

# Using Fink: A Developer's How-To

**David R. Morrison**  
**Duke University**

O'Reilly Mac OS X Convention  
October 3, 2002



**O'REILLY®**  
**Mac OS X**  
**Conference**

## Installing UNIX programs on OS X:

- Use Frameworks and bundles
  - Not yet standard UNIX
  - All libraries must be included
- Install in /usr/local
  - Using Installer.App
  - Danger of conflicting files
  - Hard to manage dependencies
- As part of a coherent distribution
  - Gnu-Darwin
  - Fink
  - DarwinPorts (new)



# The Fink Project

- UNIX distribution
  - Non-interference policy
    - Installs in /sw (like /opt)
    - And in /usr/local/X11R6
  - Careful about licenses
- Many Darwin/Mac OS X patches
  - Patches routinely sent upstream
- Users can compile locally
  - Source files downloaded over internet
- Or users can install binaries
  - No Developer Tools required



# Coherent distribution

- Many libraries already available
  - Libraries actively maintained
  - Shared libraries built whenever possible
  - Older versions of shared libraries kept
    - Backward compatibility
- X11R6 from XFree86 project
  - Window managers
  - Many existing tools which use X11 interface
- Other large software collections
  - TeX
  - Perl modules



## Fink in action

- “fink build foo”
  - Downloads the source tarball for foo and unpacks it
  - Applies patches
  - Compiles the software
    - ./configure; make
  - Installs the software in a temporary directory
  - Creates a binary package file (.deb)
- “fink install foo”
  - Builds the package, if necessary
  - Calls Debian’s “dpkg” tool to install
- “fink remove foo”



# Contents of a Fink package

```
Package: latex2rtf
Version: 1.9.13
Revision: 1
Source: mirror:sourceforge:%n/%n-%v.tar.gz
Source-MD5: dedff9b8b17e222384b26c4bb94996d0
Depends: tetex-base, imagemagick
Description: Converts a LaTeX file to an RTF file
License: GPL
CompileScript: <<
    make CC=cc PREFIX=%p
<<
InstallScript: <<
    make install CC=cc PREFIX=%i MAN_INSTALL=%i/share/man/man1
<<
DocFiles: ChangeLog Copyright README
Maintainer: Dave Morrison <dmrrsn@users.sourceforge.net>
Homepage: http://latex2rtf.sourceforge.net/
```



# Expanding the percent fields

```
Package: latex2rtf
Version: 1.9.13
Revision: 1
Source: mirror:sourceforge:latex2rtf/latex2rtf-1.9.13.tar.gz
Source-MD5: dedff9b8b17e222384b26c4bb94996d0
Depends: tetex-base, imagemagick
Description: Converts a LaTeX file to an RTF file
License: GPL
CompileScript: <<
    make CC=cc PREFIX=/sw
<<
InstallScript: <<
    make install CC=cc PREFIX=/sw/src/root-latex2rtf-1.9.13-1 \
    MAN_INSTALL=/sw/src/root-latex2rtf-1.9.13-1/share/man/man1
<<
DocFiles: ChangeLog Copyright README
Maintainer: Dave Morrison <dmrrsn@users.sourceforge.net>
Homepage: http://latex2rtf.sourceforge.net/
```



# Contents of a Fink package

```
Package: latex2rtf
Version: 1.9.13
Revision: 1
Source: mirror:sourceforge:%n/%n-%v.tar.gz
Source-MD5: dedff9b8b17e222384b26c4bb94996d0
Depends: tetex-base, imagemagick
Description: Converts a LaTeX file to an RTF file
License: GPL
CompileScript: <<
    make CC=cc PREFIX=%p
<<
InstallScript: <<
    make install CC=cc PREFIX=%i MAN_INSTALL=%i/share/man/man1
<<
DocFiles: ChangeLog Copyright README
Maintainer: Dave Morrison <dmrrsn@users.sourceforge.net>
Homepage: http://latex2rtf.sourceforge.net/
```





# Making a Fink package

- Examine the source for installation instructions

latex2rtf is a translator program that translates LaTeX text into the RTF format used by various text processors, most notably Word.

For the Copyright of the Program see the file Copyright.

As of version 1.9.13, latex2rtf supports converting equations to bitmaps. This requires TeX and ImageMagick. See scripts/README.

To install (on a UNIX system)

- Edit Makefile for your local configuration. The default install is reasonable, but if you do not have root access, then you might need to set \$PREFIX to be your home directory.
- make
- If this is not your first-time installation, you may want to preserve your old configuration (\*.cfg) files. Copy them to a safe place before installing.
- make check (expect warnings but no errors)
- make install



## Making a Fink package

- Examine the source for installation instructions
- If the package uses autoconf, run:
  - `./configure --help`
- Try compiling
  - Could use a preliminary fink .info file, or
  - Could run “./configure” and “make” directly
- If compiling is successful, try installing
  - Check that everything is in the right place



# The Fink package

```
Package: latex2rtf
Version: 1.9.13
Revision: 1
Source: mirror:sourceforge:%n/%n-%v.tar.gz
Source-MD5: dedff9b8b17e222384b26c4bb94996d0
Depends: tetex-base, imagemagick
Description: Converts a LaTeX file to an RTF file
License: GPL
CompileScript: <<
    make CC=cc PREFIX=%p
<<
InstallScript: <<
    make install CC=cc PREFIX=%i MAN_INSTALL=%i/share/man/man1
<<
DocFiles: ChangeLog Copyright README
Maintainer: Dave Morrison <dmrrsn@users.sourceforge.net>
Homepage: http://latex2rtf.sourceforge.net/
```



## Example 2: libpng

- Includes shared libraries
  - Fink makes multiple packages from one .info file
- The SplitOff command
  - “Files” to specify where the files go
- The libpng-shlibs package remains installed
  - Even after upgrade of others to libpng3



```
Package: libpng
Version: 1.0.12
Revision: 6
Depends: libpng-shlibs (= %v-%r)
BuildDepends: fink (>= 0.9.9)
Replaces: libpng3
Conflicts: libpng3
Source: mirror:sourceforge:%n/%n-%v.tar.gz
Source-MD5: 3329b745968e41f6f9e55a4d04a4964c
Patch: %f.patch
PatchScript: ln -s scripts/makefile.darwin Makefile
CompileScript: make prefix=%p ZLIBLIB=%p/lib ZLIBINC=%p/include
InstallScript: <<
    make install prefix=%i ZLIBLIB=%p/lib ZLIBINC=%p/include
<<
DocFiles: LICENSE README ANNOUNCE Y2KINFO KNOWNBUG
BuildDependsOnly: True
SplitOff: <<
    Package: %N-shlibs
    Replaces: libpng (<< 1.0.12-3)
    Files: lib/libpng.2.%v.dylib lib/libpng.2.dylib
    DocFiles: LICENSE README ANNOUNCE Y2KINFO KNOWNBUG
<<
Description: PNG image format handling library
DescPort: <<
Doesn't use autoconf. Comes with a big selection of Makefiles
instead. The included Makefile for Mac OS X only builds static
libraries, so we use our own Makefile.

Previous versions by Christoph Pfisterer.
<<
License: OSI-Approved
Homepage: http://www.libpng.org/pub/png/
Maintainer: Dave Morrison <dmrrsn@users.sourceforge.net>
```



```
diff -ruN libpng-1.0.12/scripts/makefile.darwin libpng-1.0.12-patched/scripts/makefile.darwin
--- libpng-1.0.12/scripts/makefile.darwin  Thu Jan  1 01:00:00 1970
+++ libpng-1.0.12-patched/scripts/makefile.darwin  Tue Jun 26 20:24:21 2001
@@ -0,0 +1,106 @@
+# makefile for libpng on Darwin / Mac OS X
+# Copyright (C) 2001 Christoph Pfisterer
+# derived from makefile.linux:
+# Copyright (C) 1998, 1999 Greg Roelofs
+# Copyright (C) 1996, 1997 Andreas Dilger
+# For conditions of distribution and use, see copyright notice in png.h
+
+# where "make install" puts libpng.a, libpng.dylib, png.h and pngconf.h
+prefix=/usr/local
+
+# Where the zlib library and include files are located
+#ZLIBLIB=/usr/local/lib
+#ZLIBINC=/usr/local/include
+ZLIBLIB=../zlib
+ZLIBINC=../zlib
+
+CC=cc
+CFLAGS=-I$(ZLIBINC) -Wall -O3 -funroll-loops
+LDFLAGS=-L. -L$(ZLIBLIB) -lpng -lz
+
+#RANLIB=echo
+RANLIB=ranlib
+
+# read libpng.txt or png.h to see why PNGMAJ is 2.  You should not
+# have to change it.
+PNGMAJ = 2
+PNGMIN = 1.0.12
+PNGVER = $(PNGMAJ).$(PNGMIN)
+
```



## Fink tips for developers

- Watch installation locations
  - “fink validate”
- Include all dependencies, or turn them off with configure flags
- Include license information and DocFiles
- Treat shared libraries correctly
- Submit your package to Fink so that others can use it!

<http://fink.sourceforge.net>



## Sections

- Home
- Download
- Packages
- Help
- F.A.Q.
- Documentation
- Mailing Lists

## Navigation

- Home
- News
- About
- Contributors
- Links

The Fink project wants to bring the full world of Unix [Open Source](#) software to [Darwin](#) and [Mac OS X](#). We modify Unix software so that it compiles and runs on Mac OS X ("port" it) and make it available for download as a coherent distribution. Fink uses [Debian](#) tools like dpkg and apt-get to provide powerful binary package management. You can choose whether you want to download precompiled binary packages or build everything from source. [Read more...](#)

## News

2002-09-08: [Test version of Jaguar updater available](#)

A test version of the 10.2 updater for Fink is now available. The update process is somewhat complicated at the moment, but is explained in [step-by-step instructions for updating](#). We also have separate [instructions to install Fink from scratch on 10.2](#).

At the moment, approximately 800 out of 1150 Fink packages have been made ready for 10.2. However, virtually all of these packages are still being tested and have not yet been moved to the "stable" tree in the 10.2 section; moreover, binaries for 10.2 packages are not yet available.

2002-08-20: [Mac OS X 10.2 / Jaguar](#)

During the last few weeks, we got a lot of emails asking whether Fink will work Mac OS X 10.2.

The answer is: Yes, we will support 10.2. However, due to some major changes in this new OS version, we had to make a lot of adjustments both to the Fink tool itself and to many packages. The current binary distribution, 0.4.0a, will only work partially

## Status

Fink 0.4.0 was released on 18 April 2002. A minor update, Fink 0.4.0a, changed the download URLs to be compatible with sourceforge's new mirroring setup.

## Resources

If you're looking for support, check out the [help page](#). That page also lists various options to help the project and submit feedback.

The Fink project is hosted by [SourceForge](#). In addition to hosting this site and the downloads, SourceForge provides the following resources for the project:

- [Summary page](#)
- [Bug tracker](#)
- [Package request tracker](#)
- [Feature request tracker](#)
- [Package submission tracker](#)
- [Patch tracker](#)
- [Mailing lists](#)
- CVS ([browse online](#), [access instructions](#))





## Sections

- Home >
- Download >
- Packages >
- Help >
- F.A.Q. >
- Documentation >**
- Mailing Lists >

## Navigation

- > Document List**
- > [User's Guide](#)
- > [Running X11](#)
- > [Installation](#)
- > [Usage](#)
- > [ReadMe](#)
- > [CVS Access](#)
- > [Porting](#)
- > [Packaging](#)

## Fink Documentation

This is a collection of various documents written for Fink. Some of the documents may also be useful to people who use Mac OS X or Darwin without Fink and want to learn about porting Unix software.

### User Documentation

The current user documentation for Fink:

- [Fink User's Guide](#) - this covers installing Fink itself, installing packages, and upgrading to a new Fink release. It contains instructions for both the source and the binary release. **Work in Progress!**
- [Running X11 on Darwin and Mac OS X](#) - covers concepts, installation and launching (also intended for Darwin and Mac OS X users in general)

A bunch of documents that are more complete, but slightly outdated and no longer maintained:

- [Installation and Upgrading](#) - how to install Fink or upgrade to a new version
- [Usage](#) - how to use Fink and the installed software
- [Fink ReadMe](#) - the ReadMe for the source distribution
- [CVS Access](#) - how to access the Fink CVS repository to get the latest source packages between releases

### Developer Documentation

- [Porting Tips](#) - notes for porting Unix applications to Darwin
- [Packaging Manual](#) - how to create and maintain Fink packages



## Sections

- Home ▶
- Download ▶
- Packages ▶
- Help ▶
- F.A.Q. ▶
- Documentation ▶
- Mailing Lists ▶

## Navigation

- ▲ Document List
- ▶ Contents
- ▶ Intro
- ▶ Package Descriptions
- ▶ Policy
- ▶ FS.Layout
- ▶ Reference

 Print Version

## Creating Fink Packages

This manual documents how to create package descriptions for the Fink package manager. It also provides a policy and guidelines for the Fink distribution. Both the description format and the distribution policy are still evolving, so watch the "Last changed" info and the CVS tag on this page to detect updates. What you're reading right now is a description of the format and policy used in post-0.9.0 development versions of the fink package manager.

If you create packages for Fink, you may want to subscribe to the [fink-devel](#) mailing list. If you are looking for a way to help out with Fink, and you have skills in this area, you might consider adopting a [package which currently has no maintainer](#).

### Contents

- [1 Introduction](#)
  - [1.1 What is a Package?](#)
  - [1.2 Identifying a Package](#)
  
- [2 Package Descriptions](#)
  - [2.1 Tree Layout](#)
  - [2.2 File Format](#)
  - [2.3 Percent Expansion](#)
  
- [3 Packaging Policy](#)
  - [3.1 Package Licenses](#)
  - [3.2 Base System Interference](#)
  - [3.3 Shared Libraries](#)



> ES Layout

> Reference

Print Version

- [1 Introduction](#)

- [1.1 What is a Package?](#)
- [1.2 Identifying a Package](#)

- [2 Package Descriptions](#)

- [2.1 Tree Layout](#)
- [2.2 File Format](#)
- [2.3 Percent Expansion](#)

- [3 Packaging Policy](#)

- [3.1 Package Licenses](#)
- [3.2 Base System Interference](#)
- [3.3 Shared Libraries](#)

- [4 Filesystem Layout](#)

- [4.1 The Filesystem Hierarchy Standard](#)
- [4.2 The Directories](#)
- [4.3 Things to Avoid](#)

- [5 Reference](#)

- [5.1 The Build Process](#)
- [5.2 Fields](#)
- [5.3 SplitOffs](#)
- [5.4 Scripts](#)
- [5.5 Patches](#)
- [5.6 Profile.d scripts](#)

Generated from *SFink: packaging.xml*, v 1.35 2002/08/12 21:32:43 *fin golf in Exp 5*

Copyright © 2002  
The Fink Project

Last changed by *fin golf in* on Mon, Aug 12 2002, 21:32 GMT



O'REILLY®

---

Mac OS X  
Conference

---

SEPT. 30 - OCT. 3, 2002 • SANTA CLARA, CA

