

## WHAT IS INSTALLED

### 1. The Package

The MacTeX-2015 install package contains three subpackages:

- TeXLive-2015
- GUI-Applications
- Ghostscript-9.16

In the default installation, all are installed. Use the “Custom Install” option to select which packages to install.

### 2. TeX Live

The most important package is TeXLive-2015, which installs the full TeX Live 2015 distribution in `/usr/local/texlive/2015`. TeX Live is the reference TeX distribution produced by TeX user groups across the world; it runs on almost all computer architectures including OS X, Windows, GNU/Linux, and other Unix systems. The distribution is the same on all of these platforms; nothing has been added or removed to customize it for OS X.

You can find a complete list of files and install locations by double clicking on the MacTeX-2015 package and then choosing the menu item “Show Files”. The important fact is that everything in TeX Live is put in the “2015” folder.

When you want to add files to TeX Live which are visible for all users on your machine, the files should be installed in `/usr/local/texlive/texmf-local`. This tree is not inside the 2015 folder so it can be used with future versions of TeX Live as well. If the `texmf-local` directory exists when MacTeX-2015 is installed, then it is not touched by the installer. But if there is no such tree, then MacTeX-2015 installs an empty tree waiting to be used. This is exactly what would happen if you installed TeX Live using its native install script.

Incidentally, if you want to add files to TeX Live for one particular user, install them in a similar tree `~/Library/texmf` where `~/Library` is the Library folder in that user’s home directory. The folder `texmf` and other folders for the tree will have to be created. For instance, TeX will find any file in `~/Library/texmf/tex` or a subfolder of this location,  $\LaTeX$  will find any file in `~/Library/texmf/tex/latex` or a subfolder of this location, and BibTeX will find

any `.bib` file in `~/Library/texmf/bibtex/bib` or a subfolder of this location, and any `.bst` file in `~/Library/texmf/bibtex/bst` or a subfolder of this location. It is not necessary to use `texhash` when adding files to this local tree.

In Apple’s latest operating systems, the `~/Library` folder is present but not visible in the Finder. Use the “Go To Folder” command in the Go menu to show this Folder.

In addition, MacTeX installs a few items customized for OS X and not available from the TeX Live install script. These items are not in the `2015` folder or the `texmf-local` folder; they are support items which can be used or ignored. The support items make it possible to add GUI front ends and utilities to TeX without any configuration whatever; these applications are automatically configured for your current TeX distribution. The support items also allow you to have more than one TeX distribution on your machine and trivially switch between them. For example, if you already installed TeX Live 2013 last year, that distribution remains after you install TeX Live 2015; if you are in the middle of an important project and find that something in TeX Live 2015 doesn’t work correctly, you can switch back to TeX Live 2013 with a single button push.

All of this is made possible by the TeX Distribution Data Structure designed by Jérôme Laurens and Gerben Wierda. The structure contains a small folder of symbolic links for each TeX distribution installed on your machine. The structure is in `/Library/TeX` and contains four subfolders: `.scripts`, `Documentation`, `Distributions`, and `Root`. The data structure is very small, only about 332 KB.

A user can ignore `/Library/TeX` entirely because the data is controlled from a “TeX Distribution” preference pane installed in `/Library/PreferencePanes`. To use it, open Apple’s System Preferences and find the TeX Distribution pane at the bottom. Open it to see a list of TeX distributions installed on your machine. The active distribution will be indicated by a radio button. Push a different button to change distributions; automatically all of your GUI front ends and utilities will reference the new distribution, and `PATH` and `MANPATH` will point to the new distribution in Terminal.

Currently everything in the folder `TeX` inside `/Library` was installed by MacTeX, but in the future developers may install other things in this location. It isn’t necessary to discuss the full contents of `TeX`, but two items will be of interest.

`Root` is just a symbolic link to the active distribution, and so in our case to `/usr/local/texlive/2015`. It is visible in the Finder, so to inspect TeX Live 2015 without using tricks, click on `Root` and navigate to any portion of the TeX Live 2015 tree you’d like to study.

The `Distributions` folder contains one “.texdist” folder for each distribution on your machine. Four such folders are installed by MacTeX:

- `Fink-texTeX`

- MacPorts-teTeX
- MacPorts-TeXLive
- TeXLive-2015

but you may have others if you installed earlier distributions like gwTeX or TeX Live-2013. The Fink and MacPorts structures are provided because these distributions do not install such structures themselves. Note that “.texdist” folders may exist for distributions you don’t have; this causes no trouble because the TeX Distribution preference pane is intelligent and checks to make sure the .texdist folder points to active data. So if you later remove TeX Live 2015, it is not necessary to modify /Library/TeX.

Our package also installs two symbolic links: /usr/texbin is a link pointing to the executables directory of the active distribution, and /usr/local/bin/texdist is a symbolic link to a script in /Library/TeX which can manipulate the TeX Distribution Data Structure. Most GUI front ends and utilities use /usr/texbin as the location of the TeX executables, although this can be changed in their preferences. For that reason, such applications require no configuration for new TeX distributions.

Finally, our package modifies your PATH and MANPATH so command line utilities also work automatically with the active distribution. This modification is particularly straightforward if you are running a new installation of Leopard or higher. On these systems, the directory /etc/paths.d contains a file for each addition of a new location to the default PATH on the system. As shipped by Apple, this folder has only one file: x11. Our install package adds a second file, TeX, which contains the single line /usr/texbin. Similarly the directory /etc/manpaths.d contains a file for each addition of a new location to the default MANPATH. As shipped by Apple, it contains only one file: x11. We add a second file: TeX.

If you upgraded Leopard from an older system and you modified /etc/csh.login or /etc/profile, we modify /etc/profile, /etc/csh.login, and either /etc/manpath.config or /usr/share/misc/man.conf. We use exactly the modification introduced by Gerben Wierda in his distributions of teTeX and TeX Live; indeed we use his scripts to make the modification. Gerben’s modifications are enclosed in easily visible comments, so they can be directly inspected and removed if desired.

On Snow Leopard and higher, the man command uses heuristics starting with PATH to find man pages. This technique works for TeX Live 2015 because the TeX Live 2015 bin directory contains a link named “man” which points to the related TeX Live man pages.

### 3. GUI Applications

This package installs TeXShop, BibDesk, LaTeXiT, TeX Live Utility, Setup-2015, and Excalibur in `/Applications/TeX`. Note that many other editors, front ends, and utilities are available for TeX on the Internet; you may want to experiment with a variety of such programs. The package also installs one README file and the “What Is Installed” document which you are currently reading. All of these items can be removed by dragging them to the trash.

TeXShop is a front end for TeX. It contains an editor and previewer for TeX. If you are new to TeX, you can begin learning it by running TeXShop and following the instructions in the README file in `/Applications/TeX`. Experienced users may want to switch to their own favorite editor.

TeX Live Utility is a program which can update TeX Live 2015 packages over the network, and can configure paper size in TeX. The program is self explanatory. When it starts, TeX Live Utility lists packages in TeX Live 2015 for which updates are available. Select the “Update All Packages” item in the Actions menu to update these packages. TeX Live Utility calls a command line utility named `tlmgr` in TeX Live 2015 to perform the updates; it is possible to directly run `tlmgr` in Terminal.

Setup-2015 is a small install package which can fix problems which occasionally occur when a system containing MacTeX is upgraded to a later version of the operating system. It can also be used to install the TeX Dist Preference Pane and related data structures for TeX Live 2015 and Basic TeX 2015 if these were installed using the TeX Live install script.

### 4. Ghostscript 9.16

The Macintosh comes with a distiller which converts postscript to pdf: `/usr/bin/pstopdf`. For this reason, it is not essential to install Ghostscript when installing TeX. However some TeX style files assume the existence of Ghostscript and many people prefer to distill using it. Any Ghostscript installation will do, and some users have the Fink or MacPorts distributions, or the distribution from i-Installer, which all work well with TeX. For others we provide the latest version of Ghostscript in this package.

You can find a complete list of files installed by double clicking on the MacTeX-2015 package and then choosing the menu item “Show Files”.

Ghostscript executables are placed in `/usr/local/bin`, support files are placed in `/usr/local/share/ghostscript/9.16`, man pages are in `/usr/local/share/man`, and fonts are installed in `/usr/local/share/ghostscript/fonts`. Most Ghostscript executables are just shell scripts. There are only two binaries containing code, `gs-X11` and `gs-noX11`; the first

is compiled with X11 support and the second without X11 support. The symbolic link `gs` points to one of the two versions depending on whether the installer found X11 on your system at install time.