

The Debian T_EX sub-policy

Frank Küster <frank@debian.org>

The Debian teT_EX mailing List <debian-tetex-maint@lists.debian.org>

version 0.31, 2005-10-16

Abstract

This document provides a set of rules for the packaging of applications, fonts and input files related to T_EX within the Debian GNU/Linux distribution.

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Chapter 1

About this document

This document provides a set of rules for the packaging of applications, fonts and input files related to \TeX within the Debian GNU/Linux distribution. It is still a in a draft state – some things might not yet be fully implemented, and others are advisable, but not strictly necessary. If in doubt, please ask on `debian-tetex-maint@lists.debian.org`.

The latest copy of this document can be found in the `Debian-TeX-policy` files in the `tex-common` package.

Chapter 2

Terms and Definitions

The following terms are used in this document:

T_EX-related package Any Debian package that uses or provides parts of the T_EX infrastructure, i.e. the T_EX or METAFONT program or derivatives thereof, fonts or input files in a *TEXMF* tree, etc.

tex-common This package provides basic infrastructure and some configuration files for all T_EX-related packages, including the `configuration` update programs.

Basic T_EX packages A Basic T_EX package is a Debian package that provides the basic infrastructure for T_EX-related programs. It should provide sufficient functionality for typesetting most generated (La)T_EX code, e.g. from `docbook`, `debiandoc`, or `texinfo` sources. Usually, the Basic T_EX packages will be divided into an architecture-dependent and an architecture-independent package.

The arch-dependent package must provide at least one binary that is fully compatible with Donald E. Knuth's original T_EX program, and it should provide the original T_EX itself. The output formats `dvi`, PostScript and Adobe PDF must be available, either directly or by conversion of other output formats. The arch-independent package must provide at least the files necessary to create the formats for plain T_EX and L^AT_EX and the input files required by the L^AT_EX distribution, as well as the Computer Modern fonts.

TEXMF tree One directory tree, arranged according to the T_EX Directory Structure. The latest version of the TDS is available at <http://www.tug.org/twg/tds/>.

configuration update programs The configuration information from files provided by different T_EX-related packages must be merged and made available in appropriate form to the various programs. This is usually done by scripts that write files into the *TEXMF**SYSVAR* tree.

Currently, the configuration update programs provided by `tex-common` are: `update-texmf`, `update-fmtutil`, `update-language`, `update-updmap`.

Chapter 3

File Placement

3.1 Path searching and `libkpathsea` / `libkpse`

The Basic T_EX packages must provide a mechanism for searching through *TEXMF* trees that allows different files to be found depending on the invoking program and the specified file format. The only existing implementation is the `libkpathsea` library. Unfortunately, it was not originally designed for use as a dynamic shared library. A rewrite is under way to create a `libkpse` library with proper API specification and ABI compatibility. For the time being, the Basic T_EX packages can provide a shared library, and program maintainers can decide to use it, or to link statically against their own copy of the code.

For use in scripts, the Basic T_EX packages provide the utilities `kpsewhich`, `kpsepath`, `kpsexpand`, and `kpsestat`.

3.2 Directory trees

File locations must follow the T_EX Directory Structure, TDS. It is a bug if a package only conforms to an outdated TDS version. It is a more severe bug, however, if it conforms to the current TDS version but does not make sure to depend on an appropriately recent version of the Basic T_EX packages (that support this TDS version).

Configuration files must be placed below `/etc/texmf`, with symlinks pointing from the TDS locations to files or directories below `/etc/texmf`. The system-wide *TEXMFSYSCONFIG* tree, if defined, must be the same as the *TEXMFMAIN* tree; a T_EX-related package must not change this.

The following *TEXMF* trees are defined, as outlined below:

1 `/usr/share/texmf/`, referenced as *TEXMFMAIN* ¹

¹The separation between a *TEXMFMAIN* tree (for the files that have to match the binary executables) and a *TEXMFDIST* tree (for other T_EX input files) is not made in Debian, because it is not necessary on a system with a decent package management system

- 2 `/var/lib/texmf/`, referenced as *TEXMFSYSVAR*
- 3 `/usr/share/texmf-site/`, referenced as *TEXMFSITE*
- 4 `/usr/local/share/texmf/`, referenced as *TEXMFLOCAL*
- 5 optionally user-specific directories for configuration files (*TEXMFCONFIG*) and generated files (*TEXMFVAR*)
- 6 Any directories listed in the *TEXMFHOME* configuration variable in `texmf.cnf` or as an environment variable,

The search order is from bottom up (files in *TEXMFHOME* taking precedence over files in *TEXMFMAIN*).

Debian packages generally install files in *TEXMFMAIN* exclusively (but see ‘Filenames and installation of alternative files’ on this page), and may ship or create empty directories in the other trees, in accordance with Debian Policy. Packages should take care to ignore *TEXMFHOME* in their maintainer scripts.

3.3 Generated files

Generated font files must be put in subdirectories of `/var/cache/fonts`, all other generated files should be below `/var/lib/texmf` (or the user-specific variable directories), with the subdirectory structure conforming to the TDS. If necessary, symbolic links can point from static *TEXMF* trees to files below `/var/`.

An exception is the generated file `/etc/texmf/texmf.cnf`. It is not intended that local administrators edit that file, but if they do, the configuration update programs must respect these changes.

3.4 Filenames and installation of alternative files

Packages may not install files with the same name as a file already installed in a *TEXMF* tree, unless both files are in subdirectories where they will only be found by different applications, as determined by the `--progrname` or `--format` switches to `kpsewhich`.

As an exception to this rule, packages that need newer versions of a file than already supplied by an other package and installed in *TEXMFMAIN* can place them into *TEXMFSITE*. The package must make sure that the newer version is backward-compatible, meaning it must not break compilation of any \TeX document, and it should not change the output file. A change of the output file may be acceptable if an obviously buggy behavior is corrected, **and** if it had previously not been possible to easily fix this behavior in user’s documents (or if the updated package and a possible fix in the document combined lead to a correct document).

Packages that install files in *TEXMF SITE* must make sure to follow not only their own upstream development, but also that of the package(s) that install the files in *TEXMF MAIN*, and make sure not to get outdated with respect to the files in *TEXMF MAIN*

Installing more than two versions of a file will most likely lead to confusion. Therefore, the possibility to shadow a file once using *TEXMF SITE* should be enough, and the usage of `dpkg-divert` is discouraged.

It is also discouraged to use a file other than from the canonical source for that file, usually the CTAN network.

3.5 Documentation

Packages should make documentation available to `texdoc`. This can be done by either installing the files below `/usr/share/doc/texmf`, or by providing symlinks from subdirectories of that location to the actual documentation files.

The entry points for documentation should have names that indicate what they document. Names like `manual.pdf` or `index.html` should be avoided, even if the directory name is unmistakable².

²This allows users to say `texdoc packagename` directly. Otherwise they will first have to find the right command line (e.g. `texdoc packagename/user.dvi`) using `texdoc -s keyword`

Chapter 4

Configuration

4.1 Configuration update programs

The central configuration file for T_EX applications is `/etc/texmf/texmf.cnf`, the central font configuration file is `/var/lib/texmf/web2c/updmap.cfg`, the central language/hyphenation configuration `/var/lib/texmf/tex/generic/config/language.dat`, and format generation is determined by `/var/lib/texmf/web2c/fmtutil.cnf`. All four files are generated by configuration update programs from configuration files in subdirectories of `/etc/texmf`. For `updmap.cfg`, `language.dat` and `fmtutil.cnf`, this is the only method of configuration. `texmf.cnf` can be edited manually by local system administrators, and changes will be handled by `ucf`. Package installation scripts, however, should not change this file, but use the `update-texmf` mechanism. Local administrators are encouraged to use the `update-texmf` mechanism, too.

Packages are free to add configuration items to the common configuration files, but they should not try to override configuration items that are supplied by other packages. Rather, shared configuration items should be supplied by the Basic T_EX packages or any other package on which all involved packages depend, with a setting appropriate for all. If this is impractical, the involved packages must at least agree on the way different packages override other's settings¹.

Maintainer scripts should call `update-updmap` with the option `--quiet`. Besides that, the configuration update programs should be called without any options to allow for internal changes, e.g. of the directories where the generated files are placed.

Packages that changed `updmap.cfg` must call `updmap-sys` as detailed in 'Font configuration' on the next page. Packages that changed `language.dat` or `fmtutil.cnf` must call `fmtutil-sys`. They must make sure to issue the `mktexlsr` command before this.

¹Note that in `texmf.cnf`, as well as in the sequence of multiple `texmf.cnf` files that are read, earlier entries override later ones.

4.1.1 Font configuration

A package named *package* that provides PostScript Type 1 fonts for T_EX should be useable with any Basic T_EX Package. To achieve this, it should depend on `tex-common` but not on a Basic T_EX Package. It should install the necessary map files below `/etc/texmf/map/`² and have them registered by putting a configuration file with extension `.cfg` into `/etc/texmf/updmap.d/` and calling `update-updmap --quiet`. The file contents will then be incorporated into `/var/lib/texmf/web2c/updmap.cfg`, the effective configuration file for `updmap-sys`.

`updmap-sys` has to be called afterwards. It is recommended to invoke the three programs in the following order: `update-updmap`, `mktexlsr` and then `updmap-sys`; the `mktexlsr` call is necessary for `updmap-sys` to locate the newly installed files (map files shipped by *package*; additionally, `/var/lib/texmf/web2c/updmap.cfg` might have been created by `update-updmap`, although it more probably already existed), and would be of no use to `update-updmap`. Since `mktexlsr` and `updmap-sys` are provided by the Basic T_EX packages, *package* has to ensure that they are only called when found in `$PATH`. Sample implementations for this behaviour can be found in ‘Sample code for font packages’ on page 13.

If *package* is removed, but not purged, its map files will stay in subdirectories of `/etc/texmf/map/`, but the actual font files below `/usr/share/texmf/` are removed, rendering the fonts unusable. Therefore, *package* has to make sure that its `update-updmap` configuration files in `/etc/texmf/updmap.d/` are ignored when it is in this state. This can be achieved by putting the “magic comment”:

```
# -- DebPkgProvidedMaps --
```

in these files, and installing a file in `/var/lib/tex-common/fontmap-cfg/` with the name `package.list` that contains:

```
10foo
12bar
```

if for instance *package* installs the files `10foo.cfg` and `12bar.cfg` in `/etc/texmf/updmap.d/`. When *package* is removed, but not purged, `package.list` is removed, thus disabling the `10foo.cfg` and `12bar.cfg` `update-updmap` configuration files. As a consequence, after running `update-updmap`, `mktexlsr` and `updmap-sys` in `package.postrm`, *package*’s map files won’t be listed anymore in the final map files (`psfonts.map`, `pdftex.map`...) generated by `updmap-sys`.

That way, `10foo.cfg` and `12bar.cfg` can (and should, unless there is a good reason not to) be shipped as conffiles in `/etc/texmf/updmap.d/` (which implies they stay there when *package* is removed, but not purged; without the “magic comment”, they would be unconditionally

²This directory (or relevant subdirectories such as `dvipdfm`, `dvips` and `pdftex`) is symlinked from `TEXMFMAIN/fonts/map` by the Basic T_EX packages. For more details about the placement of map files and other T_EX-related files, please refer to `TETEXDOC.pdf` (`texdoc TETEXDOC`) for t_EX, and more generally to the T_EX Directory Structure, also known as TDS and found at <http://www.tug.org/tds/> (t_EX 3 follows TDS version 1.1).

included in `/var/lib/texmf/web2c/updmap.cfg` by `update-updmap`, and in the final map files by `updmap-sys`).

The recommended way to implement the configuration scheme described in this section is to use the debhelper program `dh_installtexfonts` provided by `tex-common`. See `dh_installtexfonts(1)` for usage details.

4.1.2 Language/Hyphenation configuration

A package that provides additional hyphenation patterns for \TeX should put the actual hyphenation file into the respective places in *TEXMFMAIN*, and have them registered by putting a configuration file with extension `.cnf` into `/etc/texmf/language.d` and calling `update-language`. The file contents will then be incorporated into `/var/lib/texmf/tex/generic/config/language.dat`, the effective configuration file for \TeX and friends' hyphenations.

Hyphenation patterns present the same problem as described in the previous section for font configuration files: If the package is removed, but not purged, the patterns are deleted, but the configuration information is still in `/etc/texmf/language.d/`, and the format generation would fail if they would be included in `language.dat`. Therefore, an analogous mechanism has been implemented as described for `update-updmap`: If a file in `/etc/texmf/language.d/` contains the “magic comment”

```
# -- DebPkgProvidedMaps --
```

it will only be used as long it is listed in a file in `/var/lib/tex-common/language-cnf/` which should have the name `package.list`.

4.2 Best practices for packages that build-depend on the \TeX system:

If packages that build-depend on the \TeX system need a changed configuration, they should not try to provide it statically. If settings in any other configuration file are inappropriate for a package to build, this is (usually) a bug in the package that provides the file. It should be fixed in this package, not circumvented by a workaround in the build process. Such workarounds have proven to be problematic, because they might stop working after changes in the depended-on package, and such failure cannot be foreseen by its maintainers. If a change is still necessary, the package should use the configuration update programs with the `--outputdir` and `--add-file` options.

4.3 Command execution and format files

If \TeX formats need to be generated before execution, this must be done in the post-installation script. Packages that depend on an executable can thus simply declare `Depends:` on the pack-

age providing the executable, and *only* do that. Any additional checks, e.g. for the existence of format files, is unnecessary and harmful, causing internal changes (e.g. of format file extensions) to break the depending package that does this check.

4.4 The Dpkg Post-Invoke Mechanism

To be done...

Packages should be able to delay running of `mktexlsr`, `updmap` and perhaps even “`fmtutil -all`” until all \TeX -related packages that want to do this are configured. Thus, it would be unnecessary to call the programs multiple times. Coding this is easy, however it is unclear how it can be made sure that failures get attributed to the correct program (even `updmap` has recently been reported to fail).

Appendix A

Sample code

This section contains sample code that implements the recommendations of this document.

A.1 Sample code for font packages

Sample postinst script:

```
#
# postinst-texfonts
#
# postinst snippets for installing fonts for TEX
#
# Author: Florent Rougon <f.rougon@free.fr>
#
update_fontmaps()
{
    update-updmap --quiet
    # mktexlsr is recommended now because updmap-sys relies heavily on
    # Kpathsea to locate updmap.cfg and the map files. Also, it is slightly
    # better not to specify a particular directory to refresh because
    # updmap.cfg is typically found in $TEXMFSYSVAR while the map files are i
    # $TEXMFMAIN.
    # According to the Debian TEX policy, running mktexlsr and updmap-sys
    # should work as long as tex-common is configured and these files are
    # available (general Debian policy wouldn't assure that without this
    # override from the Debian TEX policy).
    if which mktexlsr >/dev/null; then mktexlsr; fi
    if which updmap-sys >/dev/null; then
        printf "Running updmap-sys... "
        updmap-sys --quiet
    fi
}
```

```

        echo "done."
    fi

    return 0
}

case "$1" in
    configure|abort-upgrade|abort-remove|abort-deconfigure)
        update_fontmaps
        ;;

    *)
        echo "postinst called with unknown argument \"'$1'\" ">&2
        exit 1
        ;;
esac

```

Sample postrm script:

```

#
# postrm-texfonts
#
# postrm snippets for installing fonts for TEX
#
# Author: Florent Rougon <f.rougon@free.fr>
#
tell_that_errors_are_ok()
{
    # Cheap option handling...
    if [ "$1" = -n ]; then
        prog="$2"
        endwith=' '
    else
        prog="$1"
        endwith='\n'
    fi

    # According to the Debian TEX policy, running mktexlsr and updmap-sys
    # should work as long as tex-common is configured and these files are
    # available (general Debian policy wouldn't assure that without this
    # override from the Debian TEX policy).
    printf "\
Trying to run '$prog' (error messages can be ignored if tex-common
is not configured)...$endwith"

```

```
        return 0
    }

# The function name is *try_to*_update_fontmaps because the following
# scenario might happen:
#   1. this package is deconfigured
#   2. tex-common and tetex-bin are removed
#   3. this package is removed or purged
#
# (cf. Policy § 6.5, step 2, about a conflicting package being removed due
# to the installation of the package being discussed).
#
# In this case, update-updmap, mktexlsr and updmap-sys would all be gone once
# tex-common and tetex-bin are removed, so we must append "|| true" to their
# calls.
try_to_update_fontmaps()
{
    # Don't print alarming error messages if the programs aren't even
    # available.
    if which update-updmap >/dev/null; then
        tell_that_errors_are_ok -n update-updmap
        update-updmap --quiet || true
        echo "done."
    fi
    # mktexlsr is recommended now because updmap-sys relies heavily on
    # Kpathsea to locate updmap.cfg and the map files. Also, it is slightly
    # better not to specify a particular directory to refresh because
    # updmap.cfg is typically found in $TEXMFSYSVAR while the map files are i
    # $TEXMFMAIN.
    if which mktexlsr >/dev/null; then
        tell_that_errors_are_ok mktexlsr
        mktexlsr || true
        echo "done."
    fi

    if which updmap-sys >/dev/null; then
        tell_that_errors_are_ok -n updmap-sys
        updmap-sys --quiet || true
        echo "done."
    fi

    return 0
}

case "$1" in
    remove|disappear)
```

```
        try_to_update_fontmaps
    ;;

    purge)
        # Supposing updmap.cfg & Co are clean (which I think is a reasonable
        # assumption), we don't need to call try_to_update_fontmaps().
        # Calling it on remove _and_ on purge just for hypothetical users
        # who would break their config before purging this package seems to
        # be more annoying than useful (it takes a lot of time).
    ;;

    upgrade|failed-upgrade|abort-upgrade|abort-install)
    ;;

    *)
        echo "postrm called with unknown argument \"${1}\"" >&2
        exit 1
    ;;
esac
```