

TeX Live and Fedora

(info for users and developers)

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Agenda

- What is T_EX and its distributions
- T_EX Live 2010 facts
- How to package the whole distribution?
- T_EX Live 2010 demonstration and troubleshooting

Section 1

What is T_EX and its distributions

What is T_EX and who is responsible for it?

- T_EX is a source-based typesetting system
- T_EX is written in WEB programming language around 1970
- by Donald E. Knuth



What (La)T_EX can do?

$$\begin{aligned}
 F(k) &= \sum_{n=0}^{N/2-1} f(n)e^{-i2\pi kn/N} + \sum_{n=N/2}^{N-1} f(n)e^{-i2\pi kn/N} \\
 &= \sum_{n=0}^{N/2-1} \left[f(n) + f(n + N/2)e^{-i\pi k} \right] e^{-i2\pi kn/N} \\
 &= \sum_{n=0}^{N/2-1} \left[f(n) + f(n + N/2)(-1)^k \right] e^{-i2\pi kn/N}.
 \end{aligned}$$

What (La)T_EX can do?

```

\begin{equation} \label{eq:dft}
  \begin{split}
    F(k) \; &= \; \sum_{n=0}^{N/2-1} \{ f(n) e^{-i2\pi kn/N} \} + \\
    &\quad \sum_{n=N/2}^{N-1} \{ f(n) e^{-i2\pi kn/N} \} \; \backslash\backslash \\
    &= \; \sum_{n=0}^{N/2-1} \{ \Bigl[ f(n) + f(n+N/2) \\
    &\quad e^{-i\pi k} \Bigr] e^{-i2\pi kn/N} \} \backslash\backslash \\
    &= \; \sum_{n=0}^{N/2-1} \{ \Bigl[ f(n) + \\
    &\quad f(n+N/2) (-1)^k \Bigr] e^{-i2\pi kn/N} \} . \backslash\backslash
  \end{split}
\end{equation}

```


T_EX distributions

- teT_EX - created by Thomas Esser
 - in Fedora up to 5 and RHEL 5
 - monolythic design (200MiB)
 - developmet stopped in 2006
- T_EX Live - maintained by T_EX user groups (TUG)
 - in Fedora 6 and on and RHEL 6
 - developed since 1996
 - yearly releases
- MiK_TT_EX - Windows OS based distribution

T_EX Live for Fedora

- Available in Fedora
 - T_EX Live 2007 - stable release from January 2007
 - available in all mainline Fedoras since FC6
- Repository <http://jnovy.fedorapeople.org/texlive/>
 - T_EX Live 2010 - stable release from July 2010
 - available for Fedora 13, 14
 - T_EX Live 2011/dev - still under development
 - available for Fedora 13, 14, 15 (rawhide)
- <http://fedoraproject.org/wiki/Features/TeXLive>

T_EX Live 2010 structure

- Schemes
 - Collections
 - Packages

Scheme name	Size in MiB	Package name
Minimal	31/101	texlive-scheme-minimal
Basic	31/101	texlive-scheme-basic
Medium	231/461	texlive-scheme-medium
Full	520/1100	texlive-scheme-full
ConT _E Xt	60/230	texlive-scheme-context
GUST	206/436	texlive-scheme-gust
teT _E X	301/561	texlive-scheme-tetex
XML	118/275	texlive-scheme-xml

T_EX Live 2010 collections

- Collections - there are 84 in total
 - general purpose collections
 - texlive-collection-latex
 - texlive-collection-metapost
 - documentation-
 - texlive-collection-documentation-czechslovak
 - texlive-collection-documentation-japanese
 - lang^{*}
 - texlive-collection-langfinnish
 - texlive-collection-langvietnamese
 - font^{*}
 - texlive-collection-fontsrecommended
 - texlive-collection-formatsextra

T_EX Live 2010 packages

- architecture independent packages (1.128GiB compressed)
 - all styles, fonts, etc. stored at Comprehensive T_EX Network Archive (<http://ctan.org/>)
 - each package has its own upstream developer
 - 4600 stand-alone tar.xz compressed packages
 - 2024 runtime packages (410MiB)
 - 1741 doc packages (712MiB)
 - 835 source packages (33MiB)
 - beamer, bibtex, context, fancyhdr, etc.

T_EX Live 2010 packages

- binary utilities - developed by T_EX user's group (TUG)
 - all shipped in one large tarball
 - 121 stand-alone packages (17MiB)
 - pdftex, metapost, xdvi, etc.

T_EX Live 2010 summary

- 4600 stand-alone packages with dependencies
- all installed packages require 1.9GiB
 - not compressed, including all documentation

Section 2

How to package all the T_EX Live ?

T_EX Live 2010 packaging idea

- make a main SRPM package shipping:
 - binary utilities
 - all meta packages (schemes, collections)
- make a set of architecture independent SRPMs because:
 - each package from CTAN could have a different license
 - Fedora font packaging guidelines
- package all source packages in SRPMs
 - ... so that we don't need to ship them in separate packages

T_EX Live package metadata

```

name scale
category Package
revision 15878
shortdesc Scale document by sqrt(2) or magstep(2).
relocated 1
longdesc A package to scale a document by sqrt(2) (or by \magstep{2}).
longdesc This is useful if you are preparing a document on, for example,
longdesc A5 paper and want to print on A4 paper to achieve a better
longdesc resolution.
runfiles size=1
  RELOC/tex/latex/scale/scale.sty
docfiles size=6
  RELOC/doc/latex/scale/COPYING
  RELOC/doc/latex/scale/README
srcfiles size=3
  RELOC/source/latex/scale/scale.dtx
  RELOC/source/latex/scale/scale.ins
catalogue-ctan /macros/latex/contrib/scale
catalogue-date 2006-11-06 12:20:58 +0100
catalogue-license gpl
catalogue-version 1.1.2

```

T_EX Live RPM package preamble

```
Source0: scale.tar.xz
Source1: scale.doc.tar.xz
Source2: scale.source.tar.xz

Name: texlive-scale
License: GPL+
Summary: Scale document by sqrt(2) or magstep(2)
Version: %{tl_version}
Release: %{tl_noarch_release}.1.1.2.svn15878%{?dist}
BuildArch: noarch
Requires: texlive-base = %{tl_version}
Requires: texlive-kpathsea-bin = %{tl_version}
Requires(post,postun): texlive-kpathsea-bin = %{tl_version}
Provides: tex(scale.sty)
```

%description

A package to scale a document by sqrt(2) (or by \magstep{2}). This is useful if you are preparing a document on, for example, A5 paper and want to print on A4 paper to achieve a better resolution.■

date: 2006-11-06 12:20:58 +0100

T_EX Live RPM package scriptlets

```
%post
mkdir -p /var/run/texlive
touch /var/run/texlive/run-texhash
:

%postun
if [ $1 == 1 ]; then
    mkdir -p /var/run/texlive
    touch /var/run/run-texhash
else
    %{_bindir}/texhash 2> /dev/null
fi
:

%posttrans
[ -e /var/run/texlive/run-texhash ] && [ -e %{_bindir}/texhash ] &&
%{_bindir}/texhash 2> /dev/null; rm -f /var/run/texlive/run-texhash
:
```

T_EX Live RPM package prep phase

```
%package doc
Summary: Documentation for scale
Version: %{tl_version}
Release: %{tl_noarch_release}.1.1.2.svn15878%{?dist}
Requires: texlive-base = %{tl_version}
BuildArch: noarch

%description doc
Documentation for scale

%prep
%setup -q -c -T

%build
```

T_EX Live RPM package install phase

```
%install
rm -rf %{buildroot}
mkdir -p %{buildroot}%{_texdir}/texmf-dist
ln -s %{_texdir}/licenses/gpl.txt gpl.txt
xz -dc %{SOURCE0} | tar x -C %{buildroot}%{_texdir}/texmf-dist
xz -dc %{SOURCE1} | tar x -C %{buildroot}%{_texdir}/texmf-dist
# nuke useless tlmgr packaging stuff and doc droppings
rm -rf %{buildroot}%{_texdir}/tlpkg/tlpobj/
rm -rf %{buildroot}%{_texdir}/texmf-dist/tlpkg/tlpobj/
rm -rf %{buildroot}%{_texdir}/texmf/doc/man/man*/*.pdf
rm -rf %{buildroot}%{_texdir}/texmf/doc/man/Makefile
rm -rf %{buildroot}%{_texdir}/texmf/doc/man/man*/Makefile
rm -rf %{buildroot}%{_texdir}/texmf/doc/info/dir

%clean
rm -rf %{buildroot}
```

T_EX Live RPM package files section

```
%files
%defattr(-,root,root)
%doc gpl.txt
%{_texdir}/texmf-dist/tex/latex/scale/scale.sty
```

```
%files doc
%defattr(-,root,root)
%doc gpl.txt
%{_texdir}/texmf-dist/doc/latex/scale/COPYING
%{_texdir}/texmf-dist/doc/latex/scale/README
```

T_EX Live - tl2rpm utility

- converts upstream metadata to spec files
- adds functionality virtual Provides such as "tex(tex)", "tex(latex)" etc.
- generates virtual Provides for files with various extensions
 - allows things like "yum install 'tex(latexsym.sty)'"
 - or "yum install 'tex(submit.tex)'"
- extensions exported via virtual Provides are STY, CLS, LDF, BBX, CBX, BUG, BG2, CLO, TFM, TTF, TTC, PFA, PFB, PCF, OTF, TEX, CNF, CFG, DEF, DAT, FD, ENC, MAP, VF, VPL
- written in C (75KiB)

T_EX Live - tl2rpm utility - heuristics

- analyzes STY, CLS, TEX, BBX, CBX files for:
 - `RequireBibliographyStyle`
 - `RequireCitationStyle`
 - `ProvidesPackage`
 - `RequirePackage`
 - `input` commands
- adds correct dependencies to spec automatically, such as:
 - `Provides: tex(philosophy-classic.bbx)`
 - `Requires: tex(philosophy-standard.bbx)`
 - `Requires: tex(pstricks.sty)`

T_EX Live package with dependencies

```

name amstex
category Package
revision 18835
shortdesc American Mathematical Society plain TeX macros.
longdesc AMSTeX is a TeX macro package, originally written by Michael
longdesc Spivak for the American Mathematical Society (AMS) during 1983-
longdesc 1985 and is described in the book 'The Joy of TeX'. It is based
longdesc on Plain TeX, and provides many features for producing more
longdesc professional-looking maths formulas with less burden on
longdesc authors. More recently, the focus of attention has switched to
longdesc amslatex, but AMSTeX remains as a working system.
depend tex
depend amstex.ARCH
execute AddFormat name=amstex engine=pdftex options="-translate-file=cp227.tcx *amstex"
runfiles size=44
  texmf-dist/tex/amstex/base/amspt.sti
  texmf-dist/tex/amstex/base/amspt.sty
...
catalogue-license lppl
catalogue-version 2.2

```

T_EX Live package with dependencies

```

Name: texlive-amstex
License: LPPL
Summary: American Mathematical Society plain TeX macros
Version: %{tl_version}
Release: %{tl_noarch_release}.2.2.svn18835%{?dist}
BuildArch: noarch
Requires: texlive-base = %{tl_version}
Requires: texlive-kpathsea-bin = %{tl_version}
Requires: texlive-tetex-bin = %{tl_version}
Requires(post,postun): texlive-tetex-bin = %{tl_version}
Requires(post,postun): texlive-kpathsea-bin = %{tl_version}
Requires: texlive-tex = %{tl_version}
Requires: texlive-amstex-bin = %{tl_version}
Provides: tex(amsptt1.tex)
Provides: tex(amstex.tex)
Provides: tex(amstex.bug)
Provides: tex(amsptt.sty)
Provides: tex(amstex.sty)

```

T_EX Live 2010 and 2011/dev comparison

- T_EX Live 2010
 - 4600 architecture independent packages
 - 121 binary utilities
 - 84 collections
 - 8 schemes

- T_EX Live 2011/dev
 - 4805 architecture independent packages
 - 123 binary utilities
 - 86 collections
 - 8 schemes

Section 3

T_EX Live demonstration and troubleshooting

TODO list

- finish legal audit -
`http://fedoraproject.org/wiki/Talk:Features/TeXLiveLegalAudit`
- import all packages to Fedora
- implement CTAN and Fedora syncing scripts
- (Fedora T_EX Live spin?)

References



T_EXLive homepage

<http://www.tug.org/texlive/>



Upstream mailing list

tex-live@tug.org



Downstream Fedora mailing list

texlive@linux.cz



Fedora T_EXLive user's common problems and solutions

<http://www.linux.cz/pipermail/texlive/>



Basic description, plans and FAQ

<http://fedoraproject.org/wiki/Features/TeXLive>

Questions?

Thanks for listening.