xChart 1.0 - Language Reference

This document is designed to help programmers to create charts described in xChart XML language.
Please contact Technical Support at support@ecrion.com if you need additional information about this product, or visit our Web Site at www.ecrion.com.

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This PDF document was generated using XF Rendering Server 2005. For the latest version, visit Technical Resources section on our web site.

About charting support in XF Rendering Server 2005

xChart language is supported by **XF Rendering Server 2005**, which is a highly scalable, enterprise class rendering product. It can be used to automate the creation of electronic documents containing all-purpose charts, by dynamically generating them from XML.

Product Features

- Supports XML as input.
- Can produce Pie, Area, Bar, Scatter and Line charts. It is also able to render combinations of these types.
- Can render XSL-FO and SVG elements.
- Produces PDF, GIF, JPEG, PNG, BMP and other formats.
- Supports TrueType font embedding in PDF documents.
- Uses native compiled code to deliver rendered documents at maximum speed.
- Is accessible from a multitude of development environments: C++, VB, ASP, .NET, Java.

Introduction

The primary goal of this SDK is to provide developers with the conceptual and reference information they need to create XML documents describing charts.
Please see XF Rendering Server 2005 Programmers reference on information about accessing the engine using your programming language of choice.
This SDK is not intended to be an in-depth tutorial on XSL-FO, SVG or on any related standards, and does not replace the World Wide Web Consortium (W3C) specifications for these standards. The Other Resources section below provides links to these standards on the Internet.
This SDK is not intended to demonstrate every possible use of xChart, and does not document every known problem with xChart. See Help and Support, below, for links to support resources.

Feedback and Support

Send error reports, feature requests, and comments about the XF documentation or samples directly to the Technical Support team.
Further information about support options can be found on the Ecrion Web site.

Other Resources

XML Recommendation
XSLT Recommendation
XSL-FO Recommendation
SVG Recommendation

XF Rendering Server 2005 Install Guide
XF Rendering Server 2005 Programmers Reference

xChart Language Syntax

This reference describes the syntax and semantics of the xChart language.

Summary

The following table lists the main objects:

Object	Description
xc:root	The top node in an xChart document.
xc:pie	Element describing a pie chart.
xc:slice	A slice in a pie chart.
xc:pie-3d	Element describing a 3D pie chart.
xc:slice-3d	A slice in a 3D pie chart.
xc:graph	Element describing one or more data series in a two dimensional coordinate system.
xc:serie	A data serie containing one or more data points. It can represent a line or an area.
xc:data-point	A data point in a data serie.
xc:value-axis, xc:category-axis	Elements describing the horizontal or vertical axis in an xc:graph.

Objects

xc:root

This is the top node in an **xChart** document.
Tipically, this element contains the declaration of 'xChart' namespace xmlns:xc="http://www.ecrion.com/xc". A document can range from an empty fragment (no content inside xc:root) to a complex, deeply nested collection of xChart, XSL-FO and SVG elements.

Content

xc:graph	Element describing one or more data series in a two dimensional coordinate system.
xc:pie	Element describing a pie chart.
xc:pie-3d	Element describing a 3D pie chart.
xc:foreign-object	Used for an graphic or other generic objects that resides as descendants of the xc:foreign-object, typically as an XML element subtree in a non-xChart namespace.

Attributes

xmlns[:prefix]	Standard XML attribute for identifying an XML namespace. Refer to the Namespaces in XML W3C Recommendation.
width	Intrinsic width of an element.
height	Intrinsic height of an element.

xc:pie

Element describing a pie chart.

Content

xc:slice	Element describing a slice in pie chart.

Attributes

x	x-axis coordinate.
y	y-axis coordinate.
width	Intrinsic width of an element.
height	Intrinsic height of an element.

xc:slice

Element describing a slice in pie chart.

Content

xc:title	Element used to create labels for data points, axis, etc.

Attributes

percent	The value used to calculate slice's percentage from the whole pie chart.
stroke	Set of attributes used to paint the outline of an element.
fill	Set of attributes used to paint the background of an element.

xc:pie-3d

Element describing a 3D pie chart.

Content

xc:slice-3d	Element describing a slice in 3D pie chart.

Attributes

x	x-axis coordinate.
y	y-axis coordinate.
width	Intrinsic width of an element.
height	Intrinsic height of an element.
base-height	The height of the base of a 3D piechart. Can be an absolute length (1in, 10pt, etc) or a percentage (0.3, 0.7, etc) of the total pie chart height.
base-shading	The percentage used to shade the colors in the base of a 3D pie chart. 0 means no adustment (colors identical with the ones in slices), 1 means black.

xc:slice-3d

Element describing a slice in 3D pie chart.

Content

xc:title	Element used to create labels for data points, axis, etc.

Attributes

percent	The value used to calculate slice's percentage from the whole pie chart.
stroke	Set of attributes used to paint the outline of an element.
fill	Set of attributes used to paint the background of an element.

xc:graph

Element describing one or more data series in a two dimensional coordinate system.

Content

xc:plot-area	Sets various properties for the area reserved to draw series of data.
xc:value-axis	Element describing the axis used to plot 'value' in a xc:graph.
xc:category-axis	Element describing the axis used to plot 'category' in a xc:graph.

Attributes

x	x-axis coordinate.
y	y-axis coordinate.
width	Intrinsic width of an element.
height	Intrinsic height of an element.

xc:plot-area

Sets various properties for the area reserved to draw series of data.

Content

xc:serie	A data serie containing one or more data points. It can represent a line or an area.

Attributes

stroke	Set of attributes used to paint the outline of an element.
fill	Set of attributes used to paint the background of an element.

xc:serie

A data serie containing one or more data points. It can represent a line or an area.

Content

xc:data-point	A data point in a data serie.

Attributes

stroke	Set of attributes used to paint the outline of an element.
fill	Set of attributes used to paint the background of an element.

xc:data-point

A data point in a data serie.

Content

xc:drop-line	Element that draws a line from the current viewport origin to the maximum, minimum or both values on a specified axis.
xc:foreign-object	Used for an graphic or other generic objects that resides as descendants of the xc:foreign-object, typically as an XML element subtree in a non-xChart namespace.

Attributes

value	The value measured on xc:value-axis.
category	The value measured on xc:category-axis.

xc:drop-line

Element that draws a line from the current viewport origin to the maximum, minimum or both values on a specified axis.

Attributes

axis-type	Identifies the axis type (i.e. value axis or category axis).
style	Specifies the minimum and/or maximum for a xc:drop-line.
stroke	Set of attributes used to paint the outline of an element.

xc:value-axis

Element describing the axis used to plot 'value' in a xc:graph.

Content

xc:grid-lines	Element describing the grid lines that will intersect this axis in the same coordinates as the 'major' tick-marks.
xc:title	Element used to create labels for data points, axis, etc.
xc:axis-labels	Element describing the labels displayed on axis aligned with 'major' tick-marks.
xc:major-tick-marks	Element describing the major marks for axis elements.
xc:minor-tick-marks	Element describing the minor marks for axis elements.

Attributes

orientation	Specifies if an axis is vertical or horizontal.
intersection	Specifies the intersection point of an axis with the opposite one.
stroke	Set of attributes used to paint the outline of an element.
min	Overrides the automatically calculated minimum value for an axis.
max	Overrides the automatically calculated maximum value for an axis.
unit	Overrides the automatically calculated unit value for an axis.

xc:category-axis

Element describing the axis used to plot 'category' in a xc:graph.

Content

xc:grid-lines	Element describing the grid lines that will intersect this axis in the same coordinates as the 'major' tick-marks.
xc:title	Element used to create labels for data points, axis, etc.
xc:axis-labels	Element describing the labels displayed on axis aligned with 'major' tick-marks.
xc:major-tick-marks	Element describing the major marks for axis elements.
xc:minor-tick-marks	Element describing the minor marks for axis elements.

Attributes

orientation	Specifies if an axis is vertical or horizontal.
intersection	Specifies the intersection point of an axis with the opposite one.
min	Overrides the automatically calculated minimum value for an axis.
max	Overrides the automatically calculated maximum value for an axis.
unit	Overrides the automatically calculated unit value for an axis.
stroke	Set of attributes used to paint the outline of an element.

xc:axis-labels

Element describing the labels displayed on axis aligned with 'major' tick-marks.
Attributes

offset	Specifies the distance to current viewport origin.
placement	Specifies the placement method for xc:axis-labels elements in rapport with the xc:major-tick-marks.
color	The color used to paint text.
format	String identifying the number of date format to apply to data values.
font	Collection of attributes describing the font for an element.

xc:major-tick-marks

Element describing the major marks for axis elements.
Attributes

style	Specifies the visual appearance of a xc:major-tick-marks or xc:minor-tick-marks.
stroke	Set of attributes used to paint the outline of an element.
length	Intrinsic size of an element.

xc:minor-tick-marks

Element describing the minor marks for axis elements.
Attributes

style	Specifies the visual appearance of a xc:major-tick-marks or xc:minor-tick-marks.
stroke	Set of attributes used to paint the outline of an element.
length	Intrinsic size of an element.

xc:grid-lines

Element describing the grid lines that will intersect this axis in the same coordinates as the 'major' tick-marks.
Attributes

stroke	Set of attributes used to paint the outline of an element.

xc:foreign-object

Used for an graphic or other generic objects that resides as descendants of the xc:foreign-object, typically as an XML element subtree in a non-xChart namespace.
Content

svg:svg	SVG element conforming to W3C's SVG Recommendation from 14 January 2003.
fo:root	XSL-FO element conforming to W3C's XSL-FO Recommendation from 15 October 2001.

Attributes

x	x-axis coordinate.
y	y-axis coordinate.

xc:title

Element used to create labels for data points, axis, etc.

Content

text()	The text to display.
xc:foreign-object	Used for an graphic or other generic objects that resides as descendants of the xc:foreign-object, typically as an XML element subtree in a non-xChart namespace.

Attributes

offset	Specifies the distance to current viewport origin.
color	The color used to paint text.
text-align	
font	Collection of attributes describing the font for an element.

Attributes

Size and positioning attributes

x

x-axis coordinate.

Type	length
Initial Value	0
Applies to	xc:pie , xc:pie-3d , xc:graph , xc:foreign-object

y

y-axis coordinate.

Type	length
Initial Value	0
Applies to	xc:pie , xc:pie-3d , xc:graph , xc:foreign-object

width

Intrinsic width of an element.

Type	length
Initial Value	0
Applies to	xc:root , xc:pie , xc:pie-3d , xc:graph

height

Intrinsic height of an element.

Type	length
Initial Value	0
Applies to	xc:root , xc:pie , xc:pie-3d , xc:graph

length

Intrinsic size of an element.

Type	length
Initial Value	0
Applies to	xc:major-tick-marks , xc:minor-tick-marks

offset

Specifies the distance to current viewport origin.

Type	length
Initial Value	0
Applies to	xc:axis-labels , xc:title

Font Attributes

Collection of attributes describing the font for an element.

font-family

This property specifies a prioritized list of font family names and/or generic family names.

Type	length
Initial Value	System dependent
Applies to	xc:axis-labels , xc:title

font-style

The 'font-style' property requests normal (sometimes referred to as "roman" or "upright"), italic, and oblique faces within a font family.

Type	normal | italic
Initial Value	normal
Applies to	xc:axis-labels , xc:title

font-weight

The 'font-weight' property specifies the weight of the font.

Type	normal | bold
Initial Value	normal
Applies to	xc:axis-labels , xc:title

font-size

This property describes the size of the font.

Type	length
Initial Value	normal
Applies to	xc:axis-labels , xc:title

Stroke Attributes

Set of attributes used to paint the outline of an element.

stroke-color

The color used to paint the outline.

Type	color
Initial Value	black
Applies to	xc:slice , xc:slice-3d , xc:plot-area , xc:serie , xc:drop-line , xc:value-axis , xc:category-axis , xc:major-tick-marks , xc:minor-tick-marks , xc:grid-lines

stroke-width

The width of the stroke on the current object. A zero value causes no stroke to be painted. A negative value is an error.

Type	length
Initial Value	1pt
Applies to	xc:slice , xc:slice-3d , xc:plot-area , xc:serie , xc:drop-line , xc:value-axis , xc:category-axis , xc:major-tick-marks , xc:minor-tick-marks , xc:grid-lines

stroke-dash-array

'stroke-dash-array' controls the pattern of dashes and gaps used to stroke paths. 'dash array' contains a list of comma-separated (with optional white space) lengths that specify the lengths of alternating dashes and gaps. If an odd number of values is provided, then the list of values is repeated to yield an even number of values. Thus, stroke-dash-array: 5,3,2 is equivalent to stroke-dash-array: 5,3,2,5,3,2.

Type	none | 'dash array'
Initial Value	none
Applies to	xc:slice , xc:slice-3d , xc:plot-area , xc:serie , xc:drop-line , xc:value-axis , xc:category-axis , xc:major-tick-marks , xc:minor-tick-marks , xc:grid-lines

Fill Attributes

Set of attributes used to paint the background of an element.

fill-color

The color used to paint the background.

Type	color
Initial Value	transparent
Applies to	xc:slice , xc:slice-3d , xc:plot-area , xc:serie

Value Attributes

percent

The value used to calculate slice's percentage from the whole pie chart.

Type	number
Initial Value	0
Applies to	xc:slice , xc:slice-3d

value

The value measured on xc:value-axis.

Type	number | date | string
Initial Value	Not applicable. This attribute is always required.
Applies to	xc:data-point

category

The value measured on xc:category-axis.

Type	number | date | string
Initial Value	Not applicable. This attribute is always required.
Applies to	xc:data-point

Miscellaneous Atttributes

color

The color used to paint text.

Type	color
Initial Value	black
Applies to	xc:axis-labels , xc:title

base-height

The height of the base of a 3D piechart. Can be an absolute length (1in, 10pt, etc) or a percentage (0.3, 0.7, etc) of the total pie chart height.

Type	length | number
Initial Value	0.25 (25% of the total piechart height)
Applies to	xc:pie-3d

base-shading

The percentage used to shade the colors in the base of a 3D pie chart. 0 means no adustment (colors identical with the ones in slices), 1 means black.

Type	number
Initial Value	0.1 (10% decrease in luminosity)
Applies to	xc:pie-3d

format

String identifying the number of date format to apply to data values.

Type	auto | string
Initial Value	auto
Applies to	xc:axis-labels

Formatting numbers: The following characters are supported "."; ","; "#", "0". The "#" character is used to describe integers. The "." and "," characters are used to describe the location and type of punctuation. The "0" character is used enforce digits before and after the "." character. When truncating digits to the right of the decimal points, the number is rounded. The number to the left of the decimal point is never truncated. Prefix and postfix character sequences are copied to output without change.

Examples:

When using '#,###', number 5351 will be displayed as "5,351".

When using '#.00', number 5351 will be displayed as "5351.00".

When using '0000.0000', number 53.11 will be displayed as "0053.5100".

When using "0000.####", number 5351.12 will be displayed as "5351.12"

When using "$###0.##", number 5351.12 will be displayed as "$5351.12"

Formatting dates:

Value	Description
d	Day of month as digits with no leading zero for single-digit days.
dd	Day of month as digits with leading zero for single-digit days.
ddd	Day of week as a three-letter abbreviation.
dddd	Day of week as its full name.
M	Month as digits with no leading zero for single-digit months.

Value	Description
MM	Month as digits with leading zero for single-digit months.
MMM	Month as a three-letter abbreviation.
MMMM	Month as its full name.
y	Year as last two digits, with a leading zero for years less than 10. The same format as "yy."
yy	Year as last two digits, with a leading zero for years less than 10.
yyyy	Year represented by full four digits.

For example, to get the date string

"Wed, Aug 31 94"

use the following format string:

"ddd, MMM dd yy"

orientation

Specifies if an axis is vertical or horizontal.

Type	vertical | horizontal
Initial Value	Not applicable. This attribute is always required.
Applies to	xc:value-axis , xc:category-axis

intersection

Specifies the intersection point of an axis with the opposite one.

Type	auto | min | max
Initial Value	auto
Applies to	xc:value-axis , xc:category-axis

min

Overrides the automatically calculated minimum value for an axis.

Type	number | date | string
Initial Value	nothing
Applies to	xc:value-axis , xc:category-axis

max

Overrides the automatically calculated maximum value for an axis.

Type	number | date | string
Initial Value	nothing
Applies to	xc:value-axis , xc:category-axis

unit

Overrides the automatically calculated unit value for an axis.

Type	auto | days | months | years | number
Initial Value	auto
Applies to	xc:value-axis , xc:category-axis

Values have the following meaning:

- auto - the units are calculated automatically based on the min-max range of the axis.

- days | months | years - applicable when the axis display dates.
- number - applicable when the axis display numbers.

The following line chart exemplifies the usage of min, max and unit properties.

You can find te source code in C:\Program Files\Ecrion Software\XF Rendering Server 2005\XML Samples\XChart\RangeOverride.xchart

placement

Specifies the placement method for xc:axis-labels elements in rapport with the xc:major-tick-marks.

Type	auto | center | between
Initial Value	auto
Applies to	xc:axis-labels

axis-type

Identifies the axis type (i.e. value axis or category axis).

Type	value | category
Initial Value	Not applicable. This attribute is always required.
Applies to	xc:drop-line

style (xc:drop-line)

Specifies the minimum and/or maximum for a xc:drop-line.

Type	min | max | both
Initial Value	min
Applies to	xc:drop-line

style (xc:major-tick-mark, xc:minor-tick-mak)

Specifies the visual appearance of a xc:major-tick-marks or xc:minor-tick-marks.

Type	inside | cross | outside

Initial Value	outside
Applies to	xc:major-tick-marks , xc:minor-tick-marks

Data Types

number

A real number specified in decimal notation consists of either an integer, or an optional sign character followed by zero or more digits followed by a dot (.) followed by one or more digits

date

A date specified in mm/dd/yyyy format.

string

Any sequence of characters that is not a date or a number.

length

A length is a distance measurement. The format of a length is a number optionally followed immediately by a unit identifier.
"1px" equals one device point (1/96 for most displays)

"1pt" equals "1.25px" (and therefore 1.25 user units)

"1pc" equals "15px" (and therefore 15 user units)

"1mm" would be "3.543307px" (3.543307 user units)

"1cm" equals "35.43307px" (and therefore 35.43307 user units)

"1in" equals "90px" (and therefore 90 user units)

Note that use of px units or any other absolute unit identifiers can cause inconsistent visual results on different viewing environments since the size of "1px" may map to a different number of user units on different systems.

uri

Uniform Resource Identifiers [URI] references): A URI is the address of a resource on the Web.

color

A color is either a keyword (see Recognized color keyword names) or a numerical RGB specification.

