Talloc-2.1.1 -- description
libtasn1.so:	libtasn1-4.1 -- description
libtcl8.6.so:	Tcl-8.6.2 -- description
libtheora*.so:	libtheora-1.1.1 -- description
libthunarx-2.so:	Thunar-1.6.3 -- description
libtidy.so:	HTML Tidy-cvs_20101110 -- description
libtiff.so:	LibTIFF-4.0.3 -- description
libtiffxx.so:	LibTIFF-4.0.3 -- description
libtirpc.so:	libtirpc-0.2.5 -- description
libtk8.6.so:	Tk-8.6.2 -- description
libtotem.so:	Totem-3.12.2 -- description
libtotem-plparser.so:	totem-pl-parser-3.10.2 -- description
libtotem-plparser-mini.so:	totem-pl-parser-3.10.2 -- description
libtumbler-1.so:	Tumbler-0.1.30 -- description
libudisks2.so:	UDisks-2.1.3 -- description
libulockmgr.so:	Fuse-2.9.3 -- description
libunbound.so:	Unbound-1.4.22 -- description
libunique-1.0.so:	libunique-1.1.6 -- description
libunistring.{a,so}:	libunistring-0.9.4 -- description
libupower-glib.so:	UPower-0.9.23 -- description
libusb-1.0.so:	libusb-1.0.19 -- description
libusb.so:	libusb-compat-0.1.5 -- description
libva.so:	libva-1.3.1 -- description
libvala-0.24.so:	Vala-0.24.0 -- description
libvdpau.so:	libvdpau-0.8 -- description
libvdpau.so:	libvdpau-va-gl-0.3.4 -- description
libvorbis.so:	libvorbis-1.3.4 -- description
libvpx.so:	libvpx-v1.3.0 -- description
libvte.so:	Vte-0.28.2 -- description
libvte2_90.so:	VTE-0.36.3 -- description
libwbclient.so:	Samba-4.1.11 -- description
libwebkit2gtk-3.0.so:	WebKitGTK+-2.4.5 -- description
libwebkitgtk-1.0.so:	WebKitGTK+-2.4.5 -- description
libwebkitgtk-3.0.so:	WebKitGTK+-2.4.5 -- description
libwebp.so:	libwebp-0.4.1 -- description
libwireshark.so:	Wireshark-1.12.1 -- description
libwiretap.so:	Wireshark-1.12.1 -- description

libx264.so:	x264-20140818-2245 -- description
libxatracker.so:	MesaLib-10.2.7 -- description
libXau.so:	libXau-1.0.8 -- description
libXaw.so:	Xorg Libraries -- description
libXaw6.so:	Xorg Libraries -- description
libXaw7.so:	Xorg Libraries -- description
libxcb.so:	libxcb-1.11 -- description
libxcb-ewmh.so:	xcb-util-wm-0.4.1 -- description
libxcb-icccm.so:	xcb-util-wm-0.4.1 -- description
libxcb-image.so:	xcb-util-image-0.3.9 -- description
libxcb-keysyms.so:	xcb-util-keysyms-0.3.9 -- description
libxcb-render-util.so:	xcb-util-renderutil-0.3.9 -- description
libxcb-util.so:	xcb-util-0.3.9 -- description
libXcomposite.so:	Xorg Libraries -- description
libXcursor.so:	Xorg Libraries -- description
libXdamage.so:	Xorg Libraries -- description
libXdmcp.so:	libXdmcp-1.1.1 -- description
libxdot.so:	Graphviz-2.38.0 -- description
libXext.so:	Xorg Libraries -- description
libxfce.so:	gtk-xfce-engine-3.0.1 -- description
libxfce4kbd-private-2.so:	libxfce4ui-4.10.0 -- description
libxfce4panel-1.0.so:	xfce4-panel-4.10.1 -- description
libxfce4ui-1.so:	libxfce4ui-4.10.0 -- description
libxfce4util.so:	libxfce4util-4.10.1 -- description
libxfcegui4.so:	libxfcegui4-4.10.0 -- description
libxfconf.so:	Xfconf-4.10.0 -- description
libXfixes.so:	Xorg Libraries -- description
libXfont.so:	Xorg Libraries -- description
libxfsm-4.6.so:	xfce4-session-4.10.1 -- description
libXft.so:	Xorg Libraries -- description
libXi.so:	Xorg Libraries -- description
libxine.so:	xine-lib-1.2.6 -- description
libXinerama.so:	Xorg Libraries -- description
libxkbfile.so:	Xorg Libraries -- description
libxklavier.so:	libxklavier-5.3 -- description
libxml2.so:	libxml2-2.9.1 -- description
libXmu.so:	Xorg Libraries -- description
libXmuu.so:	Xorg Libraries -- description
libXpm.so:	Xorg Libraries -- description
libXrandr.so:	Xorg Libraries -- description
libXrender.so:	Xorg Libraries -- description
libXRes.so:	Xorg Libraries -- description
libxshmfence.so:	Xorg Libraries -- description
libxslt.so:	libxslt-1.1.28 -- description
libXss.so:	Xorg Libraries -- description
libXt.so:	Xorg Libraries -- description
libXtst.so:	Xorg Libraries -- description
libXv.so:	Xorg Libraries -- description
libxvidcore.so:	XviD-1.3.3 -- description
libXvMC.so:	Xorg Libraries -- description
libXvMCW.so:	Xorg Libraries -- description
libXxf86dga.so:	Xorg Libraries -- description
libXxf86vm.so:	Xorg Libraries -- description
libyasm.a:	yasm-1.3.0 -- description
libyelp.so:	Yelp-3.12.0 -- description
libzeitgeist-1.0.so:	libzeitgeist-0.3.18 -- description
Lisp bindings:	Rep-gtk-0.90.8.1 -- description
mach64_drv.so:	Xorg Mach64 Driver-6.9.4 -- description
mga_drv.so:	Xorg MGA Driver-1.6.3 -- description
mod_authz_svn.so:	Subversion-1.8.10 -- description
mod_dnssd.so:	mod_dnssd-0.6 -- description
netx.jar:	IcedTea-Web-1.5.1 -- description
nouveau_drv.so:	Xorg Nouveau Driver-1.0.11 -- description
openchrome_drv.so:	Xorg OpenChrome Driver-0.3.3 -- description
p11-kit-proxy.so:	p11-kit-0.20.6 -- description
plugin.jar:	IcedTea-Web-1.5.1 -- description
r128_drv.so:	Xorg R128 Driver-6.9.2 -- description
radeon_drv.so:	Xorg ATI Driver-7.4.0 -- description
savage_drv.so:	Xorg Savage Driver-2.3.7 -- description
sis_drv.so:	Xorg SiS Driver-0.10.7 -- description
synaptics_drv.so:	Xorg Synaptics Driver-1.8.0 -- description
tdfx_drv.so:	Xorg 3Dfx Driver-1.4.5 -- description
vesa_drv.so:	Xorg VESA Driver-2.3.3 -- description
vmmouse_drv.so:	Xorg VMMouse Driver-13.0.0 -- description
vmware_drv.so:	Xorg VMware Driver-13.0.2 -- description
wacom_drv.so:	Xorg Wacom Driver-0.25.0 -- description

bluez:	BlueZ-5.23 -- description
Bridge Utilities:	bridge-utils-1.5 -- description
Capturing network packets:	Wireshark-1.12.1 -- description
cifs-utils:	cifs-utils-6.4 -- description
cups:	Cups-1.7.5 -- description
DHCP:	DHCP-4.3.1 -- description
escputil for usb printers:	Gutenprint-5.2.10 -- description
fuse:	Fuse-2.9.3 -- description
Iptables:	Iptables-1.4.21 -- description
JFS Utilities:	jfsutils-1.1.15 -- description
libevdev:	Libevdev 1.2.2 -- description
lm_sensors:	lm_sensors-3.3.5 -- description
lvm2:	LVM2-2.02.111 -- description
mdadm:	mdadm-3.3.2 -- description
NFS Utilities:	NFS-Utils-1.3.0 -- description
ntfs-3g:	ntfs-3g-2014.2.15 -- description
qemu:	qemu-2.1.0 -- description
Reiserfs Programs:	reiserfsprogs-3.6.24 -- description
rox-filer:	Rox-Filer-2.11 -- description
Scanning devices:	SANE-1.0.24 -- description
Support for Host-side USB:	libusb-1.0.19 -- description
Wireless devices:	Wireless Tools-29 -- description
wpa_supplicant:	wpa_supplicant-2.2 -- description
XFS Programs:	xfsprogs-3.2.1 -- description
xorg-ati-driver:	Xorg ATI Driver-7.4.0 -- description
xorg-ati-firmware:	Xorg ATI Driver-7.4.0 -- description
xorg-cirrus-driver:	Xorg Cirrus Driver-1.5.2 -- description
xorg-intel-driver:	Xorg Intel Driver-2.99.916 -- description
xorg-mga-driver:	Xorg MGA Driver-1.6.3 -- description
xorg-nouveau-driver:	Xorg Nouveau Driver-1.0.11 -- description
xorg-openchrome-driver:	Xorg OpenChrome Driver-0.3.3 -- description
xorg-r128-driver:	Xorg R128 Driver-6.9.2 -- description
xorg-savage-driver:	Xorg Savage Driver-2.3.7 -- description
xorg-sis-driver:	Xorg SiS Driver-0.10.7 -- description
xorg-tdfx-driver:	Xorg 3Dfx Driver-1.4.5 -- description
xorg-vesa-driver:	Xorg VESA Driver-2.3.3 -- description
xorg-vmware-driver:	Xorg VMware Driver-13.0.2 -- description
xorg-wacom-driver:	Xorg Wacom Driver-0.25.0 -- description

Configuration Files

$exp_library/expect.rc:	Expect-5.45 -- description
$PGDATA/pg_hba_conf:	PostgreSQL-9.3.5 -- description
$PGDATA/pg_indent.con:	PostgreSQL-9.3.5 -- description
$PGDATA/postgresql.conf:	PostgreSQL-9.3.5 -- description
~/.AbiSuite/templates/normal.awt:	AbiWord-3.0.0 -- description
~/.ant/ant.conf:	apache-ant-1.9.4 -- description
~/.antrc:	apache-ant-1.9.4 -- description
~/.asoundrc:	alsa-lib-1.0.28 -- description
~/.config/openbox/autostart:	openbox-3.5.2 -- description
~/.bashrc:	The Bash Shell Startup Files -- description
~/.bash_logout:	The Bash Shell Startup Files -- description
~/.bash_profile:	The Bash Shell Startup Files -- description
~/.config/pulse:	PulseAudio-5.0 -- description
~/.config/.mc/*:	MC-4.8.13 -- description
~/.cshdirs:	Tcsh-6.18.01 -- description
~/.cshrc:	Tcsh-6.18.01 -- description
~/.cvspass:	CVS-1.11.23 -- description
~/.cvsrc:	CVS-1.11.23 -- description
~/.cvswrappers:	CVS-1.11.23 -- description
~/.dircolors:	The Bash Shell Startup Files -- description
~/.enchant:	enchant-1.6.0 -- description
~/.expect.rc:	Expect-5.45 -- description
~/.fetchmailrc:	Fetchmail-6.3.26 -- description
~/.ffmpeg/ffserver-config:	FFmpeg-2.3.3 -- description
~/.fluxbox/init:	Fluxbox-1.3.5 -- description
~/.fluxbox/keys:	Fluxbox-1.3.5 -- description
~/.fluxbox/menu:	Fluxbox-1.3.5 -- description
~/.fonts:	Fontconfig-2.11.1 -- description
~/.foprc:	fop-1.1 -- description
~/.gimp-2.0/gimprc:	Gimp-2.8.14 -- description
~/.gitconfig:	Git-2.1.0 -- description
~/.gpm-root:	GPM-1.20.7 -- description
~/.gtkrc-02:	Pidgin-2.10.9 -- description
~/.gtkrc-2.0:	GTK+-2.24.24 -- description
~/.history:	Tcsh-6.18.01 -- description

~/.icewm/toolbar:	IceWM-1.3.8 -- description
~/.icewm/winoptions:	IceWM-1.3.8 -- description
~/.joerc:	JOE-3.7 -- description
~/.libao:	Libao-1.2.0 -- description
	vorbis-tools-1.4.0 -- description
~/.links/*:	Links-2.8 -- description
~/.login:	Tcsh-6.18.01 -- description
~/.logout:	Tcsh-6.18.01 -- description
~/.mailrc:	mailx-12.4 -- description
~/.config/openbox/menu.xml:	openbox-3.5.2 -- description
~/.mime.types:	Mutt-1.5.23 -- description
~/.mplayer/*:	MPlayer-1.1.1 -- description
~/.muttrc:	Mutt-1.5.23 -- description
~/.my.cnf:	MariaDB-10.0.13 -- description
~/.nailrc:	mailx-12.4 -- description
~/.nanorc:	Nano-2.3.6 -- description
~/.ncftp/*:	NcFTP-3.2.5 -- description
~/.ogg123rc:	vorbis-tools-1.4.0 -- description
~/.pangorc:	Pango-1.36.7 -- description
~/.pinerc:	Re-alpine-2.03 -- description
~/.procmailrc:	Procmail-3.22 -- description
~/.profile:	Dash-0.5.7 -- description
~/.purple/*:	Pidgin-2.10.9 -- description
~/.config/openbox/rc.xml:	openbox-3.5.2 -- description
~/.screenrc:	Screen-4.2.1 -- description
~/.slshrc:	S-Lang-2.2.4 -- description
~/.ssh/*:	OpenSSH-6.6p1 -- description
~/.subversion/config:	Subversion-1.8.10 -- description
~/.tcshrc:	Tcsh-6.18.01 -- description
~/.vimrc:	The /etc/vimrc and ~/.vimrc FilesVim-7.4 -- description
~/.w3m/*:	W3m-0.5.3 -- description
~/.wgetrc:	Wget-1.15 -- description
~/.wireshark/*:	Wireshark-1.12.1 -- description
~/.xine/config:	xine-ui-0.99.9 -- description
~/.xinitrc:	Fluxbox-1.3.5 -- description
	IceWM-1.3.8 -- description
	sawfish-1.10 -- description
~/.xscreensaver:	XScreenSaver-5.30 -- description
/etc/a2ps/a2ps-site.cfg:	a2ps-4.14 -- description
/etc/a2ps/a2ps.cfg:	a2ps-4.14 -- description
/etc/aliases:	Exim-4.84 -- description
	Postfix-2.11.1 -- description
/etc/ant/ant.conf:	apache-ant-1.9.4 -- description
/etc/asound.conf:	alsa-lib-1.0.28 -- description
/etc/at.allow:	at-3.1.15 -- description
/etc/at.deny:	at-3.1.15 -- description
/etc/auto.master:	autofs-5.1.0 -- description
/etc/auto.misc:	autofs-5.1.0 -- description
/etc/auto.net:	autofs-5.1.0 -- description
/etc/bashrc:	The Bash Shell Startup Files -- description
/etc/bluetooth/main.conf:	BlueZ-5.23 -- description
/etc/csh.cshrc:	Tcsh-6.18.01 -- description
/etc/csh.login:	Tcsh-6.18.01 -- description
/etc/csh.logout:	Tcsh-6.18.01 -- description
/etc/cups/*:	Cups-1.7.5 -- description
/etc/dbus-1/session.conf:	D-Bus-1.8.8 -- description
/etc/dbus-1/system.d/*:	D-Bus-1.8.8 -- description
/etc/dbus-1/system.conf:	D-Bus-1.8.8 -- description
/etc/default/useradd:	Configuring for Adding Users
/etc/dhcp/dhclient.conf:	DHCP-4.3.1 -- description
/etc/dhcp/dhcpd.conf:	DHCP-4.3.1 -- description
/etc/dhcpcd/dhcpcd.conf:	dhcpcd-6.4.3 -- description
/etc/dircolors:	The Bash Shell Startup Files -- description
/etc/dovecot/conf.d/*:	Dovecot-2.2.13 -- description
/etc/dovecot/dovecot.conf:	Dovecot-2.2.13 -- description
/etc/dovecot/local.conf:	Dovecot-2.2.13 -- description
/etc/exim.conf:	Exim-4.84 -- description
/etc/exportfs:	NFS-Utils-1.3.0 -- description
/etc/fcron.allow:	Fcron-3.2.0 -- description
/etc/fcron.conf:	Fcron-3.2.0 -- description
/etc/fcron.deny:	Fcron-3.2.0 -- description
/etc/ffserver.conf:	FFmpeg-2.3.3 -- description
/etc/fonts/*:	Fontconfig-2.11.1 -- description
/etc/fonts/conf.d/*:	Fontconfig-2.11.1 -- description
/etc/fstab:	NFS-Utils-1.3.0 -- description
/etc/gimp/2.0/*:	Gimp-2.8.14 -- description
/etc/gitconfig:	Git-2.1.0 -- description

/etc/httpd/httpd.conf:	Apache-2.4.10 -- description
/etc/issue:	Customizing your Logon with /etc/issue
/etc/joe/jmacsrc:	JOE-3.7 -- description
/etc/joe/joerc:	JOE-3.7 -- description
/etc/joe/jpicorc:	JOE-3.7 -- description
/etc/joe/jstarrc:	JOE-3.7 -- description
/etc/joe/rjoerc:	JOE-3.7 -- description
/etc/krb5.conf:	MIT Kerberos V5-1.12.2 -- description
/etc/ld.so.conf:	Qt-4.8.6 -- description
	Qt-5.3.1 -- description
	KDE Pre-installation Configuration
/etc/libao.conf:	Libao-1.2.0 -- description
	vorbis-tools-1.4.0 -- description
/etc/login.defs:	About System Users and GroupsShadow-4.2.1 -- description
	Shadow-4.2.1 -- description
/etc/lxdm/lxdm.conf:	LXDM-0.5.0 -- description
/etc/lynx/lynx.cfg:	Lynx-2.8.8rel.2 -- description
/etc/mail/*:	sendmail-8.14.9 -- description
/etc/mercurial/hgrc:	Mercurial-3.1.1 -- description
/etc/mime.types:	Mutt-1.5.23 -- description
/etc/mplayer/*:	MPlayer-1.1.1 -- description
/etc/Muttrc:	Mutt-1.5.23 -- description
/etc/mysql/my.cnf:	MariaDB-10.0.13 -- description
/etc/nail.rc:	mailx-12.4 -- description
/etc/named.conf:	BIND-9.10.0-P2 -- description
/etc/namedb/pz/127.0.0.0:	BIND-9.10.0-P2 -- description
/etc/namedb/root.hints:	BIND-9.10.0-P2 -- description
/etc/nanorc:	Nano-2.3.6 -- description
/etc/ncftp.*:	NcFTP-3.2.5 -- description
/etc/NetworkManager/NetworkManager.conf:	NetworkManager-0.9.10.0 -- description
/etc/ntp.conf:	ntp-4.2.6p5 -- description
/etc/openldap/*:	OpenLDAP-2.4.39 -- description
/etc/openldap/ldap.conf:	OpenLDAP-2.4.39 -- description
/etc/openldap/slapd.conf:	OpenLDAP-2.4.39 -- description
/etc/pam.conf:	Shadow-4.2.1 -- description
	Fcron-3.2.0 -- description
/etc/pam.d/*:	Linux-PAM-1.1.8 -- description
	Shadow-4.2.1 -- description
	Fcron-3.2.0 -- description
/etc/pango/pangorc:	Pango-1.36.7 -- description
/etc/passwd:	About System Users and Groups
/etc/xdg/openbox/autostart:	openbox-3.5.2 -- description
/etc/sensors3.conf:	lm_sensors-3.3.5 -- description
/etc/xdg/openbox/menu.xml:	openbox-3.5.2 -- description
/etc/xdg/openbox/rc.xml:	openbox-3.5.2 -- description
/etc/gtk-3.0/settings.ini:	GTK+-3.12.2 -- description
/etc/pear.conf:	PHP-5.6.0 -- description
/etc/php-fpm.conf:	PHP-5.6.0 -- description
/etc/php.ini:	PHP-5.6.0 -- description
/etc/postfix/*:	Postfix-2.11.1 -- description
/etc/procmailrc:	Procmail-3.22 -- description
/etc/profile:	The Bash Shell Startup Files -- description
	Dash-0.5.7 -- description
/etc/profile.d:	The Bash Shell Startup Files -- description
/etc/profile.d/dircolors.sh:	The Bash Shell Startup Files -- description
/etc/profile.d/extrapaths.sh:	The Bash Shell Startup Files -- description
/etc/profile.d/i18n.sh:	The Bash Shell Startup Files -- description
/etc/profile.d/readline.sh:	The Bash Shell Startup Files -- description
/etc/profile.d/umask.sh:	The Bash Shell Startup Files -- description
/etc/proftpd.conf:	ProFTPD-1.3.5 -- description
/etc/pulse/client.conf:	PulseAudio-5.0 -- description
/etc/pulse/daemon.conf:	PulseAudio-5.0 -- description
/etc/pulse/default.pa:	PulseAudio-5.0 -- description
/etc/request-key.conf:	keyutils-1.5.9 -- description
/etc/request-key.d/*:	keyutils-1.5.9 -- description
/etc/resolv.conf:	dhcpcd-6.4.3 -- description
	BIND-9.10.0-P2 -- description
/etc/rndc.conf:	BIND-9.10.0-P2 -- description
/etc/rsyncd.conf:	rsync-3.1.1 -- description
/etc/samba/smb.conf:	Samba-4.1.11 -- description
/etc/sane.d/*.conf:	SANE-1.0.24 -- description
/etc/saslauthd.conf:	Cyrus SASL-2.1.26 -- description
/etc/screenrc:	Screen-4.2.1 -- description
/etc/security/*:	Linux-PAM-1.1.8 -- description
	Shadow-4.2.1 -- description
/etc/security/access.conf:	Shadow-4.2.1 -- description
/etc/security/limits.conf:	Shadow-4.2.1 -- description

/etc/skel/*:	Configuring for Adding Users
/etc/slsh.rc:	S-Lang-2.2.4 -- description
/etc/ssh/sshd_config:	OpenSSH-6.6p1 -- description
/etc/ssh/ssh_config:	OpenSSH-6.6p1 -- description
/etc/ssl/openssl.cnf:	OpenSSL-1.0.1i -- description
/etc/stunnel/stunnel.conf:	stunnel-5.03 -- description
/etc/subversion/config:	Subversion-1.8.10 -- description
/etc/sudoers:	Sudo-1.8.10p3 -- description
/etc/sysconfig/ifconfig.eth0:	DHCP-4.3.1 -- description
/etc/sysconfig/autofs.conf:	autofs-5.1.0 -- description
/etc/sysconfig/ifconfig.eth0 (dhcpcd):	dhcpcd-6.4.3 -- description
	dhcpcd-6.4.3 -- description
/etc/sysconfig/mouse:	GPM-1.20.7 -- description
/etc/sysconfig/nfs-server:	NFS-Utils-1.3.0 -- description
/etc/sysconfig/sysstat:	Sysstat-11.1.1 -- description
/etc/sysconfig/sysstat.ioconf:	Sysstat-11.1.1 -- description
/etc/sysconfig/wpa_supplicant-*.conf:	wpa_supplicant-2.2 -- description
/etc/syslog.conf:	Fcron-3.2.0 -- description
/etc/tripwire/*:	Tripwire-2.4.2.2 -- description
/etc/udev/rules.d:	About Devices
/etc/unbound/unbound.conf:	Unbound-1.4.22 -- description
/etc/unixODBC/*:	unixODBC-2.3.2 -- description
/etc/vimrc:	The /etc/vimrc and ~/.vimrc FilesVim-7.4 -- description
/etc/vsftpd.conf:	vsftpd-3.0.2 -- description
/etc/w3m/*:	W3m-0.5.3 -- description
/etc/wgetrc:	Wget-1.15 -- description
/etc/wireshark.conf:	Wireshark-1.12.1 -- description
/etc/X11/app-defaults/XScreenSaver:	XScreenSaver-5.30 -- description
/etc/xinetd.conf:	xinetd-2.3.15 -- description
/etc/xinetd.d/*:	xinetd-2.3.15 -- description
/etc/xinetd.d/chargen:	xinetd-2.3.15 -- description
/etc/xinetd.d/comsat:	xinetd-2.3.15 -- description
/etc/xinetd.d/daytime:	xinetd-2.3.15 -- description
/etc/xinetd.d/echo:	xinetd-2.3.15 -- description
/etc/xinetd.d/exec:	xinetd-2.3.15 -- description
/etc/xinetd.d/finger:	xinetd-2.3.15 -- description
/etc/xinetd.d/ftp:	xinetd-2.3.15 -- description
/etc/xinetd.d/irc:	xinetd-2.3.15 -- description
/etc/xinetd.d/login:	xinetd-2.3.15 -- description
/etc/xinetd.d/netstat:	xinetd-2.3.15 -- description
/etc/xinetd.d/ntalk:	xinetd-2.3.15 -- description
/etc/xinetd.d/rquotad:	xinetd-2.3.15 -- description
/etc/xinetd.d/rstatd:	xinetd-2.3.15 -- description
/etc/xinetd.d/ruserd:	xinetd-2.3.15 -- description
/etc/xinetd.d/shell:	xinetd-2.3.15 -- description
/etc/xinetd.d/sprayd:	xinetd-2.3.15 -- description
/etc/xinetd.d/systat:	xinetd-2.3.15 -- description
/etc/xinetd.d/talk:	xinetd-2.3.15 -- description
/etc/xinetd.d/telnet:	xinetd-2.3.15 -- description
/etc/xinetd.d/tftp:	xinetd-2.3.15 -- description
/etc/xinetd.d/time:	xinetd-2.3.15 -- description
/etc/xinetd.d/walld:	xinetd-2.3.15 -- description
/etc/xml/catalog:	docbook-xml-4.5 -- description
	docbook-xsl-1.78.1 -- description
/etc/xml/docbook:	docbook-xml-4.5 -- description
/etc/zsh/zlogin:	zsh-5.0.6 -- description
/etc/zsh/zlogout:	zsh-5.0.6 -- description
/etc/zsh/zprofile:	zsh-5.0.6 -- description
/etc/zsh/zshenv:	zsh-5.0.6 -- description
/etc/zsh/zshrc:	zsh-5.0.6 -- description
${JAVA_HOME}/jre/lib/sound.properties:	IcedTea-Sound-1.0.1 -- description
/usr/share/enchant/enchant.ordering:	enchant-1.6.0 -- description
/usr/share/fontconfig/conf.avail/*:	Fontconfig-2.11.1 -- description
/usr/share/fonts:	Fontconfig-2.11.1 -- description
/usr/share/graphviz/config:	Graphviz-2.38.0 -- description
/usr/share/gtk-2.0/gtkrc:	GTK+-2.24.24 -- description
/var/lib/alsa/asound.state:	alsa-utils-1.0.28 -- description
/var/lib/krb5kdc/kdc.conf:	MIT Kerberos V5-1.12.2 -- description

Bootscripts

General Information:	BLFS Boot Scripts
acpid:	acpid-2.0.23 -- description
alsa:	alsa-utils-1.0.28 -- description
apache:	Apache-2.4.10 -- description
at:	at-3.1.15 -- description

bridge-utils:	bridge-utils-1.5 -- description
cups:	Cups-1.7.5 -- description
dbus:	D-Bus-1.8.8 -- description
dhclient (service script):	DHCP-4.3.1 -- description
dhcpcd (service script):	dhcpcd-6.4.3 -- description
dhcpd:	DHCP-4.3.1 -- description
dovecot:	Dovecot-2.2.13 -- description
exim:	Exim-4.84 -- description
fcron:	Fcron-3.2.0 -- description
gpm:	GPM-1.20.7 -- description
haveged:	Haveged-1.9.1 -- description
iptables:	Iptables-1.4.21 -- description
krb5:	MIT Kerberos V5-1.12.2 -- description
lxdm:	LXDM-0.5.0 -- description
mysql:	MariaDB-10.0.13 -- description
netfs:	NFS-Utils-1.3.0 -- description
	Configuring for Network Filesystems -- description
NetworkManager:	NetworkManager-0.9.10.0 -- description
nfs-client:	NFS-Utils-1.3.0 -- description
nfs-server:	NFS-Utils-1.3.0 -- description
ntp:	ntp-4.2.6p5 -- description
php:	PHP-5.6.0 -- description
postfix:	Postfix-2.11.1 -- description
postgresql:	PostgreSQL-9.3.5 -- description
proftpd:	ProFTPD-1.3.5 -- description
random:	Random Number Generation
rpcbind:	rpcbind-0.2.1 -- description
samba:	Samba-4.1.11 -- description
saslauthd:	Cyrus SASL-2.1.26 -- description
sendmail:	sendmail-8.14.9 -- description
slapd:	OpenLDAP-2.4.39 -- description
sshd:	OpenSSH-6.6p1 -- description
stunnel:	stunnel-5.03 -- description
svn:	Running a Subversion Server -- description
sysstat:	Sysstat-11.1.1 -- description
unbound:	Unbound-1.4.22 -- description
wicd (bootscript):	Wicd-1.7.2.4 -- description
winbind:	Samba-4.1.11 -- description
wpa:	wpa_supplicant-2.2 -- description
xinetd:	xinetd-2.3.15 -- description
xnmap:	Nmap-6.47 -- description
zenmap:	Nmap-6.47 -- description

Others

ALSA Description:	ALSA-1.0.28
Configuring Xorg:	Xorg-7.7 Testing and Configuration
DTD Files:	docbook-xml-4.5 -- description
ENT-files:	docbook-xml-4.5 -- description
Image::Magick:	ImageMagick-6.8.9-7 -- description
libraries: static or shared:	Libraries: Static or shared?
MOD files:	docbook-xml-4.5 -- description
SGML DTD files:	docbook-3.1 -- description
	docbook-4.5 -- description
SGML entities files:	sgml-common-0.6.3 -- description
SGML MOD files:	docbook-3.1 -- description
	docbook-4.5 -- description
TrueType Fonts:	Xft Font Protocol
vulnerability links:	Vulnerabilities
XML entities files:	sgml-common-0.6.3 -- description