

Using TrueType fonts with T_EX via Postscript Type 1 format

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Abstract

This document describes how I have managed to use TrueType fonts with teT_EX 1.0 under SuSE Linux 6.2.¹ The way described in “Using TrueType fonts with T_EX (L^AT_EX) and pdfT_EX (pdfL^AT_EX)” [Rak] did work with MiK_TE_X, but I did not manage to use the fonts with teT_EX.

Strictly speaking this document doesn’t describe how to use TrueType fonts with teT_EX but how to convert TrueType fonts to PostScript Type 1 format which can be used with T_EX.

The shown shell commands are unix style. Similar commands should also work under Windows. Please try yourself to find the according commands.

If I have made any errors or if you have a suggestion please mail it to me.

This document can be downloaded from <ftp://ftp.dante.de/tex-archive/info/TrueType/> (PDF and html available).

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¹The updmap section has been updated to teT_EX 2.0.

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1 Disclaimer

This document is provided as is. I will not guarantee that the described conversion works and that it doesn't cause any damage. I also will not give any support for problems doing the conversion. Please refer to the newsgroups, e.g., `comp.text.tex` or `de.comp.text.tex`. My email address is given to give feedback (suggestions, error reports), not for support.

I don't know if the shown conversion violates any copyrights.

2 Preparing the conversion

As an example I will show how to convert the font "VAG Rounded BT" which is part of Microsoft Windows 98 (`tt0756m_.TTF`).

First copy the fonts you want to convert into a temporary directory (e.g., a Windows disk is mounted on `/dos/c`):

```
$ mkdir ~/ttf
$ cp /dos/c/windows/fonts/tt0756m_.TTF ~/ttf
```

Then rename the files to a name conforming the fontname scheme by K. Berry [Ber99]. In this case the supplier is "Bitstream" (Filename `b*****.ttf`)². The Shortcut for the typeface is "vr" (Filename `*vr*****.ttf`) taken from [Ber99]. The weight is "regular" (Filename `***r****.ttf`). The variant is omitted because itself and the width are normal. The encoding is set to "8a" which means Adobe standard encoding³ (Filename `****8a**.ttf`). Because the width is standard and the font is linearly scaled, these parts of the filename are omitted. Finally the filename results in `bvrr8a.ttf`. Move the original file to this filename:

```
$ mv tt0756m_.TTF bvrr8a.ttf
```

A more detailed description on the naming conventions can be found in [Ber99].

²You can find this out by viewing the file with `less`.

³Maybe the TrueType font is in Windows encoding, but the approach using "8a" worked fine, so I won't change it.

3 Generating the Postscript Type 1 fonts

To convert the TrueType font to Postscript Type 1 format I used the program `ttf2pt1` by Andrew Weeks et al. (<http://ttf2pt1.sourceforge.net/>). Generate the font files `bvrr8a.afm`, `bvrr8a.pfa`, and `bvrr8a.pfb` by using these commands:

```
$ ttf2pt1 -a -e bvrr8a.ttf bvrr8a
$ ttf2pt1 -a -b bvrr8a.ttf bvrr8a
```

The switch `-a` switches the conversion of some ligatures (e.g., `fi`) on (thanks to Hume Smith for that hint). In one of the last lines of the output the fontname is noted:

```
FontName VAGRoundedBT-Regular
```

Note the name on a sheet of paper—You will need it later again.

The script `ttf2type1` does these conversion automatically for all files with the extension `ttf` in the present working directory. To get the font names you should start it as follows:

```
$ ./ttf2type1 2>&1 | grep FontName
```

4 Generating the T_EX related font files

Use “fontinst” by Alan Jeffrey and Rowland McDonnell (<ftp://ftp.tex.ac.uk/tex-archive/fonts/utilities/fontinst>) to generate the files that T_EX needs to use the fonts:

```
$ tex fontinst.sty
* \latinfamily{bvr}{ } \bye
```

If you use fonts with different variants you have to append the letter of the variant to the family name of the font (e.g., `VAGRoundedBT_Condensed` would be `bvrc`). This automatic conversion only works if you are using a text font and if you have used file names according to the fontname scheme by K. Berry [Ber99]. Otherwise, you will get some nearly empty `.fd` files and nothing more.

Now use `pltotf` on every file with the extension `.pl` and `vptovf` on all files with the extension `.vpl`:

```
$ for a in *.pl; do pltotf $a; done
$ for a in *.vpl; do vptovf $a; done
```

Now you may delete all files that are not used anymore:

```
$ rm *.pl *.vpl *.mtx
```

The manual of the `fontinst` package includes a better description.

5 Move the files to the right places

Now all files have to be moved to a position where $\text{T}_{\text{E}}\text{X}$ can find them. I suggest to put them in the `TEXMFLOCAL` tree. One possibility to get its location is to view the file `texmf.cnf`. You can locate it by using `kpsewhich`:

```
$ kpsewhich texmf.cnf
```

e.g., on SuSE 6.2 and $\text{t}_{\text{E}}\text{X}$ 1.0 `texmf.cnf` is located in the directory `/etc/texmf/`. Another possibility to get `TEXMFLOCAL` is to use `kpsexpand`:

```
$ kpsexpand '$TEXMFLOCAL'
```

On my computer the `TEXMFLOCAL` tree starts at `/usr/local/teTeX/share/texmf.local`. The `TEXMFMAIN` tree starts at `/usr/local/teTeX/share/texmf`. In order to have less work I set the shell variable `TMF` to the local $\text{T}_{\text{E}}\text{X}$ tree by typing:

```
$ export TMF='kpsexpand '$TEXMFLOCAL''
```

The files of each file type are installed in an own directory tree which has this structure:

```
$TMF/fonts/<extension>/<supplier>/<fontname>/
```

In this case:

```
$TMF/fonts/<extension>/bitstream/vagrounded/
```

The extensions are: `tfm`, `vf`, `pfa`, `afm`, and `ttf`. The extension `pfm` is an exception, its files have to be copied to the subdirectory `.../type1/...`. Copy the files by typing:

```
$ for a in tfm vf pfa afm ttf; do
> mkdirhier $TMF/fonts/$a/bitstream/vagrounded;
> mv *.$a $TMF/fonts/$a/bitstream/vagrounded;
> done
$ mkdirhier $TMF/fonts/type1/bitstream/vagrounded;
$ mv *.pfb $TMF/fonts/type1/bitstream/vagrounded;
```

You do not really need to copy the `ttf` and `pfa` files into the directory because $\text{T}_{\text{E}}\text{X}$ does not use them. I just did it to save them at a special place where I surely find them, if I need them for other purposes later.

Move the `*.fd` files to the directory `$TMF/tex/latex/psnfss/`:

```
$ mkdirhier $TMF/tex/latex/psnfss
$ mv *.fd $TMF/tex/latex/psnfss
```

6 Make dvips find the new font

There are at least two possibilities to make dvips find the new font. The first has a simple installation but its usage is a little bit more complicated and it does not enable xdvi to use the font. The second possibility has a more complicated installation and may lead to problems when updating L^AT_EX later. But it enables xdvi to use the new fonts.

6.1 Use an additional map file

Create the file `$TMF/dvips/vagrounded/config.vagrounded` with these contents:

```
o
p +vagrounded.map
```

Create the file `$TMF/dvips/vagrounded/vagrounded.map` with these contents (*Each font definition is in one single line.* So in this example each line starts with `bvr` and ends with `<bvrr8a.pfb`. The `\` just shows that the line is continued in the next one; it does not appear in the file itself.):

```
bvrr8r VAGroundedBT_Regular \
    "TeXBase1Encoding ReEncodeFont" <8r.enc <bvrr8a.pfb
bvrr08r VAGroundedBT_Regular \
    "0.167 SlantFont TeXBase1Encoding ReEncodeFont" \
    <8r.enc <bvrr8a.pfb
```

The first item is the filename of the TrueType font with “8r” instead of “8a”. The second item is the font name you held in mind, hopefully. The next items are the same all times. The last one is the filename of the TrueType font with the extension `.pfb`. Don’t use the tabulator character in the mapping file because this causes trouble with the `updmap` tool generating the map file for pdfL^AT_EX. Use one single space instead.

In the second line the slanted shape of the font is defined. The `fontinst` package generates slanted, italic and small capital shapes of the font automatically if no special font file is available. To use the generated slanted shape the second line is necessary.

Additional font effects can be reached by using `afm2tfm`. Type

```
$ info afm2tfm
```

and go to the section “Special font effects” (This was a hint of Thomas Henlich (henlich@mmers1.mw.tu-dresden.de)).

Finally type

```
$ texhash
```

to update the T_EX file database.

6.2 Append data to the global map file

This technique was suggested by Nguyễn-Dai Quý (daiquy.nguyen@ulg.ac.be) [Quý00]. There are different possibilities to append the map lines to the global map file. Here, only the simplest (and best) possibility is described. It works with all relatively recent TeX versions.

Before you can do it the TeX file database has to be updated if that has not been done, yet:

```
$ texhash
```

Then, just type

```
$ updmap --enable Map vagrounded.map
```

If you have generated more than one map file you have to repeat that line for each map file. It is not possible to enable multiple map files in one call of updmap.

When you install a new version of TeX probably the added map entries get lost. Then you have to repeat the updmap calls again.

7 Usage of the new font

To use the new font you simple have to insert

```
\renewcommand{\rmdefault}{bvr}\rmfamily
```

into you TeX sourcecode. For example [sample.tex](#)

```
\documentclass{article}
\begin{document}
\renewcommand{\rmdefault}{bvr}\rmfamily
\noindent Hello, I am VAG Rounded BT
{\slshape Hello, I am VAG Rounded BT slanted}\\
{\scshape Hello, I am VAG Rounded BT small capitals}\\
\end{document}
```

It is more elegant to create an new style file that switches to your new font. The style file [vagrounded.sty](#) is an example how this can be done.

```
\ProvidesPackage{vagrounded}
[2000/05/12 VAG-Rounded font as default sf font]
%%
\renewcommand{\sfdefault}{bvr}
%%
\AtEndDocument{\PackageWarningNoLine{vagrounded.sty}%
  {Ensure to use dvips with the option -Pvagrounded}}
%%
\endinput
```

If you have not included the mapping entries to the file `psfonts.map` (section 6) you also have to tell dvips that it should use the font:

```
$ latex sample
$ dvips -Pvagrounded sample
```

This should produce the PostScript file `sample.ps` which looks like figure 1.

Hello, I am VAG Rounded BT
Hello, I am VAG Rounded BT slanted
HELLO, I AM VAG ROUNDED BT SMALL CAPITALS

Figure 1: Sample of the font VAGRounded BT

A To do

Nguyễn-Dai Quý has complained that the fontnames contain the underscore (`_`) instead of the minus (`-`). I have not been able to find out whether this causes problems using the fonts. But I also know that nobody uses fonts with an underscore in the name. So I should find out whether the underscores may cause problems e.g., when including eps files which use these fonts (e.g., from Adobe Illustrator).

B Links

Nguyễn-Dai Quý has written a script that does all or most of the conversion automatically [Quy00]. It is available from <http://iris.ltas.ulg.ac.be/viettug/contrib/q/>. This script also replaces the underscores by minuses in the fontnames.

Hume Smith has developed a method that does not include the Type 1 fonts into the postscript file but tells ghostscript to use the TrueType fonts directly [Smi01]. He says that this approach avoids some problems with some fonts. But these files are not portable anymore because they do not contain the used fonts. His description is available from <http://geocities.com/kwantus/ttf.html>.

C References

- [Ber99] K. Berry. Fontname, March 1999. <ftp://ftp.dante.de/tex-archive/info/fontname/>.
- [Quy00] Nguyễn-Dai Quý. Truetype with tetex : Quick and dirty, 2000. <http://iris.ltas.ulg.ac.be/viettug/contrib/q/>.

- [Rak] Damir Rakityansky. Using TrueType with TeX (LaTeX) and pdf-TeX (pdfLaTeX). <http://www.radamir.com/tex/ttf-tex.htm>.
- [Smi01] Hume Smith. Kwantus' TTF/teTeX notes, 2001. <http://geocities.com/kwantus/ttf.html>.