The XeTeX reference guide

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Contents

1 Introduction

This document serves to summarise XETEX's additional features without being so much as a 'users' guide'. Note that much of the functionality addressed here is provided in abstracted form in various LATEX packages and ConTEXt modules.

Part I
XETEX specifics

2 The \font command

The `\font` command has seen significant addition in XETEX to facilitate rich font feature selection. Under TEX, fonts were selected like so: `\font\1="`*‹font name›*`"` with various options appended such as '`at 10pt`' or '`scaled 1.2`'. This syntax has been extended in XETEX by passing additions options through the *‹font name›*. This syntax looks something like

`\font\1="`*‹font name›‹font options›*`:`*‹font features›*`"`

The *‹font name›* is the actual name of the font; e.g., '`Charis SIL`'. The other arguments are optional and described subsequently.

2.1 Font options

‹Font options› may be an concatenation of the following:

`/B` Use the bold version of the selected font.
`/I` Use the italic version of the selected font.
`/BI` Use the bold italic version of the selected font.
`/IB` Same as `/BI`.
`/S=`x Use the version of the selected font corresponding to the optical size x pt.

`/AAT` Explicitly use the ATSUI renderer (Mac OS X only).
`/ICU` Explicitly use the ICU OpenType renderer (only useful on Mac OS X).

2.2 Font features

The ‹*font features*› is a comma or semi-colon separated list activating or deactivating various AAT or OpenType font features, which will vary by font. The XeTeX documentation files `aat-info.tex` and `opentype-info.tex` provide per-font lists of supported features.

2.2.1 Arbitrary AAT or OpenType features.

OpenType font features are chosen with standard tags, registered with Adobe or Microsoft: see this link[1].

> *Example:*
>
> ```
> \font\warnock="Warnock Pro/I/S=5:+smcp" at 12pt
> \warnock This is the OpenType font Warnock Pro in italic
>          with small caps at a small optical size.
> ```
>
> THIS IS THE OPENTYPE FONT WARNOCK PRO IN ITALIC WITH SMALL CAPS AT A SMALL OPTICAL SIZE.

AAT font features are specified by strings within each font. Therefore, even equivalent features between different fonts can have different names.

> *Example:*
>
> ```
> \font\hoefler="Hoefler Text/B:Letter Case=Small Caps" at 12pt
> \hoefler This is the AAT font Hoefler Text in bold with small caps.
> ```
>
> **THIS IS THE AAT FONT HOEFLER TEXT IN BOLD WITH SMALL CAPS.**

Some font features may be applied for any font. These are

`mapping=`*`<font map>`*
: Uses the specified font mapping for this font.

`color=`*`RRGGBB[TT]`*
: Triple pair of hex values to specify the colour in RGB space, with an optional value for the transparency.

`letterspace=`x
: Adds x/S space between letters in words, where S is the font size.

[1] `http://www.microsoft.com/typography/otspec/featuretags.htm`

2.2.2 *OpenType script and language support*

OpenType font features can vary by script ('alphabet') and by language.

`script=<script tag>`
: See this link[2].

`language=<lang tag>`
: See this link[3].

2.2.3 *Multiple Master and Variable Axes AAT font support*

`weight=`x
: Selects the normalised font weight, x.

`width=`x
: Selects the normalised font width, x.

`optical size=`x
: Selects the optical size, x. Note the difference between the `/S` font option, which selects discrete fonts.

3 XeTeX's \specials

To be addressed. Hopefully not by me.

Part II
New commands

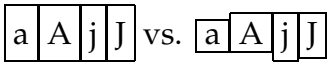
4 Font commands

`\XeTeXuseglyphmetrics` ‹*Integer*›
Boolean to specify if the height and depth of characters are taken into account (≥ 1). Otherwise (< 1), a single height and depth for the entire alphabet is used. When activated, by default, gives better output but is slower.

[2] `http://www.microsoft.com/typography/otspec/scripttags.htm`
[3] `http://www.microsoft.com/typography/otspec/languagetags.htm`

Example:

```
\XeTeXuseglyphmetrics=0 \fbox{a}\fbox{A}\fbox{j}\fbox{J} vs.
\XeTeXuseglyphmetrics=1 \fbox{a}\fbox{A}\fbox{j}\fbox{J}
```



`\XeTeXglyph` ‹*Glyph slot*›
Inserts the glyph in ‹*slot*› of the current font. **Font specific**, so will give different output for different fonts.

`\XeTeXglyphindex` ‹*Glyph name*›
Returns the ‹*glyph slot*› corresponding to the (possibly font specific) ‹*glyph name*› in the currently selected font. Only works for TrueType fonts (or TrueType-based OpenType fonts) at present. Use `fontforge` or similar to discover glyph names.

`\XeTeXcharglyph` ‹*Char code*›
Returns the default glyph number of character ‹*Char code*› in the current font, or 0 if the character is not available in the font.

Example:

```
\font\1="Charis SIL"\1
The glyph slot in Charis SIL for the Yen symbol is:
    \the\XeTeXglyphindex"yen". % the font-specific glyph name
Or: \the\XeTeXcharglyph"00A5.  % the unicode character slot

This glyph may be typeset with the font-specific glyph slot:
\XeTeXglyph1458,
or the unicode character slot:
\char"00A5.
```

The glyph slot in Charis SIL for the Yen symbol is: 1458. Or: 1458.
This glyph may be typeset with the font-specific glyph slot: ¥, or the unicode character slot: ¥.

`\XeTeXfonttype` ‹*font*›
Returns what renderer is used for a ‹*font*›:

`0` for TEX(a legacy TFM-based font);
`1` for ATSUI (usually an AAT font);
`2` for ICU (an OpenType font).

Example:

```
\newcommand\whattype[1]{%
  \texttt{\fontname#1} is rendered with
  \ifcase\XeTeXfonttype#1 \TeX\or ATSUI\or ICU\fi.\par}
\font\1="cmr10"
\font\2="Hoefler Text"
\font\3="Charis SIL"
\font\4="Charis SIL/AAT"
\whattype\1\whattype\2\whattype\3\whattype\4
```

cmr10 is rendered with TEX.
"Hoefler Text" is rendered with ATSUI.
"Charis SIL" is rendered with ICU.
"Charis SIL/AAT" is rendered with ATSUI.

4.1 OpenType fonts

`\XeTeXOTcountscripts` ‹*Font*›
Returns the number of scripts in a font.

`\XeTeXOTscripttag` ‹*Font*› ‹*Integer, n*›
Returns the n-th script tag of a font.

`\XeTeXOTcountlanguages` ‹*Font*› ‹*Script tag*›
Returns the number of languages in the script of a font.

`\XeTeXOTlanguagetag` ‹*Font*› ‹*Script tag*› ‹*Integer, n*›
Returns the n-th language tag in the script of a font.

`\XeTeXOTcountfeatures` ‹*Font*› ‹*Script tag*› ‹*Language tag*›
Returns the number of features in the language of a script of a font.

`\XeTeXOTfeaturetag` ‹*Font*› ‹*Script tag*› ‹*Language tag*› ‹*Integer, n*›
Returns the n-th feature tag in the language of a script of a font.

4.2 AAT fonts

4.2.1 Features

`\XeTeXcountfeatures` ‹*font*›
Returns the number of features in the ‹*font*›.

`\XeTeXfeaturecode` ‹*font*› ‹*integer, n*›
Returns the feature code for the n-th feature in the ‹*font*›.

`\XeTeXfeaturename` ‹*font*› ‹*feature code*›
Returns the name corresponding to the ‹*feature code*› in the ‹*font*›.

`\XeTeXisexclusivefeature` ‹*font*› ‹*feature code*›
Returns greater than zero if the feature of a font is exclusive (can only take a single selector).

4.2.2 Feature selectors

`\XeTeXcountselectors` ‹*font*› ‹*feature*›
Returns the number of selectors in a ‹*feature*› of a ‹*font*›.

`\XeTeXselectorcode` ‹*font*› ‹*feature code*› ‹*integer, n*›
Returns the selector code for the n-th selector in a ‹*feature*› of a ‹*font*›.

`\XeTeXselectorname` ‹*font*› ‹*feature code*› ‹*selector code*›
Returns the name corresponding to the ‹*selector code*› of a feature of a ‹*font*›.

`\XeTeXisdefaultselector` ‹*font*› ‹*feature code*› ‹*selector code*›
Returns greater than zero if the selector of a feature of a font is on by default.

4.2.3 Variation axes

`\XeTeXcountvariations` ‹*font*›
Returns the number of variation axes in the ‹*font*›.

`\XeTeXvariation` ‹*font*› ‹*integer, n*›
Returns the variation code for the n-th feature in the ‹*font*›.

`\XeTeXvariationname` ‹*font*› ‹*variation code*›
Returns the name corresponding to the ‹*feature code*› in the ‹*font*›.

`\XeTeXvariationmin` ‹*font*› ‹*variation code*›
Returns the minimum value of the variation corresponding to the ‹*variation code*› in the ‹*font*›.

`\XeTeXvariationmax` ‹*font*› ‹*variation code*›
Returns the maximum value of the variation corresponding to the ‹*variation code*› in the ‹*font*›.

`\XeTeXvariationdefault` ‹*font*› ‹*variation code*›
Returns the default value of the variation corresponding to the ‹*variation code*› in the ‹*font*›.

5 Encodings

`\XeTeXinputencoding` ‹*Charset name*›
Defines the input encoding of the following text.

`\XeTeXdefaultencoding` ‹*Charset name*›
Defines the input encoding of subsequent files to be read.

6 Line breaking

`\XeTeXdashbreakstate` ‹*Integer*›
Specify whether line breaks after en- and em-dashes are allowed. On, 1, by default.

`\XeTeXlinebreaklocale` ‹*Locale ID*›
Defines how to break lines for multilingual text.

`\XeTeXlinebreakskip` ‹*Glue*›
Inter-character linebreak stretch

`\XeTeXlinebreakpenalty` ‹*Integer*›
Inter-character linebreak penalty

`\XeTeXupwardsmode` ‹*Integer*›
If positive, successive lines of text (and rules, boxes, etc.) will be stacked upwards instead of downwards.

7 Graphics

`\XeTeXpicfile` ‹*filename*› ‹*optional options*›
Insert an image.

`\XeTeXpdffile` ‹*filename*› ‹*optional options*›
Insert (pages of) a PDF.

7.1 Parity with pdfTEX

`\pdfpageheight` ‹*Number*›
The height of the PDF page.

`\pdfpagewidth` ‹*Number*›
The width of the PDF page.

`\pdfsavepos`
Saves the current location of the page in the typesetting stream.

`\pdflastxpos`
Retrieves the horizontal position saved by the above.

`\pdflastypos`
Retrieves the vertical position saved by the above.

8 Misc.

`\XeTeXversion`
A number corresponding to the XETEX version.

`\XeTeXrevision`
A string corresponding to the XETEX revision number.

> *Example:*
>
> ```
> The \XeTeX\ version is: \the\XeTeXversion\XeTeXrevision
> ```
>
> The XETEX version is: 0.994a