fmtutil and updmap – past & future changes
(or: cleaning up the mess)

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Once upon a time ...
... there was only updmap and fmtutil
... and the world was good ...
... and ONE.
Until the introduction of sys-scripts!
Overview

▶ Repetition: What does updmap and fmtutil do?
▶ Repetition: Multi-layered updmap.cfg and fmtutil.cnf
▶ Modus operandi till TL2016
▶ What is the pain?
▶ New modus operandi from TL2017
▶ Secret item
What does updmap do?

- **font map definition** maps a \TeX{} internal name to an external font with optional additional transformations
- **font map file** a collection of font map definitions, normally one per ‘package’ collecting all fonts shipped by that package
- **updmap config file** list of font map files (and some options)
- **generated files** \texttt{ updmap} generates configuration files for various output drivers (\texttt{dvips, pdftex, dvipdfmx, pxdvi})
What does fmtutil do?

Dumps formats specified in fmtutil.cnf, which contains for each format the following information:

- **name**: the name of the format, also the program name
- **engine**: the engine used to dump the format
- **options**: command line options
- **patterns**: the hyphenation pattern file used
What does fmtutil do?

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Example formats: aleph, latex, dviluatex, ...
eplain pdftex language.dat -translate-file=cp227.tcx
*eplain.ini
Multi-layered configuration files

All `updmap.cfg` (or `fmtutil.cnf`) files are read in a stacked mode: later entries override former.

**System mode**

- `TEXMFSYSCONFIG`  
  `$TEXLIVE/YYYY/texmf-config/web2c/updmap.cfg`  
- `TEXMFSYSVAR`  
  `$TEXLIVE/YYYY/texmf-var/web2c/updmap.cfg`  
- `TEXMFLOCAL`  
  `$TEXLIVE/texmf-local/web2c/updmap.cfg`  
- `TEXMFMAIN`  
  `$TEXLIVE/YYYY/texmf/web2c/updmap.cfg`  
- `TEXMFDIST`  
  `$TEXLIVE/YYYY/texmf-dist/web2c/updmap.cfg`

**User mode**

- `TEXMFCONFIG`  
  `$HOME/.texlive/YYYY/texmf-config/web2c/updmap.cfg`  
- `TEXMFVAR`  
  `$HOME/.texlive/YYYY/texmf-var/web2c/updmap.cfg`  
- `TEXMFHOME`  
  `$HOME/texmf/web2c/updmap.cfg`  
- `TEXMFSYSCONFIG`  
  `$TEXLIVE/YYYY/texmf-config/web2c/updmap.cfg`  
- `TEXMFSYSVAR`  
  `$TEXLIVE/YYYY/texmf-var/web2c/updmap.cfg`  
- `TEXMFLOCAL`  
  `$TEXLIVE/texmf-local/web2c/updmap.cfg`  
- `TEXMFMAIN`  
  `$TEXLIVE/YYYY/texmf/web2c/updmap.cfg`  
- `TEXMFDIST`  
  `$TEXLIVE/YYYY/texmf-dist/web2c/updmap.cfg`
Practical example: mtpro fonts

Assume you have purchased mtpro2 fonts and want to use them with your \TeX{} Live installation. Problem: \TeX{} Live ships belleek fonts/maps defining the same fonts.

- put the files in \texttt{TEXMFLOCAL}
- edit (or create) \texttt{TEXMFLOCAL/texmf/web2c/updmap.cfg}
- disable the belleek map file by adding
  ```
  #! Map belleek.map
  ```
- enable the mtpro2 map file by adding
  ```
  Map mtpro2.map
  ```
- run \texttt{updmap-sys}
Modus operandi till TL 2016 – sys/user mode

System mode

Invoked by using updmap-sys or fmtutil-sys (or pass in the -sys option)

Generated files go into TEXMFSYSVAR.

User mode

Invoked by using updmap or fmtutil without the -sys option

Generated files go into TEXMFSVAR.
What is the problem?
Google for ‘latex font installation’ …
Problems arising from using the user mode

- if a user once calls `updmap`, he will have local copies of the config files for the output drivers, that shadow the system wide.
- after changes on the system side, the config files of that user are not update, so the user has to run `updmap` again.
- reason: output drivers don’t read stacked config files
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- reason: output drivers don’t read stacked config files

Consequence: loads of bug reports of fonts not found, formats not updated, etc. In 99.99% the above was the explanation.
We had enough of it …
New modus operandi (TL 2017)

**System mode**

Invoked by using `updmap-sys` or `fmtutil-sys` (or pass the `-sys` option)

**User mode**

Invoked by using `updmap-user` or `fmtutil-user` (or pass the `-user` option)
New modus operandi (TL 2017)

System mode

Invoked by using `updmap-sys` or `fmtutil-sys`
(or pass the `-sys` option)

User mode

Invoked by using `updmap-user` or `fmtutil-user`
(or pass the `-user` option)

Calling `updmap` or `fmtutil` without `-sys` or `-user` results in an error (with link to web site).
Does it help?

- We hope …
- invalidating wrong documentation on the web
- make people more aware, require explicit decision
Does it help?

- We hope ...
- invalidating wrong documentation on the web
- make people more aware, require explicit decision
- ask me at BachoTeX 2018
Best practice
Use system mode. Full stop.
Use cases

http://tug.org/texlive/scripts-sys-user.html
Single user computer – add fonts

▶ put the fonts into TEXMFLOCAL with the full subdirectory structure, following the TDS by default, this is /usr/local/texlive/texmf-local

▶ Add the font map to the file TEXMFLOCAL/web2c/updmap.cfg

▶ run (once) updmap-sys (no options needed).

Advantages: upgrades to new TEx Live releases pick up the fonts automatically
Multi-user computer – add system-wide fonts

A common need in a department or company with organization-specific fonts, which all users should have access to:

Follow use case above. That is all!
Multi-user computer – private user fonts

This is the only case where user mode is required!

Thus TEXMFHOME is used instead of TEXMFLocal:

▶ Put fonts into TEXMFHOME, following the TDS,
▶ add the font map lines to TEXMFHOME/web2c/updmap.cfg,
▶ run updmap-user once.
Multi-user computer – private user fonts

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Thus TEXMFHOME is used instead of TEXMFLOCAL:

- Put fonts into TEXMFHOME, following the TDS,
- add the font map lines to TEXMFHOME/web2c/updmap.cfg,
- run updmap-user once.

Warnings:

- Changes in the font setup of the system invisible!
- Run updmap-user regularly!
New/changed format definitions
Single user computer – add fonts

- adjust TEXMFLOCAL/web2c/fmtutil.cnf
- run (once) fmtutil-sys [no options needed].
Switching back to system mode

Remove (backup first) the following files to switch back to system mode:

- for updmap: TEXMFVAR/fonts/map
- for fmtutil: TEXMFVAR/web2c

TEXMFVAR is normally ~/.texliveYYYY/texmf-var.
Conclusion
Conclusion

We hope for the best!
Conclusion

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Thanks
Secret item
My new toy: tlmgr shell

$ tlmgr shell
protocol 1
tlmgr> load local
OK
tlmgr> get repository
repository = /home/norbert/public_html/tlpretest
OK
tlmgr> load remote
tlmgr: package repository /home/norbert/public_html/tlpretest
OK
tlmgr> update --list

tlmgr: saving backups to /home/norbert/tl/2017/tlpkg/backups

update: arabluatex  [635k]: local:  43739, source:  44102
update: babel       [951k]: local:  40706, source:  44101
update: jlreq       [83k]: local:  43693, source:  44117
update: langsci     [167k]: local:  44063, source:  44096
update: latexindent [568k]: local:  43326, source:  44120
update: lwp        [1593k]: local:  43857, source:  44119
update: markdown    [389k]: local:  43737, source:  44118
update: reledmac    [3026k]: local:  43946, source:  44099
update: stage       [153k]: local:  15878, source:  44100
update: tex4ebook   [89k]: local:  40199, source:  44103
update: tex4ht      [872k]: local:  43982, source:  44105
update: texlive-docindex [227k]: local:  44071, source:  44111
update: texlive-scripts [100k]: local:  44031, source:  44108
autoinst: childdoc   [246k]: local: <absent>, source:  44098
update: collection-latexextra [6k]: local:  43964, source:  44098
OK

tlmgr> update --all

tlmgr: saving backups to /home/norbert/tl/2017/tlpkg/backups
[ 1/15, ??:??/??:??] update: arabluatex [635k] (43739 -> 44102) ... done
[ 2/15, 00:02/00:28] update: babel [951k] (40706 -> 44101) ... done
[ 3/15, 00:06/00:34] update: jlreq [83k] (43693 -> 44117) ... done
[ 4/15, 00:07/00:38] update: langsci [167k] (44063 -> 44096) ... done
...
Supported operations

- set, get: for most command line switches to \TeX{} Live Manager
- all actions as is
- load local and remote databases

WIP installation of \TeX{} Live via \texttt{tlmgr}
Why?

- allow for new GUI to be written in arbitrary languages (communication via pipes)
- unifying installer and TeX Live Manager
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Now really finished … Thanks!