Debian-specific information about TEX packages

The Debian TEX mailing list <debian-tex-maint@lists.debian.org>

generated from Id

Abstract

This document covers Debian-specific information for *users* of the Debian TEX Live packages (all packages named `texlive-something`). Further information, especially for *developers*, can be found in the Debian TEX Policy draft in `/usr/share/doc/tex-common/`.

Copyright Notice

Contents

Chapter 1

Overview of the packages

The Debian TEX Live packages are comprised of (currently) 80 packages in total. The most important are:

texlive-binaries provides the basic binaries and scripts, but is practically useless by itself

texlive-base provides a minimal system

texlive-latex-base provides the most basic LATEX input files, and will be sufficient for some simple documents

texlive-latex-recommended a recommended set of LATEX packages which are sufficient for most typesetting purposes if you don't have any special requirements

texlive-fonts-recommended a recommended set of fonts which are sufficient for most typesetting purposes if you don't have any special requirements

texlive a meta-package depending on a decent selection of packages, comprising all of the above

texlive-full a meta-package depending on all packages from the TEX Live group and on some other packages to create something similar to a full TEX Live installation

texlive-doc-* packages like `texlive-doc-en` and `texlive-doc-de` provide documentation in the respective language

texlive-lang-* packages like `texlive-lang-dutch` and `texlive-lang-spanish` provide language-specific support, like hyphenation patterns

There are many more packages, providing extra functionality and extra fonts. Please see the respective descriptions of these packages.

Chapter 2

Changing your configuration, file placement

2.1 Available *TEXMF* trees for users and system administrators

The following *TEXMF* trees are available. They are displayed below in the order they are searched, where earlier ones override later ones.

TEXMFCONFIG Default location: `$HOME/.texmf-config/`

Contains user-specific configuration

TEXMFVAR Default location: `$HOME/.texmf-var/`

Contains user-specific generated files

TEXMFHOME Default location: `$HOME/texmf/`

Contains user-specific static input files, e.g. new LaTeX packages.

TEXMFSYSCONFIG Default location: `/etc/texmf`

Contains system-wide configuration

TEXMFSYSVAR Default location: `/var/lib/texmf/`

Contains system-wide generated files

TEXMFDEBIAN Default location: `/usr/share/texmf/`

Contains files shipped by Debian packages other than the main texlive packages. This tree contains system-wide, `dpkg`-managed input files.

TEXMFMAIN Default location: `/usr/share/texlive/texmf/`

Contains files that are closely related to the binaries and the specific version, thus this tree has higher priority then *TEXMFLOCAL* below. It contains only few system-wide, `dpkg`-managed input files.

TEXMFLOCAL Default location: `/usr/local/share/texmf/`

Contains system-wide input files, used for configuration on specific systems.

TEXMFDIST Default location: `/usr/share/texlive/texmf-dist`

Contains the binary-independent files that are distributed with TeX Live, comprising most of the input files, font files etc.

If you want to add files, you should usually use *TEXMFLOCAL* or *TEXMFHOME*, depending on whether you are the system administrator or a user. If needed, a system administrator can add additional trees to the *TEXMF* variable by copying the definition of *TEXMF* from `/usr/share/texmf/web2c/texmf.cnf` into one file in `/etc/texmf/texmf.d/`, for example `/etc/texmf/texmf.d/00local.cnf` (earlier entries take precedence). *TEXMFCONFIG* and *TEXMFVAR* are used by the user-specific `texconfig`, `updmap`, and `fmtutil` commands. Note that `texconfig` creates a copy of configuration files from *TEXMFMAIN* (or `/etc/texmf`) at the time it is first invoked to handle a particular file, and does not track later system-wide changes, and it does not know about `update-*` programs (see below 'The files `texmf.cnf`, `fmtutil.cnf`, `updmap.cfg` and `language.*` group' on the following page).

2.2 General hints

2.2.1 System-wide versus user-specific configuration

TEX Live supports a complete user-specific configuration setup in the user's home directory. System administrators must use the commands `texconfig-sys`, `fmtutil-sys` and `updmap-sys` which act on the system-wide configuration files. Users can invoke their user counterparts `texconfig`, `fmtutil` and `updmap`. This will put copies of the system-wide configuration files into the user's *TEXMFCONFIG* directory (by default, `$HOME/.texmf-config`), modify them and generate according formats, if applicable.

There is no such mechanism for `texmf.cnf`. For a way to customize `texmf.cnf` as a user, see 'Per user configuration changes' on the next page.

2.2.2 Configuration file placement

On a TEX system, in principle every TEX input file can be used to *change the behavior of the system* and hence could be treated as a configuration file. To avoid an inflation of configuration files, those that are used to control the typeset output - the appearance of documents - are not installed as configuration files. It makes more sense to keep changed versions in the current directory for a certain project, or in *TEXMFHOME* or *TEXMFCONFIG* of a particular user. However, local admins can take any file they want from the *TEXMFDIST* (`/usr/share/texlive/texmf-dist`) or *TEXMFDEBIAN* (`/usr/share/texmf`) trees and put changed copies into the respective directories below `/etc/texmf` (*TEXMFSYSCONFIG* which sorts before all other trees) or `/usr/local/share/texmf` (*TEXMFLOCAL* which sorts before the above two trees).

Since the package management system does not know whether a file is treated as a configuration file on a specific system, it is up to the site admin or local user to check whether one of their changed files has changed in *TEXMFDIST* or *TEXMFDEBIAN*.

2.2.3 What is configured where?

The central system-wide configuration files `texmf.cnf` (which controls the basic operation and file search paths for the included programs), `fmtutil.cnf` (which specifies the available TEX formats), (several) `updmap.cfg` (font configuration) and `language.dat`, `language.def`, `language.dat.lua` (hyphenation patterns for latex, etex, lualatex, resp.) are handled through a Debian-specific mechanism that allows the basic TEX packages, add-on packages and local administrators to combine their changes (see 'The files `texmf.cnf`, `fmtutil.cnf`, `updmap.cfg` and `language.*` group' on this page below).

2.3 Hyphenation

Hyphenation should pretty much work out of the box. Please note that in Debian, language.dat, language.def, language.dat.lua are generated files (see 'The files `texmf.cnf`, `fmtutil.cnf`, `updmap.cfg` and `language.*` group' on the current page).

2.4 The files `texmf.cnf`, `fmtutil.cnf`, `updmap.cfg` and `language.*` group

In the following we will refer to the three files `language.dat`, `language.def`, `language.dat.lua`, as `language.*`.

In the following we describe ways to configure these files for the *system administrator*, i.e. one that has write access to the `/etc/texmf` hierachy. In 'Per user configuration changes' on the facing page we describe a per-user configuration.

The files `texmf.cnf`, `fmtutil.cnf`, `updmap.cfg` and `language.dat` contain configuration options from TEX Live, possibly from you, and from other TEX-related packages. They are generated by scripts and may not be edited directly. Rather, you should work with the source files in the respective directories below `/etc/texmf/`.

In order to make updates smooth, you should *avoid editing* system-wide files as far as possible, and instead *add new files* to change settings. For `texmf.cnf` snippets, this is particularly easy, since earlier entries override any later entries. Only for removing settings from `fmtutil.cnf`, or `language.*` it is necessary to edit existing files.

2.4.1 `texmf.cnf` and `update-texmf`

The TEX binaries are built to look for and merge `texmf.cnf` files in various trees. That means that it is easy to override the default settings as shipped in `/usr/share/texmf/web2c/texmf.cnf` by adding entries in `/etc/texmf/web2c/texmf.cnf`. The Debian packaging includes a mechanism for constructing texmf.cnf from a collection of files under `/etc/texmf/texmf.d/`. To customize `texmf.cnf` while retaining the Debian-supplied configuration, create an appropriate file (or files) in `/etc/texmf/texmf.d/`, or change existing files, and then run `update-texmf`. This will generate the desired `texmf.cnf` for you. By default nothing is shipped in `/etc/texmf/texmf.d/` since no adaptions are necessary, but further addon packages might ship parts.

You may not edit the file `/etc/texmf/web2c/texmf.cnf` directly, any local changes will be overwritten the next time this file is generated.

Instead, please edit the files in `/etc/texmf/texmf.d`, or create an additional one, and invoke `update-texmf`. This will write your changes into `/etc/texmf/web2c/texmf.cnf`.

You should name your customization file something like `40macros.cnf`; the leading numerals will decide the order in which configuration fragments will be assembled by `update-texmf`, so it might be important to place your customizations in an appropriate place in the sequence — earlier definitions take precedence over later ones. In previous versions the extension `.cnf` was not necessary, and all files in the directory were used. If you had teTEX installed in woody, you might still have private files which need the extension to be added.

2.4.2 `fmtutil.cnf` and `update-fmtutil`, `language.*` and `update-language`

These files are also generated files, just as it has been explained above for `texmf.cnf`. The difference to `texmf.cnf` is that the system-wide files will be put into `/var/lib/texmf/web2c`, and any change made in these files will be **unconditionally overwritten** by `update-fmtutil` and `update-language`, respectively. Only the files in `/etc/texmf/fmt.d/` and `/etc/texmf/hyphen.d/` will be treated as configuration files. Furthermore, the files `fmtutil.cnf` and `language.*` are used on a first-found-first-used basis, if there are more than one in the search path, whereas if there are several `texmf.cnf` files in the search path, their settings are combined as described in 'Per user configuration changes' on the current page.

Just as for `texmf.cnf`, the right way to change settings is to edit or add files in `/etc/texmf/fmt.d/` or `/etc/texmf/language.d/`. The details have been described above (see '`texmf.cnf` and `update-texmf`' on this page).

2.4.3 `updmap.cfg`

`updmap-sys(8)` reads *all* available `updmap.cfg` files found, stacking them on top of each other. That means that local configurations can be done by editing/adding a file in `/etc/texmf/web2c/updmap.cfg`.

`updmap-sys(8)` provides options for enabling or disabling font map files. When enabling a new map file that is not mentioned, `updmap-sys` will create or edit `/etc/texmf/web2c/updmap.cfg`. Note that `updmap-sys`'s `--edit` and `--syncwithtrees` options cannot be used on a Debian system.

For more details on how to disable map files that are enabled on a higher level, please see the man page and help output of `updmap`.

2.4.4 Per user configuration changes

`update-texmf` is only available for root; if a user wants to maintain their own `texmf.cnf`, they can put it into *`TEXMFCONFIG`*`/web2c` and must manually edit it. However, in order for it to be found, they need to set an environment variable [1]:

```
export TEXMFCNF=$HOME/.texmf-config/web2c:
```

The final colon includes the system wide default. Since all `texmf.cnf` files are read, with earlier definitions taking precedence over later ones, it is best to keep only a minimal set of definitions in the user-specific file.

In contrast to the above—TEX reading and merging all `texmf.cnf` files—the *first* found occurrence of one of the files `language.dat`, `fmtutil.cnf` is used. Thus, when called by a user, the other configuration update programs also work with files in *`TEXMFCONFIG`*`/fmt.d` or *`TEXMFCONFIG`*`/language.d`, where *TEXMFCONFIG* is usually *`HOME`*

[1] The reason for this is that the search path for `texmf.cnf`, which is the file that defines all search paths for later use, naturally cannot be specified in the file, but is fixed at compile time.

`/.texmf-config`. They combine files in these directories with the files in the system-wide directories—naturally the user-specific ones take precedence if the names are equal (see 'User-specific installation' on page 10) —and drop the respective generated file into the user's *TEXMFVAR*, effectively overriding the system-wide config files. Note that changes to existing configuration file snippets made by package updates will not be propagated to the user's files.

`updmap(1)` provides the same options for enabling and disabling map files as `updmap-sys(8)`, see above. `updmap.cfg` is created or edited in *`TEXMFCONFIG`*`/web2c/`.

2.5 Font caching

A TEX system needs to generate new font data (pixel data, metric, sources) on the fly. These files can be saved into the TEX font cache and later be reused. By default, a separate font cache is created for each user in their own *TEXMFVAR* directory (`$`*`HOME`*`/.texmf-var/`). If this directory is not writable, e.g. during automated package building, a directory called *VARTEXFONTS*, `/tmp/texfonts/`, is used instead, but this directory is cleaned up regularly.

On multi-user machines, it might be advisable that the local administrator enables a site-wide font cache and sets *VARTEXFONTS* to a persistent directory, e.g. `/var/cache/fonts`. The variable can be changed by adding an entry via `/etc/texmf/texmf.d`, e.g. `/etc/texmf/texmf.d/00local.cnf`. Do not forget to run `update-texmf` after making the change. To enable a side-wide font caching the admin should edit `/etc/texmf/web2c/mktex.cnf` and use 'varfonts' instead of 'texmfvar' in *MT_FEATURES*. Care should be taken to specifiy appropriate permissions for the directory containing the font cache. Either the local admin should create all available font data and not allow write access, or else write access should be limited to trusted users. Yet an other alternative is to bind-mount `/var/cache/fonts` from a separate partition, so that users are not able to fill up the `/var` partition with font data.

Chapter 3

Usage hints, Debian-specific adaptations

3.1 Note on `dvips`

Per default, `dvips` is in secure mode and won't execute shell commands in `\special` commands, like backticks in `\DeclareGraphicsRule`, etc. To enable this, change `z1` to `z0` in `/etc/texmf/dvips/config.ps` (second entry).

3.2 Note on `dvipdfmx`

The Debian TEX Live packages do evaluate the settings of `/etc/papersize`, please configure your preferred paper size with `paperconfig`. Alternatively, and more portable, thus recommended, set the paper geometry explicitly in the (La)TEX source, e.g. using the packages `geometry` or `hyperref`.

3.3 "TEX capacity exceeded" and similar errors

In most cases, this error is the symptom of a syntax error in the document—TEX is getting into an infinite loop, and after some time all its internal registers have been used. Sometimes, however, a large document that loads a package that uses a lot of TEX's registers leads to that error, or to a similar error message. The package documentation, the Google archive, or TEX-related mailing-lists or newsgroups will be helpful to find out which parameter needs to be changed in `/etc/texmf/texmf.cnf` (or rather in one of the files under `/etc/texmf/texmf.d/`, (see '`texmf.cnf` and `update-texmf`' on page 5)).

Chapter 4

How to install additional or updated (La)TEX packages or fonts

If you want to install additional (La)TEX stuff, you have to:

1 install it at a place where TEX can find it;

2 register it properly.

This can generally be done site-wide (by an administrator who has write access to at least `/usr/local/share/texmf` and `/etc/texmf`), or on a per-user basis. This can be done by any user on the system, without requiring write access to system directories. Some people might also find it more convenient in case they share their home directory between a couple of machines, even if they do have administrator rights.

In the following, we first explain the principles by describing a site-wide setup; then we explain the details for user-specific setup.

4.1 (La)TEX input files

This is usually quite easy. Put the files in an appropriate directory below *TEXMFLOCAL*, which is the directory tree rooted at `/usr/local/share/texmf`.

For LATEX packages, create the directory `tex/latex/`*`packagename`* within that tree (or use `tex/latex/misc`) and put the files there; the documentation should be put into `doc/latex/`*`packagename`*. If the package comes as a pair of `.dtx` and `.ins` files, you need to run `latex` over the `.ins` file in order to produce the package files, and over the `.dtx` file to produce the documentation. After that, the `.dtx` and `.ins` files are no longer needed. Please refer to the `README` file of the package if there is one.

After that, *registering* is easy: just run the command `mktexlsr` (also called `texhash`). This will regenerate the `ls-R` file for all *TEXMF* trees you have write access to.

4.2 Complex installations

With some packages, e.g. when they contain fonts, the procedure is more complicated. Please follow the instructions given in the package. The Debian-specific part comes in when the configuration files `texmf.cnf`, `fmtutil.cnf`, `updmap.cfg`, or `language.dat` need to be changed. See the description above (‘The files `texmf.cnf`, `fmtutil.cnf`, `updmap.cfg` and `language.*` group’ on page 4), the manual pages for `update-updmap`, `update-texmf`, `update-fmtutil`, `update-language` and ‘Font installation’ on this page.

4.3 Font installation

If you wish to install a font package in a system-wide manner, please follow the instructions in this section. If you are preparing a Debian package containing fonts, you should refer to the Debian TEX policy instead, which is shipped in the `tex-common` package.

Generally, you should first have a look at the installation instructions that come with the font package, in case there is something specific to that package with respect to installation. But you should make sure that you install most files in a subdirectory of *TEXMFLOCAL* (see 'Available *TEXMF* trees for users and system administrators' on page 3). This is because we are describing here a system-wide installation that is not done by Debian packages.

For instance, AFM files should be stored into *TEXMFLOCAL*`/fonts/afm/`*supplier*`/`*typeface*`/` where *supplier* identifies the supplier of the fonts (for instance, `adobe`, `urw` or `public`) and *typeface* refers to the name of the font family (e.g., `marvosym` or `lm`). If in doubt, you should have a look at the system trees managed by Debian packages, `/usr/share/texmf` and `/usr/share/texlive/texmf-dist`; they follow the same layout, called the TEX Directory Structure (which is documented at `http://www.tug.org/tds/`).

In order for the various TEX-related programs to be able to use a font, you need to somehow register its map files (simply copying the files to *TEXMFLOCAL* is not enough). You can do this with the following steps, performed as `root`, where *foo* stands for the name of the font package you are installing:

1 Make sure you have stored all the relevant files shipped in the package (`.afm`, `.tfm`, `.pfb`, `.pfa`, `.mf`, `.fd`, `.enc`, `.map`, `.sty` are all relevant in this context) in the appropriate subdirectories of *TEXMFLOCAL*, as explained above.

2 List the map files you stored in step 1 under *TEXMFLOCAL*, with one line per file, as in:

```
# This is a comment line
Map foo.map
Map other-map-file-from-package-foo.map
```

in the file `/usr/local/share/texmf/web2c/updmap.cfg`.

If a font is available both as bitmap and outline, you should use `MixedMap` instead of `Map`. Please refer to the manual pages for `updmap` for details.

(not recommended, but possible) You can also use `updmap-sys --enable Map` *foo*`.map`; this will create/edit the `/etc/texmf/web2c/updmap.cfg` file for you. But since the real files are stored in *TEXMFLOCAL* it is better to add the map directives to the `updmap.cfg` in the same tree.

3 Run the program `mktexlsr`. This will record all the newly created files in `ls-R` files (these are used by TEX-related programs as indices to find the files they need when operating).

4 Run the program `updmap-sys`. This will use your updated `updmap.cfg` to generate files that are needed by `dvips`, `pdflatex`, `dvipdfm`, etc., such as `psfonts.map` and `pdftex.map`.

At this point, the font package should be properly installed for all users on the system.

4.4 User-specific installation

Instead of a system-wide installation, one can also install input files and fonts in the private *TEXMFHOME*, which is set to `$HOME/texmf` by default. For fonts, compared to the system-wide installation explained above, the following changes have to be made:

- In step 1, copy all relevant files to the appropriate subdirectories in *TEXMFHOME*.
- In step 2, edit *TEXMFHOME*`/web2c/updmap.cfg` instead.
  As for the site-wide installation, you can also use `updmap --enable Map` *foo*`.map`.
- In step 3 run `updmap` instead of `updmap-sys`. The generated files are created in directories below *TEXMFVAR*.

Chapter 5

Problems, bug reports

If the installation failed, please check the following points:

- Is there enough room on your hard disk?
- Is there any privately-compiled TEX system besides the Debian packages?
- Does the command:
  ```
  kpsewhich --format=cnf texmf
  ```
  return `/usr/share/texmf/web2c/texmf.cnf`?
- Is `texmf.cnf` modified a lot? Please check `/etc/texmf/web2c/texmf.d/`.
- Did you set any TEX-related environment variable?
- Try again. This might work in some cases.
- Is your `language.dat` correct?

How to report a bug:

- Please calm down anyway. ;)
- Please check the Debian Bug Tracking System first.
- Please read carefully the error messages, if any. It will help both you and us.
- Please use `reportbug` and include all information it gathers
- Please attach a simple and short sample file which causes the problem you want to report.
- Be prepared that we will have to ask more questions: You should have time to exchange a couple of e-mails with us
- It will be helpful to show us the output of the command:
  ```
  ls /etc/texmf/texmf.d/*
  ```