

# BUILDING CONVERT AND IMAGE MAGICK

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This package installs a single binary, `convert`, in `/usr/local/bin`. This binary is just one portion of Image Magick, which we used to install. The binary can convert between different file formats using a simple shell command. For example

```
convert mypicture.tiff mypicture.png
```

converts a tiff file to a png file, leaving the original tiff file in place. Many file formats are covered, including tiff, jpg, png, pdf, and eps.

There are two main uses for the binary. Pdftex does not understand tiff files but does understand png files. With the proper header command, the `graphicx` package can automatically convert tiff files to png files during typesetting.

The TeX4ht package converts TeX files to html files. It uses `convert` extensively. I verified with Eitan Gurari that no other part of Image Magick is used. While TeX4ht is in TeX Live, `convert` is not.

## 1. COMPILING

Compiling `convert` is tricky. Image Magick constructs shared libraries which all of its components call, and it requires other libraries: `libjpeg`, `png`, `freetype`, `tiff`, `zlib`. We don't want to install the Image Magick shared libraries or these extra libraries. The trick is to compile Image Magick using static libraries and then pull out `convert`.

Start by renaming the old `/usr/local` in `/usr`, and rename `X11` and/or `X11R6` so `X11` support won't be added.

We compile on OS X 10.5 for PPC and for Intel.

First install the required libraries in `/usr/local`. We need the following libraries:

<code>zlib</code>	<a href="http://www.zlib.net/">http://www.zlib.net/</a>	Ver 1.2.7: May 2, 2012
<code>libjpeg</code>	<a href="http://www.ijg.org">http://www.ijg.org</a>	Ver 8d: January 15, 2012
<code>freetype</code>	<a href="http://freetype.sourceforge.net/index2.html">http://freetype.sourceforge.net/index2.html</a>	Ver 2.4.11: December 20, 2012
<code>libpng</code>	<a href="http://www.libpng.org/pub/png/libpng.html">http://www.libpng.org/pub/png/libpng.html</a>	Ver 1.5.14: January 24, 2013
<code>libtiff</code>	<a href="http://www.remotesensing.org/libtiff/">http://www.remotesensing.org/libtiff/</a>	Ver 4.0.3 September 22, 2012
<code>bzip2</code>	<a href="http://bzip.org/">http://bzip.org/</a>	Ver 1.0.6; September 20, 2010

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The latest version of libjpeg is Ver 9, but that version has a bug which affects libtiff. So we downgrade to Ver 8d.

Compile and install libjpeg first. Use the following instructions:

```
make clean
./configure --enable-shared --enable-static

rm libtool
ln -s 'which glibtool' ./libtool

make

sudo mkdir -p /usr/local/include

sudo mkdir -p /usr/local/lib
sudo mkdir -p /usr/local/man/man1
sudo mkdir -p /usr/local/bin

sudo make install
```

Then change to /usr/local/lib and remove all files except libjpeg.a.

Compile zlib, libtiff, libpng, freetype, and bzip2 in that order, using the standard commands (bzip2 doesn't have a .configure step):

```
make clean
./configure
make
sudo make install
```

After each step, remove all .dylib and .la files in /usr/local/lib.

Next go to /usr/local and remove everything in the bin directory. Also remove the man, and share directories, leaving only the include and lib directories.

Obtain the ImageMagick source code at

<http://www.imagemagick.org/script/install-source.php#unix>

This contains version 6.8.3-3 released February 19, 2013.

Go to IM/ImageMagick-6.8.3-3 and compile Image Magick using the sequence

```
make clean
./configure --disable-shared
make
```

```
sudo make install
```

It helps to look at the configure output and confirm that shared libraries are disabled.

Now go to /usr/local and remove the include library. Also in /usr/local/lib, remove the “old” directory and all libraries, leaving only the folder named “ImageMagick-6.8.3”.

Finally, move the entire remaining contents of /usr/local to Universal/local-i386 or Universal/local-ppc depending on whether you compiled on Intel or on PPC.

Make sure the Universal folder has a subfolder named “local” containing a subfolder named “bin”. Change directory to Universal, strip the binaries, and lipo them together using the following commands:

```
cd local-i386/bin
strip *
cd ../..
cd local-ppc/bin
strip *
cd ../..
sh liposcript
```

Finally, execute the build instruction using the command

```
sudo sh buildRoot.sh
```