

FONT TECHNOLOGY OPENTYPE

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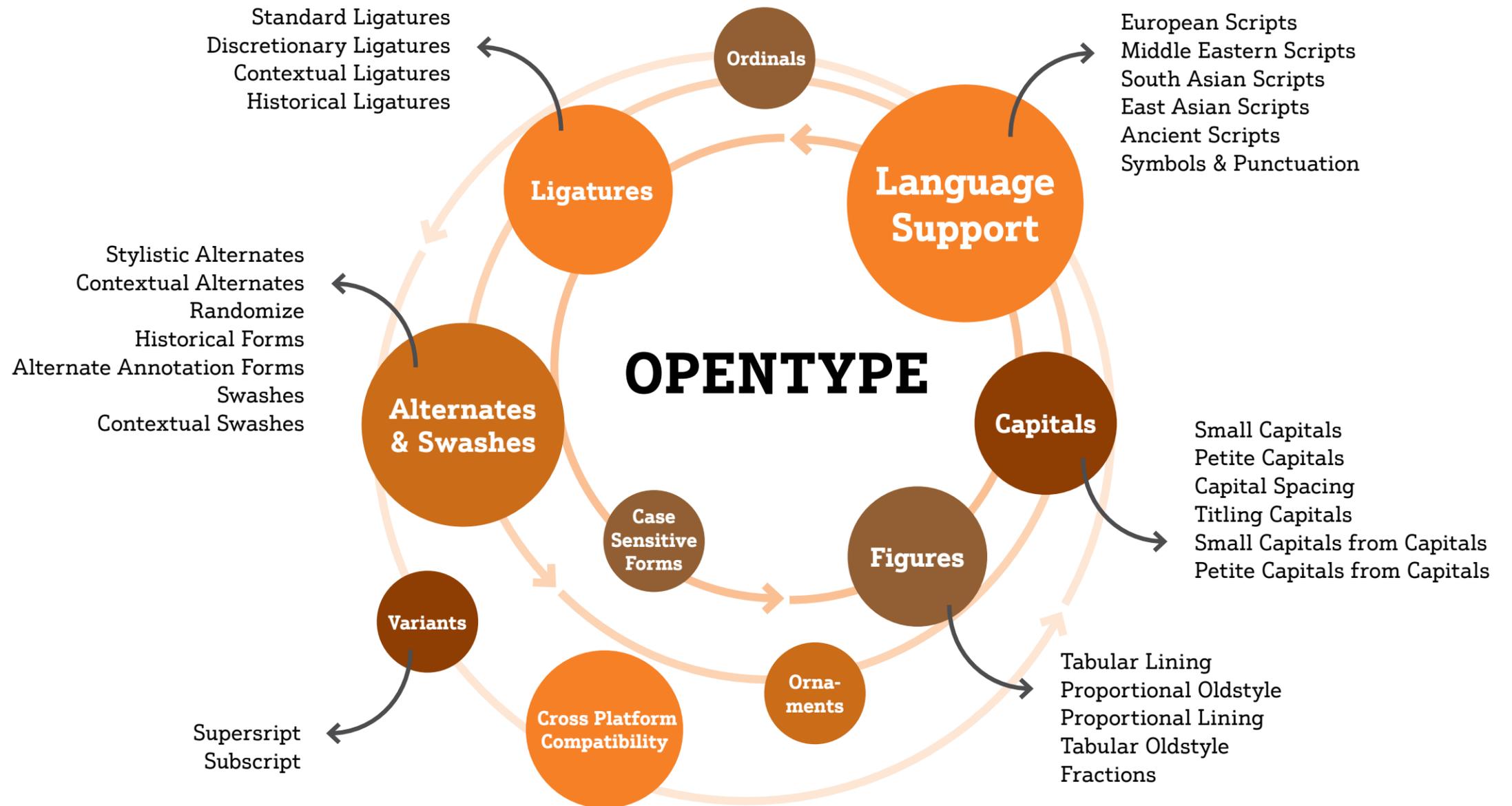
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1.1 Introduction to OpenType

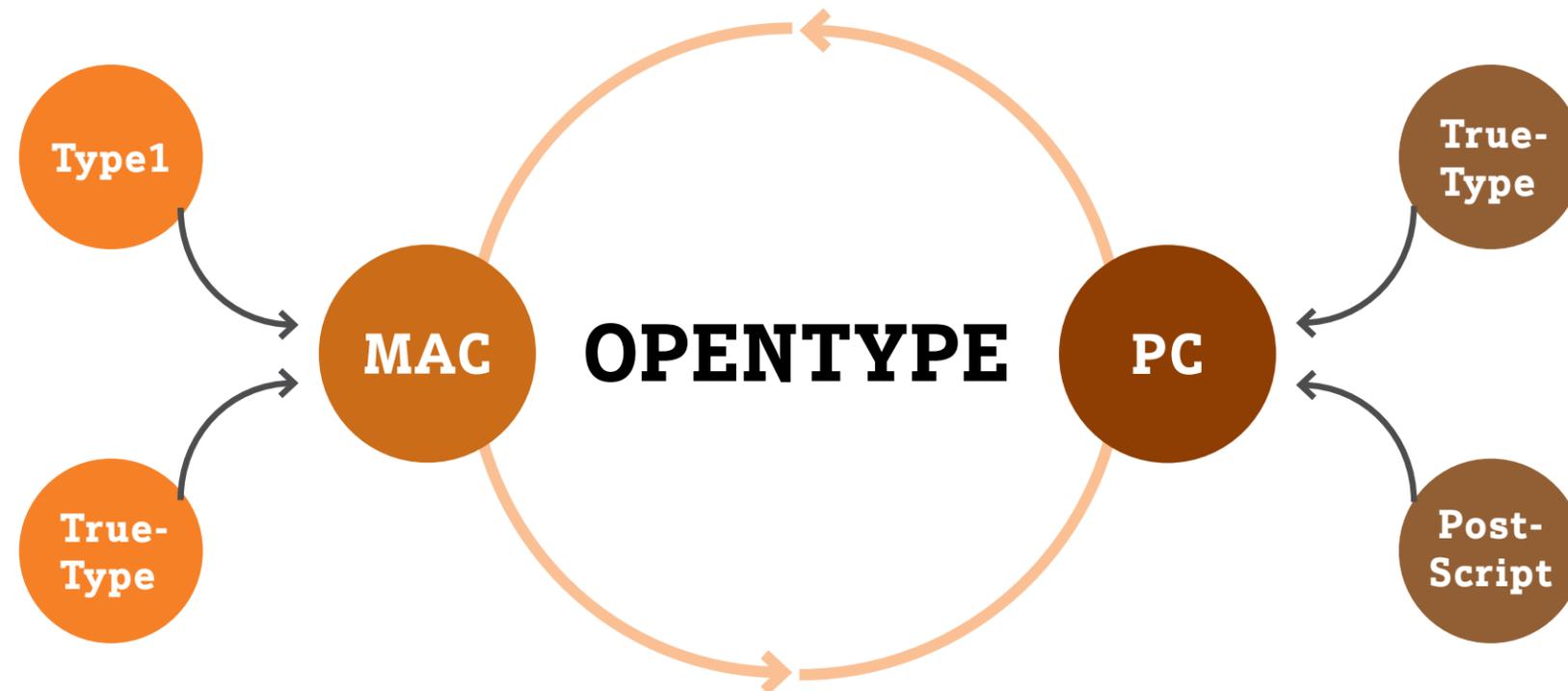
OpenType is a cross-platform font format developed by Adobe and Microsoft. URW++ offers its complete typeface library of Latin fonts in OpenType format. This document focuses primarily on OpenType font technology covering character sets for Western and Eastern Europe.



As illustrated in the above graphic, the OpenType font format has many benefits. Not only the cross-platform compatibility makes OpenType the most advanced font format up to date, but especially its ability to support widely expanded character sets and layout features, in turn providing richer linguistic support and advanced typographic control.

2.1 Cross Platform Compatibility

The OpenType font format uses only a single font file for the outline and the metric data and can be installed on both Mac OSX and Windows systems, ensuring total compatibility among all electronic documents.



2.2 Application Support

Full support for Unicode as well as for typographic features is provided solely by high-end layout programs such as InDesign or QuarkXPress. Of course, Windows and Mac OSX support the multilingual features of OpenType.

3.1 OpenType Formats

- OpenType Standard OpenType Standard covers the complete Latin character sets for Western and Eastern Europe.
- OpenType Plus OpenType Plus covers the complete Latin character sets for Western and Eastern Europe as well as the Cyrillic and/or Greek character sets.
- OpenType Pro Besides complete Latin character sets for Western and Eastern Europe, OpenType Pro may include several sets of numeric figures, true fractions, small caps, additional ligatures, swash characters, dingbats, and more. Some OpenType Pro fonts also include Cyrillic and/or Greek.

1.1 Language Support

Unicode is the standard for OpenType character encoding. In contrast to earlier fonts in Type 1 and TrueType format, Unicode allows for multiple language character sets without duplicating glyph data. This can significantly reduce the size of a single OpenType font in comparison to the individual 1-byte, single codepage fonts. The enhancement of character sets within an OpenType font is independent of the outline type (PostScript or TrueType). In Unicode, the positions of international characters are standardized (Euro, Liter, etc.).

The Nimbus Global font family includes up to 65337 characters per font style and thus provides the most advanced OpenType language support in the URW++ Library. This allows for writing in many different scripts, using only one single font file of the Nimbus Global. All major scripts of the world like Latin, Cyrillic, Greek, Armenian, Georgian, Hebrew, Arabic, Devanagari, Thai, Hangul, Katakana, Hiragana, Kanji etc. are supported with all their specific layout language features in a single font file. (For more information about multilingual OpenType features please refer to URW's Global Font brochure).

With this font family URW++ takes OpenType language support to new standards. Furthermore, URW++ works closely together with experts from all over the world to enhance and expand the possibilities of OpenType.

1.2 Examples

language script	example glyphs	language scripts	example glyphs
Latin	ADMZ	Cyrillic	БИПФ
Greek	ΓΔΘΣ	Armenian	ԱԲԹՁ
Georgian	აბგდ	Hebrew	אבגד
Arabic	غڱني	Thai	คปศหฬ
Devanagari	ऑ ढ ख	Katakana	ホセ夕
Hagul	발트해	Hiragana	きせほ
Kanji	ギクグ	CJK	对阿拉

2.1 Capitals

Capitals (also referred to as caps, upper-case, upper case, uppercase or majuscule) are a set of typographical forms that render text in capital-styled glyphs. Typically, when text is rendered as all capitals, the spacing between letters can appear too tight, and the weight and proportion of the letters, too heavy. OpenType supports a number of styling formats for capitals, including small capitals, petite capitals, titling, and capital spacing. These styling formats allow you to control the appearance of capitals.

Small Capitals

This feature turns lowercase characters into small capitals. This corresponds to the common SC font layout. It is generally used for display lines set in capital letters & small caps, such as titles. Forms related to small capitals, such as oldstyle figures, may be included.

Petite Capitals

Some fonts contain an additional size of capital letters, shorter than the regular small caps and whimsically referred to as petite caps. Such forms are most likely to be found in designs with a small lowercase x-height, where they better fit with lowercase text than the taller small caps. This feature turns lowercase characters into petite capitals. Forms related to petite capitals, such as specially designed figures, may be included.

Capital Spacing

Capital spacing is a feature that allows you to provide more spacing when using all capitals in text. Capital letters are typically designed to blend with lowercase letters. Spacing that appears attractive between a capital letter and a lowercase letter may look too tight when only capital letters are used.

Titling Capitals

Titling capitals are lighter in weight and proportion and designed to give a more elegant look than normal capitals. Titling capitals are typically used in larger font sizes as headings. Notice the narrower stem widths.

Small Capitals from Capitals

This feature turns capital characters into small capitals. It is generally used for words which would otherwise be set in all caps, such as acronyms, but which are desired in small-cap form to avoid disrupting the flow of text.

Petite Capitals from Capitals

This feature turns capital characters into petite capitals. It is generally used for words which would otherwise be set in all caps, such as acronyms, but which are desired in petite-cap form to avoid disrupting the flow of text. See the pcap feature description for notes on the relationship of caps, small caps and petite caps.

2.2	Example	feature friendly name	default setting	applied OTF feature	example font
	'smcp'	Small Capitals	Hamburg	HAMBURG	Justus Pro
	'pcap'	Petite Capitals	Barcelona	BARCELONA	Corporate E

B KEY FEATURES

	feature friendly name	default setting	applied OTF feature	example font
cpsp'	Capital Spacing	MILANO	MILANO	URW Antiqua
'titl'	Titling Capitals	ODESSA	ODESSA	Nimbus Roman No9
'c2sc'	Small Capitals from Capitals	HELSINKI	HELSINKI	Garamond URW
'c2pc'	Petite Capitals from Capitals	LONDON	LONDON	Corporate A

3.1 Variants

Variants are used to render different typographic styles, such as superscripts and subscripts.

Superscript

Replaces lining or oldstyle figures with superior figures (primarily for footnote indication), and replaces lowercase letters with superior letters (primarily for abbreviated French titles).

Subscript

The 'subs' feature may replace a default glyph with a subscript glyph, or it may combine a glyph substitution with positioning adjustments for proper placement.

3.2 Example	feature friendly name	default setting	applied OTF feature	example font
'sups'	Superscript	3rd inning	3 rd inning	Helserif
'subs'	Subscript	C9H13NO3	C ₉ H ₁₃ NO ₃	Serifa

4.1 Figures

One of OpenType's many useful features is its ability to manage different styles of numerals available within a font. When working with typefaces that offer both lining and oldstyle figures, each in both proportional and tabular spacing, this is a huge timesaver!

Tabular Figures

Replaces numeric glyphs set on proportional widths with corresponding glyphs set on uniform (tabular) widths. Tabular widths will generally be the default, but this cannot be safely assumed. Of course this feature is not present in monospaced designs.

Proportional Figures

Replaces numeric glyphs set on uniform (tabular) widths with corresponding glyphs set on glyph-specific (proportional) widths. Tabular widths will generally be the default, but this cannot be safely assumed. Of course this feature is not present in monospaced designs.

Oldstyle Figures

This feature changes selected figures from the default or lining style to oldstyle form.

Fractions

OpenType fonts support styles for fractions, including slashed and stacked (nut).

Slashed Zero

Some fonts contain both a default form of zero, and an alternative form which uses a diagonal slash through the counter. Especially in condensed designs, it can be difficult to distinguish between 0 and O (zero and capital O) in any situation where capitals and lining figures may be arbitrarily mixed. This feature allows the user to change from the default 0 to a slashed form.

4.2 Example	feature friendly name	default setting	applied OTF feature	example font
'tnum'	Tabular Figures	8416,93,147	8416,93,147	Nimbus Sans Novus
'pnum'	Proportional Figures	11.19.1973	11.19.1973	Prana Pro
'onum'	Oldstyle Figures	May 4, 2060	May 4, 2060	Raldo RE
'frac'	Fractions	2 1/2 pound	2½ pound	Imperial URW
'zero'	Slashed Zero	708190ID	7Ø819ØID	OCR A M

5.1 Ligatures

Ligatures are two or more glyphs that are formed into a single glyph in order to create more readable or attractive text. OpenType fonts support four types of ligatures:

Standard ligatures

Replaces a sequence of glyphs with a single glyph which is preferred for typographic purposes. This feature covers the ligatures which the designer/manufacturer judges should be used in normal conditions.

Discretionary ligatures

Replaces a sequence of glyphs with a single glyph which is preferred for typographic purposes. Unlike other ligature features, 'clig' specifies the context in which the ligature is recommended. This capability is important in some script designs and for swash ligatures.

Contextual ligatures

Replaces a sequence of glyphs with a single glyph which is preferred for typographic purposes. This feature covers those ligatures which may be used for special effect, at the user's preference.

Historical ligatures

Some ligatures were in common use in the past, but appear anachronistic today. Some fonts include the historical forms as alternates, so that they can be used for a 'period' effect. This feature replaces the default (current) forms with the historical alternates.

When type was made of metal, ligatures were a physical necessity to stop one piece of metal from clashing with another: it was physically impossible for strokes to overlap. This is not so with digital strokes, so that, nowadays, ligatures have primarily aesthetic benefits. Some ligatures, such as the common »fi« may merely prevent the collision of two glyphs, but others such as the contextual ligatures provide a decorative, ornamental quality.

5.2 Example

	feature friendly name	default setting	applied OTF feature	example font
'liga'	Standard Ligature	catfishing	catfishing	Caslon No. 540
'dlig'	Discretionary Ligature	mackerel	mackerel	Filo Pro
'clig'	Contextual Ligature	feel the ocean	feel the ocean	Palisade Pro
'hlig'	Historical Ligatures	Hafenplatz	Hafenplatz	Unger Fraktur

6.1. Alternates

Alternates are glyphs that can be substituted for a standard glyph. OpenType fonts can contain alternate glyphs that you can use to create different appearances for text. Especially in script typefaces these OpenType features can create a certain sense of typographic flair.

Sylistic Alternates

Many fonts contain alternate glyph designs for a purely aesthetic effect; these don't always fit into a clear category like swash or historical. As in the case of swash glyphs, there may be more than one alternate form. This feature replaces the default forms with the stylistic alternates.

Contextual Alternates

In specified situations, replaces default glyphs with alternate forms which provide better joining behavior. Used in script typefaces which are designed to have some or all of their glyphs join.

Radomize

In order to emulate the irregularity and variety of handwritten text, this feature allows multiple alternate forms to be used.

Historical Forms

Some letterforms were in common use in the past, but appear anachronistic today. The best-known example is the long form of s (ſ); others include the old Fraktur k (Ꝁ). Some fonts include the historical forms as alternates, so that they can be used for a 'period' effect. This feature replaces the default (current) forms with the historical alternates. While some ligatures are also used for historical effect, this feature deals only with single characters.

6.2	Example	feature friendly name	default setting	applied OTF feature	example font
	'salt'	Sylistic Alternates	<i>Pingdingshan</i>	<i>Pingdingshan</i>	Laramie Pro
	'calt'	Contextual Alternates	<i>Hämeenlinna</i>	<i>Hämeenlinna</i>	Sonora Pro
	'rand'	Randomize	<i>Ling Islands</i>	<i>Ling Islands</i>	Mountauk Pro
	'hist'	Historical Forms	<i>Rielwasser</i>	<i>Rielwasser</i>	Kleist Fraktur

B KEY FEATURES

7.1 Swashes

Swashes are decorative glyphs that use elaborate ornamentation often associated with calligraphy.

Swash

This feature replaces default character glyphs with corresponding swash glyphs. Note that there may be more than one swash alternate for a given character.

Contextual Swashes

Certain combinations of swash glyphs can cause an unattractive appearance, such as overlapping descenders on adjacent letters. Applying a contextual swash allows you to use a substitute swash glyph that produces a better appearance.

7.2	Example	feature friendly name	default	applied OTF feature	example font
	'swsh'	Swash	<i>Amistad</i>	<i>Amistad</i>	Arabella Pro
	'cswh'	Contextual Swashes	<i>Lyonesse</i>	<i>Lyonesse</i>	Minister

8.1 Additional Features

Fonts can include many more OpenType Features. Some of the more common ones for Latin scripts are explained here:

Ornaments

This is a dual-function feature, which uses two input methods to give the user access to ornament glyphs (e.g. fleurons, dingbats and border elements) in the font. One method replaces the bullet character with a selection from the full set of available ornaments; the other replaces specific “lower ASCII” characters with ornaments assigned to them. The first approach supports the general or browsing user; the second supports the power user.

Case-Sensitive Forms

Shifts various punctuation marks up to a position that works better with all-capital sequences or sets of lining figures; also changes oldstyle figures to lining figures. By default, glyphs in a text face are designed to work with lowercase characters. Some characters should be shifted vertically to fit the higher visual center of all-capital or lining text. Also, lining figures are the same height (or close to it) as capitals, and fit much better with all-capital text.

Ordinals

Replaces default alphabetic glyphs with the corresponding ordinal forms for use after numeric figures. One exception to the follows-a-figure rule is the numero character (U+2116), which is actually a ligature substitution, but is best accessed through this feature.

Alternate Annotation Forms

Replaces default glyphs with various notational forms (e.g. glyphs placed in open or solid circles, squares, parentheses, diamonds or rounded boxes). In some cases an annotation form may already be present, but the user may want a different one.

8.2	Example	feature friendly name	default settings	applied OTF feature	example font
	'ornm'	Ornaments	DEFCAB	DEFCAB	ClarendoNeo Pro
	'case'	Case-Sensitive Forms	(Feat. 1-3)	(Feat. 1-3)	Franklin Gothic URW
	'ordn'	Ordinals	Planta 4 2a	Planta 4 2 ^a	URW Latino
	'nalt'	Alternate Annotation Forms	25 KIDS	②⑤ ⓀⓁⓁⓁⓈ	Nimbus Sans Global

editor's note

The OpenType feature samples shown in this document serve for demonstration only and may not be part of the actual font used.

1.1 Feature Tag List

FEATURE TAG	FEATURE FRIENDLY NAME
'aalt'	Access All Alternates
'abvf'	Above-base Forms
'abvm'	Above-base Mark Positioning
'abvs'	Above-base Substitutions
'afrc'	Alternative Fractions
'akhn'	Akhands
'blwf'	Below-base Forms
'blwm'	Below-base Mark Positioning
'blws'	Below-base Substitutions
'calt'	Contextual Alternates
'case'	Case-Sensitive Forms
'ccmp'	Glyph Composition / Decomposition
'cfar'	Conjunct Form After Ro
'cjt'	Conjunct Forms
'clig'	Contextual Ligatures
'cpct'	Centered CJK Punctuation
'csp'	Capital Spacing
'csw'	Contextual Swash
'curs'	Cursive Positioning
cv01-cv99'	Character Variants
'c2pc'	Petite Capitals From Capitals
'c2sc'	Small Capitals From Capitals
'dist'	Distances
'dlig'	Discretionary Ligatures
'dnom'	Denominators
'expt'	Expert Forms
'falt'	Final Glyph on Line Alternates
'fin2'	Terminal Forms #2
'fin3'	Terminal Forms #3
'fina'	Terminal Forms

FEATURE TAG	FEATURE FRIENDLY NAME
'frac'	Fractions
'fwid'	Full Widths
'half'	Half Forms
'haln'	Halant Forms
'halt'	Alternate Half Widths
'hist'	Historical Forms
'hkna'	Horizontal Kana Alternates
'hlig'	Historical Ligatures
'hngl'	Hangul
'hojo'	Hojo Kanji Forms (JIS X 0212-1990 Kanji Forms)
'hwid'	Half Widths
'init'	Initial Forms
'isol'	Isolated Forms
'ital'	Italics
'jalt'	Justification Alternates
'jp78'	JIS78 Forms
'jp83'	JIS83 Forms
'jp90'	JIS90 Forms
'jp04'	JIS2004 Forms
'kern'	Kerning
'lfb'	Left Bounds
'liga'	Standard Ligatures
'ljmo'	Leading Jamo Forms
'lnum'	Lining Figures
'locl'	Localized Forms
'ltra'	Left-to-right alternates
'ltrm'	Left-to-right mirrored forms
'mark'	Mark Positioning
'med2'	Medial Forms #2
'medi'	Medial Forms

1.2 Feature Tag List

FEATURE TAG	FEATURE FRIENDLY NAME
'mgrk'	Mathematical Greek
'mkmk'	Mark to Mark Positioning
'mset'	Mark Positioning via Substitution
'nalt'	Alternate Annotation Forms
'nlck'	NLC Kanji Forms
'nukt'	Nukta Forms
'numr'	Numerators
'onum'	Oldstyle Figures
'opbd'	Optical Bounds
'ordn'	Ordinals
'ornm'	Ornaments
'palt'	Proportional Alternate Widths
'pcap'	Petite Capitals
'pkna'	Proportional Kana
'pnum'	Proportional Figures
'pref'	Pre-Base Forms
'pres'	Pre-base Substitutions
'pstf'	Post-base Forms
'psts'	Post-base Substitutions
'pwid'	Proportional Widths
'qwid'	Quarter Widths
'rand'	Randomize
'krf'	Rakar Forms
'rlig'	Required Ligatures
'rphf'	Reph Forms
'rtbd'	Right Bounds
'rtla'	Right-to-left alternates
'rtlm'	Right-to-left mirrored forms
'ruby'	Ruby Notation Forms
'salt'	Stylistic Alternates

FEATURE TAG	FEATURE FRIENDLY NAME
'salt'	Stylistic Alternates
'sinf'	Scientific Inferiors
'size'	Optical size
'smcp'	Small Capitals
'smp'	Simplified Forms
'ss01' - 'ss20'	Stylistic Set 1 - Stylistic Set 20
'subs'	Subscript
'sup'	Superscript
'swsh'	Swash
'titl'	Titling
'tjmo'	Trailing Jamo Forms
'tnam'	Traditional Name Forms
'tnum'	Tabular Figures
'trad'	Traditional Forms
'twid'	Third Widths
'unic'	Unicase
'valt'	Alternate Vertical Metrics
'vatu'	Vattu Variants
'vert'	Vertical Writing
'vhal'	Alternate Vertical Half Metrics
'vjmo'	Vowel Jamo Forms
'vkna'	Vertical Kana Alternates
'vkrn'	Vertical Kerning
'vpal'	Proportional Alternate Vertical Metrics
'vrt2'	Vertical Alternates and Rotation
'zero'	Slashed Zero
'blue'	<i>examples explained in PDF</i>

1.1 CLIENT SUPPORT

Hotline customer support and consulting are extremely important to us, since our customers give us many ideas and impulses for improving and enhancing our font products. Software projects like the development of OpenType features are never completely finished, but rather updated in versions. Consider the CJK glyph set which in Unicode 5.0 already exceeds the 2-byte-limit of OpenType, or local CJK variants used in Japan, Korea, Taiwan and Hong Kong, to understand that this is a continuous, long-range development project taken on by URW++. Consequently, we update and expand our font library with OpenType fonts regularly for our clients.

We have been developing digital fonts and font design and production programs since 1980 (IKARUS). We have learned a lot about type in these last 30 years. This font design, font production and font programming know-how flows in its entirety into our fonts. We can serve our customers with up to date OpenType font technology. We are a small font company and therefore do not maintain an external hotline responding to our customers' questions. If you call URW++, you won't end up on hold, but rather you will talk to one of our type experts right away.

We look forward to receiving your next call or e-mail!

You contact person for OpenType questions at URW++

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