Debian-specific information about TEX packages

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Abstract

This document covers Debian-specific information for *users* of the Debian teTEX packages (tetex-bin, tetex-base, tetex-extra, tetex-doc, tetex-doc-nonfree and tetex-src) and 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/. Information for people upgrading from teTEX 2.0.2 in sarge is in the NEWS.Debian file.

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Chapter 1

Overview of the packages

The Debian teTEX packages are comprised of:

tetex-bin provides the binary files

tetex-base provides the most basic TEX and LATEX input files, and will be sufficient for some simple documents, e.g. to build the documentation of other Debian packages (hopefully)

tetex-extra contains lots of fonts and add-on packages for LATEX and TEX development. If you want to use LATEX to write and format your own documents, you will probably need many of these.

tetex-doc the free part (according to the Debian Free Software Guidelines) of the documentation for `tetex-bin`, `tetex-base` and `tetex-extra`. It is not needed to build existing documents, but as an author, you will for sure want to install it.

tetex-doc-nonfree the non-free part (according to the Debian Free Software Guidelines) of the documentation for `tetex-bin`, `tetex-base` and `tetex-extra`

tetex-src the sources (i.e., `.dtx` files) of all the TEX/LATEX files in `tetex-base` and `tetex-extra`, and of the documentation in `tetex-doc`. This package will only be needed by (La)TEX developers, or if you want to look up licensing information.

The Debian TEX live packages are comprised of in total (currently) 76 packages. The most important are:

texlive-base-bin provides the basic binaries and basic TEX input files.

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-context The complete ConTEXt environment.

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

texlive-full A meta-package depending on all packages from the texlive 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

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

Contains system-wide input files

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

Contains system-wide, `dpkg`-managed input files (TeX add-on packages)

TEXMFDIST Default location: `/usr/share/texmf-{tetex,texlive}`

Contains system-wide, `dpkg`-managed input files (basic TeX packages)

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 in `/etc/texmf/texmf.d/05TEXMF.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, 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.dat`' on the facing page

2.2 General hints

2.2.1 System-wide versus user-specific configuration

TEXLive as well as, since version 3.0, teTEX 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 *TEXCONFIG* directory (by default, `$HOME/.texmf-config`), modify them and generate according formats, if applicable.

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/texmf-tetex`) or *TEXMFMAIN* (`/usr/share/texmf`) trees and put changed copies into the respective directories below `/etc/texmf` (*TEXMFSYSCONFIG* which sorts before all other 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 *TEXMFMAIN* or *TEXMFDIST*.

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), `updmap.cfg` (font configuration) and `language.dat` (hyphenation patterns

for many formats) 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.dat`' on the current page below).

For some configuration changes, there is a program called `texconfig-dialog` (or simply `texconfig` for a commandline frontend); alternatively, you can of course make the necessary changes in configuration files by hand.

2.3 Hyphenation

Hyphenation should pretty much work out of the box. In teTEX, there have been some changes in the past — see `NEWS.Debian` and `changelog.Debian` — but currently (nearly) all available patterns are enabled. If you want to use a reduced set of hyphenation patterns (which might gain you a trifle more speed), you can exclude them from the format file by changing the file specified in the third column of `fmtutil.cnf` — usually `language.dat` — and rebuild the formats with `fmtutil` or `fmtutil-sys`. Please note that in Debian, language.dat is a generated file (see 'The files `texmf.cnf`, `fmtutil.cnf`, `updmap.cfg` and `language.dat`' on this page).

For users of the norwegian language and teTEX, there are several alternatives. For norwegian, there are different sets of patterns, and upstream chose `nohyphb.tex`. Details can be found in `/usr/share/texmf/doc/generic/nohyph/README.nohyph` — you can choose another one by editing `language.dat` or rather `/etc/texmf/language.d/01tetex.cnf`.

For users of the ukranian language (with teTEX and TEX live), the right pattern file depends on the output encoding (see `/usr/share/texmf-{tetex,texlive}/tex/generic/ukrhyph/ukrhyph.tex`); you can also choose different rule sets in the file.

There are currently no free hyphenation patterns for british english. Before enabling british/UKenglish, you need to get the non-free ukhyphen.tex - otherwise the format generation will fail. Don't forget to complain to the UK TUG about how annoying this is...

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

These files contain configuration options from teTEX and/or TEXLive, possibly from you, and from other TEX-related packages. They are generated by scripts and should not — in fact, except `texmf.cnf` may not — be edited directly. Rather, you should edit the source files, or better add new ones.

`update-texmf` is only available for root; if a user wants to maintain their own `texmf.cnf`, they can put it into *TEXMFCONFIG* and must manually edit it. 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. The other configuration update programs also work with files in *TEXMFCONFIG*`/updmap.d`, *TEXMFCONFIG*`/fmt.d` or

TEXMFCONFIG/language.d, combining 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 13). Note that changes to existing files made by packages updates will not be propagated to the user's files.

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, updmap.cfg or language.dat is it necessary to edit existing files.

2.4.1 texmf.cnf and update-texmf

The TEX binaries are built to look for texmf.cnf (the master config file for TEX and MetaFont) in /usr/share/texmf/web2c/texmf.cnf (or $HOME/.texmf-config/web2c/texmf.cnf if it exists). The system-wide file is a symbolic link to /etc/texmf/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.

You should not edit this file directly! While changes made by the local administrator will not be overwritten, they will cause you trouble once a package is updated and brings in a configuration change. You will be shown the differences between the edited and the newly generated file. We will try to merge our and your changes, but that might not always work, and you will probably have to edit again.

Therefore, if you want a smooth upgrade, 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/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, updmap.cfg and update-updmap, language.dat 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, update-language and update-updmap, respectively. Only the files in /etc/texmf/updmap.d/, /etc/texmf/fmt.d/ and /etc/texmf/language.d/ will be treated as configuration files.

Just as for `texmf.cnf`, the right way to change settings is to edit or add files in `/etc/texmf/updmap.d/`, `/etc/texmf/fmt.d/` or `/etc/texmf/language.d/`. The details have been described above (see '`texmf.cnf` and `update-texmf`' on the facing page). Note, however, that the extension for `updmap.cfg` snippets in `/etc/texmf/updmap.d/` is `.cfg`, not `.cnf`.

`updmap(1)` and `updmap-sys` provide options for enabling or disabling font map files. When enabling a new map file that is not mentioned, `updmap` will first create or edit `10local.cfg` in the site-wide or user-specific `updmap.d` directory, as appropriate, and then call `update-updmap`. Note that `updmap`'s `--edit` and `--syncwithtrees` options cannot be used on a Debian system.

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) (for teTEX) and in `/etc/texmf/texlive/dvips/config.ps` (for TEX live).

3.2 Note on `dvipdfm`

In Debian teTEX packages, `dvipdfm` uses the settings in `/etc/papersize` to determine the default papersize. This only takes effect if the paper geometry is not set explicitly in the (La)TEX source, e.g. using the packages `geometry` or `hyperref`.

The Debian TEX live packages currently do not evaluate the settings of `/etc/papersize`, please 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 `/etc/texmf/texmf.d/95NonPath.cnf`, (see 'texmf.cnf and update-texmf' on page 6)).

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.dat`' on page 5), the manual pages for `update-updmap`, `update-texmf`, `update-fmtutil`, `update-language` and 'Font installation' on the current 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/texmf-tetex`; it follows 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.

   Note: in teTEX 3 (as opposed to teTEX 2):
   - `.map` files should go to *TEXMFLOCAL*`/fonts/map/`*syntax*`/`*foo*`/`
   - `.enc` files should go to *TEXMFLOCAL*`/fonts/enc/`*syntax*`/`*foo*`/`

   where *syntax* indicates the syntax followed by the files (it is often `dvips`). Please refer to the teTEX Manual for details. You can read this manual with the command

```
texdoc TETEXDOC
```

2 Create a configuration file `/etc/texmf/updmap.d/10local-`*`foo`*`.cfg` (the extension `.cfg` is important! You can also use one `10local.cfg` for all your locally installed fonts). The file should 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
```

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

You can also use `updmap-sys --enable Map` *`foo`*`.map`, it will create the `10local.cfg` file for you.

3 Run the program `update-updmap`. This will generate an appropriate `updmap.cfg` file under `/var/lib/texmf/web2c/` (not `/etc/texmf/`!), containing the `Map` and/or `MixedMap` lines taken from `10local-`*`foo`*`.cfg`.

Note: modifying `updmap.cfg` directly is not supported in Debian, because Debian font packages need to update it when they are installed or removed. This is why `updmap.cfg` is not stored under `/etc` and why you have to use `update-updmap` whenever you want to modify it.

4 Run the program `mktexlsr` (or `texhash`, which is the same). 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).

5 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` or `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*.
- The configuration file created in step 2 should be placed in *TEXMFCONFIG* (`$HOME/.texmf-config` by default). An appropriate place would be *`TEXMFCONFIG`*`/updmap.d/`. Note that most likely you will have to create this directory first.

  As for the site-wide installation, you can also use `updmap --enable Map` *`foo`*`.map`

- After updating the `ls-R` files with `mktexlsr` or `texhash` (step 4), one has to generate the map files in step 5. This is done by running the program `updmap` instead of `updmap-sys`. The generated files are also created in directories below *TEXMFVAR*.

Note that `update-updmap` merges the configuration files in `$HOME/.texmf-config/web2c/updmap.d` and in `/etc/texmf/updmap.d`. Therefore, all system-wide installed fonts are accessible without duplicating their configuration files. Merging the configuration files is done on the basis of file names: If a file exists in both directories, the version in *TEXMFCONFIG* takes precedence. Thus, you can also use this mechanism to change settings compared to the site-wide configuration, e.g. by keeping a changed copy of `00updmap.cfg` in *TEXMFCONFIG*`/updmap.d/`.

Keep in mind that you still have to call `update-updmap` with the above options whenever the system-wide installation changes. If you keep a changed copy of a file from the site-wide directories, you need to manually merge any changes to this file, if desired.

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/texmf.d/`.
- Did you set any TEX-related environment variable?
- Try again. This might work in some cases.
- For `amstex`, `metapost`, `eurosym`, `texdoctk`, `txfonts`, `pxfonts`, etc., you need `tetex-extra` at present. (`pdftex`/`pdflatex` should work basically only with `tetex-base` now.)
- 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/*
  ```
- If you see something like:
  ```
  Unpacking replacement tetex-base ...
  dpkg: error processing /var/cache/../tetex-base_*_all.deb (--unpack): t
  ```
  then the problem should be of package `foo`, not of `tetex-base`.
- Note that teTEX is not further developed upstream, and new features will only be integrated in TEXlive. The Debian maintainers will not include anything in the TEXlive packages that is not already in TEXlive upstream.