

# TUG

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All of the original contents of this tree of MacTeX build documentation is released to the public domain. This work is published from the United States. It was written by Richard Koch in 2011.

## 1. INTRODUCTION

This is the root document for a series of related documents which explain how to construct MacTeX.

This document is provided inside a build tree for MacTeX. Do not rearrange folders in this tree. As MacTeX is constructed, these folders will gradually be filled with bits and pieces of the package, until finally the complete package is inside one of the folders.

The MacTeX install package contains a series of subpackages which install the various pieces of MacTeX. A user can choose which packages to install by clicking the “Custom” button during installation. Each subpackage is built in a folder of the build system, and each such folder contains a subfolder named “TUG” with the documentation needed to build that portion of MacTeX. This document lists features common to all pieces.

There are three main products: MacTeX, MacTeX-DVD, and MacTeX-Additions. The first is the main distribution for the web. The second is a variant of the first for the DVD; it installs TeX Live from a copy elsewhere on the DVD rather than from a copy inside the package. Finally, MacTeX-Additions installs everything except TeX Live, for users who obtained a TeX distribution some other way.

These three packages MacTeX, MacTeX-DVD, and MacTeX-Additions need to be built last because they contain Ghostscript, Convert from Image Magick, Latin Modern Fonts, TeX Gyre Fonts, and TeXLive. The remaining packages can be made in any order.

Building MacTeX requires compiling various binaries, and then assembling the results into subpackages and the final package. The assembly step can be done on any reasonable machine; for convenience I use a Snow Leopard machine. This is the only machine which needs to have a copy of the texmf tree, copies of the various GUI apps, and so forth.

Compiling binaries is a matter of compiling Ghostscript, compiling convert from Image Magick, and compiling TeX Live. Compiling is done on both PowerPC and Intel machines and then the resulting binaries are combined into universal binaries using lipo. So compiling

requires both PowerPC and Intel machines. Currently the PowerPC machine must have operating system 10.5 (Leopard) installed, and the Intel machine must have operating systems 10.5 (Leopard) and 10.6 (Snow Leopard) installed. Intel Snow Leopard is only required for 64 bit binaries.

The install packages are constructed with PackageMaker from XCode 2.5 rather than later versions of PackageMaker. The root folder for the MacTeX build system contains a copy of this PackageMaker, so installing XCode 2.5 is not necessary. MacTeX doesn't use the GUI features of the program; it calls it as a command line program. Do not move PackageMaker; the various MacTeX scripts assume it is at the root level of the build directory.

## 2. HOW TO MAKE YEARLY UPDATES IN PACKAGES

There are some universal steps required to update scripts for a new year. I'll describe the steps here, using the Ghostscript package as an example.

Some packages retain the same name from year to year, while other package names change. When the name changes, it typically contains a year or version number; for example, Ghostscript-9.02.pkg. Although it will be obvious that the name changes, the individual package TUG document will confirm this fact.

It is important that some packages get new names for the following reason. When a user installs a Package, their Mac stores a receipt for the package. If a new version of the package is later installed, the installer updates files which changed in the new package, installs additional files from the new package, *and removes files that used to be in the package, but now aren't*. Ghostscript 9.02 installs support files in `/usr/local/share/ghostscript/9.02`, which depend on a version number. If the name of the package didn't change, the old support files would be removed, but we want to preserve them in case the user retreats to the older version. Renaming is particularly important for TeX Live itself, since we certainly don't want the installer to remove the old copy of TeX Live.

To switch to the new name:

- Edit the "buildPackage.sh" script, noting that the name of the package is contained in the last few lines of the script.
- Edit the "buildPackage1.sh" script, for the same reason.
- Edit the short "Description.plist" to indicate the new name.
- Edit the "Info.plist" file, which contains a list of keys and values. The important key is "CFBundleIdentifier"; it contains the name of the package in the form "org.tug.mactex.ghostscript9.02". This item is the crucial element which determines the Mac's receipt policy.
- The folder `resources/English.lproj` contains three files which will be shown to the user during installation: `License.rtf`, `ReadMe.rtf`, and `Welcome.rtf`. Edit these

files to reflect the new package name and release date. Make other changes as appropriate.