#### stroke (Line Stroke Settings)

This element describes how to draw the [path](path.docx) if something beyond solid [line](line.docx) with a solid color is desired.  The attributes of the stroke element can be used to describe a powerful set of stroke properties.   Extensions to the [VML](VML.docx) stroke definition are encoded as sub-elements of stroke.

[Example:

<v:[polyline](polyline.docx) points="0pt,0pt,50pt,0pt,50pt,35pt,15pt,35pt,

 15pt,15pt,75pt,15pt">

 <v:stroke startarrow="classic" endarrow="classic"

 startarrowwidth="wide" endarrowwidth="wide" dashstyle="dashdot"

 weight="2pt" color="teal" linestyle="thinThin"/>

</v:[polyline](polyline.docx)>



end example]

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| Parent Elements |
| [arc](arc.docx) (§); [background](background.docx) (§); [curve](curve.docx) (§); [group](group.docx) (§); [image](image.docx) (§); [line](line.docx) (§); object (§); [oval](oval.docx) (§); pict (§); pict (§); [polyline](polyline.docx) (§); [rect](rect.docx) (§); [roundrect](roundrect.docx) (§); shape (§); [shapedefaults](shapedefaults.docx) (§); [shapetype](shapetype.docx) (§) |

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| Child Elements | Subclause |
| bottom (Text Box Bottom Stroke) | § |
| column (Text Box Interior Stroke) | § |
| left (Text Box Left Stroke) | § |
| right (Text Box Right Stroke) | § |
| top (Text Box Top Stroke) | § |

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| Attributes | Description |
| althref (Alternate Image Reference)Namespace: urn:schemas-microsoft-com:office:office | Specifies an alternate reference for an [image](image.docx) in Macintosh PICT format.[Example:<v:stroke ... althref="myimage.pcz" ... ></v:stroke>end example]The possible values for this attribute are defined by the XML Schema string datatype. |
| color (Stroke Color) | Specifies the stroke color. Overrides the strokecolor attribute of a shape. [Default](Default.docx) is black. See the fillcolor attribute for a list of supported named colors.[Example: The shape stroke is blue:<v:shape ... strokecolor="red" ... > <v:stroke color="blue"/></v:[shape](shape.docx)>end example]The possible values for this attribute are defined by the [ST\_ColorType](ST_ColorType.docx) simple type (§). |
| color2 (Stroke Alternate Pattern Color) | Specifies a second color for strokes, used when filltype is pattern. [Default](Default.docx) is no value.When a pattern [fill](fill.docx) is used for the stroke, the stroke color is used in colored parts of the source image. The color2 defines an alternate color to use in place of black in the source image.[Example: This unusual example is intended to demonstrate how the [image](image.docx) and colors interact to create a patterned stroke. The yellow [background](background.docx) shows transparency. The non-square shape and square [image](image.docx) create an effective offset. The heavy stroke weight shows more of the image. The green shape [fill](fill.docx) shows how the stroke is overlaid on the shape.<v:[background](background.docx) fillcolor="yellow"/><v:[shape](shape.docx) style="width:60;height:50" strokecolor="red" fillcolor="lime" [path](path.docx)="m 0,0 l 0,1000 1000,1000 1000,0 x e"> <v:stroke filltype="pattern" weight="10pt" src="myimage.gif" color2="blue"/></v:[shape](shape.docx)>, where myimage.gif is: end example]The possible values for this attribute are defined by the [ST\_ColorType](ST_ColorType.docx) simple type (§). |
| dashstyle (Stroke Dash Pattern) | Specifies the dot and dash pattern for a stroke. [Default](Default.docx) is solid. Pre-defined values are:* solid
* shortdash
* shortdot
* shortdashdot
* shortdashdotdot
* dot
* dash
* longdash
* dashdot
* longdashdot
* longdashdotdot

A custom-defined dash pattern may also be specified using a series of numbers. These define the length of the dash (the drawn part of the stroke) and the length of the space between the dashes. The lengths are relative to the [line](line.docx) width: a length of 1 is equal to the [line](line.docx) width. The endcap style is applied to each dash but the arrow style is not. The string defines the length of the dash then the length of the space. This may be repeated to form [complex](complex.docx) dash styles. The string should always contain a pair of numbers; if it contains an odd number of numbers the last is disregarded. 0 implies a dot that is fourfold symmetrical (with round end caps, this is a circle).[Example:<v:stroke dashstyle="0 2" weight="3pt" endcap="round"></v:stroke><v:stroke dashstyle="longdashdotdot" weight="2pt"></v:stroke>end example]The possible values for this attribute are defined by the XML Schema string datatype. |
| endarrow (Line End Arrowhead) | Specifies an arrowhead for the end of a line. [Default](Default.docx) is none. Note that the [path](path.docx) must not be closed with the x command for the arrowhead to show. Allowed values are:* none
* block
* classic
* diamond
* [oval](oval.docx)
* open

[Example:<v:stroke endarrow="classic"/>end example]The possible values for this attribute are defined by the [ST\_StrokeArrowType](ST_StrokeArrowType.docx) simple type (§). |
| endarrowlength (Line End Arrowhead Length) | Specifies the length of the arrowhead at the end of a line. [Default](Default.docx) is medium. Allowed values are:* short
* medium
* long

[Example:<v:stroke ... endarrowlength="long" ... />end example]The possible values for this attribute are defined by the [ST\_StrokeArrowLength](ST_StrokeArrowLength.docx) simple type (§). |
| endarrowwidth (Line End Arrowhead Width) | Specifies the width of the arrowhead at the end of a line. [Default](Default.docx) is medium. Allowed values are:* narrow
* medium
* wide

[Example:<v:stroke ... endarrowwidth="wide" ... />end example]The possible values for this attribute are defined by the [ST\_StrokeArrowWidth](ST_StrokeArrowWidth.docx) simple type (§). |
| endcap (Line End Cap) | Specifies the cap style for the end of a stroke. [Default](Default.docx) is flat. Allowed values are:* flat
* square
* round

[Example:<v:stroke ... endcap="round" weight="10pt" ... /> endcap="flat" endcap="square" endcap="round"end example]The possible values for this attribute are defined by the [ST\_StrokeEndCap](ST_StrokeEndCap.docx) simple type (§). |
| filltype (Stroke Image Style) | Specifies the type of [fill](fill.docx) used for the [background](background.docx) of a stroke. [Default](Default.docx) is solid. Allowed values are:* solid - The [fill](fill.docx) pattern is solid.
* tile - The [fill](fill.docx) [image](image.docx) is tiled.
* pattern - The [fill](fill.docx) [image](image.docx) is stretched to form a pattern.
* frame - The [fill](fill.docx) [image](image.docx) becomes a border for the shape.

[Example:<v:[shape](shape.docx) style="width:50;height:50" strokecolor="red"  [path](path.docx)="m 0,0 l 0,1000 1000,1000 1000,0 x e"> <v:stroke filltype="frame" weight="10pt" src="border.gif"/></v:[shape](shape.docx)>, where border.gif is: end example]The possible values for this attribute are defined by the [ST\_FillType](ST_FillType.docx) simple type (§). |
| forcedash (Force Dashed Outline)Namespace: urn:schemas-microsoft-com:office:office | Specifies whether a dashed outline is used to draw a shape when a shape has no [line](line.docx) or fill. [Default](Default.docx) is false.Used by PresentationML placeholders to draw a dashed outline when there is no [line](line.docx) and no [fill](fill.docx) for a shape.[Example:<v:shape ... o:forcedash="true" ... ></v:[shape](shape.docx)>end example]The possible values for this attribute are defined by the [ST\_TrueFalse](ST_TrueFalse.docx) simple type (§). |
| href (Original Image Reference)Namespace: urn:schemas-microsoft-com:office:office | Specifies the URL to the original [image](image.docx) file. Used only if the picture has been linked and embedded. [Default](Default.docx) is no value.[Example:<v:[fill](fill.docx) ... o:href="myimage.gif" ... ></v:[fill](fill.docx)>end example]The possible values for this attribute are defined by the XML Schema string datatype. |
| id (Unique Identifier) | Specifies a unique identifier that can be used to reference a [VML](VML.docx) object.[Default](Default.docx) is no value.[Example:<v:shape ... id="myShape" ... ></v:[shape](shape.docx)>end example]The possible values for this attribute are defined by the XML Schema string datatype. |
| id (Relationship)Namespace: .../officeDocument/2006/relationships | Specifies the relationship ID of the relationship to the [image](image.docx) used for the stroke. The specified relationship shall be of type http://schemas.openxmlformats.org/officeDocument/2006/relationships/[image](image.docx) or the document shall be considered non-conformant.[Example: The markup specifies the associated relationship part with relationship ID rId10 contains the corresponding relationship information:< ... r:id="rId10" />end example]The possible values for this attribute are defined by the [ST\_RelationshipId](ST_RelationshipId.docx) simple type (§). |
| imagealignshape (Stoke Image Alignment) | Specifies the alignment of the stroke image. If true, the [image](image.docx) is aligned with the shape. Otherwise, it is aligned with the containing scope. [Default](Default.docx) is true.[Example: The top position offset shifts the [image](image.docx) alignment relative to the containing window:<v:[shape](shape.docx) fillcolor="silver" style="top:20;width:50;height:50" [path](path.docx)="m 0,0 l 0,1000 1000,1000 1000,0 x e"> <v:stroke imagealignshape="false" weight="20pt" filltype="tile" src="myimage.gif"/></v:[shape](shape.docx)> imagealignshape="false" imagealignshape="false"end example]The possible values for this attribute are defined by the [ST\_TrueFalse](ST_TrueFalse.docx) simple type (§). |
| imageaspect (Stroke Image Aspect Ratio) | Specifies how the stroke [image](image.docx) aspect ratio is preserved. [Default](Default.docx) is ignore. Allowed values are:

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| Value | Description |
| ignore | Ignore aspect issues. |
| atleast | Image is at least as big as imagesize. |
| atmost | Image is no bigger than imagesize. |

[Example:<v:stroke filltype="frame" weight="10pt"  src="border.gif" imagealignshape="true"  imageaspect="atleast"></v:stroke> imagealignshape="ignore" imagealignshape="atleast" imagealignshape="atmost"end example]The possible values for this attribute are defined by the [ST\_ImageAspect](ST_ImageAspect.docx) simple type (§). |
| imagesize (Stroke Image Size) | Specifies the size of the [image](image.docx) for the stroke. [Default](Default.docx) is the size of the image.[Example:<v:stroke ... imagesize="10pt,10pt" ... />end example]The possible values for this attribute are defined by the XML Schema string datatype. |
| insetpen (Inset Border From Path) | Specifies that the border shall be displayed inside of the [path](path.docx) defining the shape, rather than along the [path](path.docx) (the default border placement), or outside of the [path](path.docx) as might be done with an image.[Example:<v:shape ... insetpen="true" ... ></v:[shape](shape.docx)>end example]The possible values for this attribute are defined by the [ST\_TrueFalse](ST_TrueFalse.docx) simple type (§). |
| joinstyle (Line End Join Style) | Specifies the join style for [line](line.docx) ends. [Default](Default.docx) is round.* round
* bevel
* miter

[Example:<v:[polyline](polyline.docx) strokeweight="10pt" strokecolor="navy" points="10pt,10pt,50pt,50pt,90pt,10pt"> <v:stroke joinstyle="bevel"/></v:[polyline](polyline.docx)>  joinstyle="round" joinstyle="bevel" joinstyle="miter"end example]The possible values for this attribute are defined by the [ST\_StrokeJoinStyle](ST_StrokeJoinStyle.docx) simple type (§). |
| linestyle (Stroke Line Style) | Specifies the [line](line.docx) style of the stroke. [Default](Default.docx) is single.* single
* thinThin
* thinThick
* thickThin
* thickBetweenThin

[Example:<v:stroke linestyle="thickThin" weight="5pt"></v:stroke>end example]The possible values for this attribute are defined by the [ST\_StrokeLineStyle](ST_StrokeLineStyle.docx) simple type (§). |
| miterlimit (Miter Joint Limit) | Specifies the smoothness of the miter joint, or the maximum distance between the inner point and outer point of a joint. This number is a multiple of the thickness of the line. [Default](Default.docx) is 8.[Example:<v:stroke joinstyle="miter" weight="10pt"  miterlimit="2"></v:stroke>end example]The possible values for this attribute are defined by the XML Schema decimal datatype. |
| on (Stroke Toggle) | Specifies whether the stroke is displayed. [Default](Default.docx) is true. This attribute overrides the shape's stroke attribute.[Example:<v:[rect](rect.docx) style="width:50;height:50" stroked="true"  fillcolor="lime" strokecolor="red"> <v:stroke on="false" weight="5pt"/></v:[rect](rect.docx)> end example]The possible values for this attribute are defined by the [ST\_TrueFalse](ST_TrueFalse.docx) simple type (§). |
| opacity (Stroke Opacity) | Specifies the amount of transparency of a stroke. [Default](Default.docx) is 1.0.[Example:<v:[rect](rect.docx) style="width:50;height:50"  fillcolor="lime" strokecolor="red"> <v:stroke weight="5pt" opacity="50%"/></v:[rect](rect.docx)>end example]The possible values for this attribute are defined by the XML Schema string datatype. |
| relid (Relationship to Part)Namespace: urn:schemas-microsoft-com:office:office | Specifies the relationship ID of the relationship to the image. The specified relationship shall be of type http://schemas.openxmlformats.org/officeDocument/2006/relationships/[image](image.docx) or the document shall be considered non-conformant.[Example: The markup specifies the associated relationship part with relationship ID rId10 contains the corresponding relationship information:<v:stroke ... o:relid="rId10" ...></v:stroke>end example]The possible values for this attribute are defined by the [ST\_RelationshipId](ST_RelationshipId.docx) simple type (§). |
| src (Stroke Image Location) | Specifies the source [image](image.docx) to load for a stroke fill. [Default](Default.docx) is no value.[Example:<v:stroke ... src="myimage.gif" ... ></v:stroke>end example]The possible values for this attribute are defined by the XML Schema string datatype. |
| startarrow (Line Start Arrowhead) | Specifies an arrowhead for the start of a line. [Default](Default.docx) is none. Note that the [path](path.docx) must not be closed with the x command for the arrowhead to show. Allowed values are:* none
* block
* classic
* diamond
* [oval](oval.docx)
* open

[Example:<v:stroke startarrow="classic"/>end example]The possible values for this attribute are defined by the [ST\_StrokeArrowType](ST_StrokeArrowType.docx) simple type (§). |
| startarrowlength (Line Start Arrowhead Length) | Specifies the length of the arrowhead at the start of a line. [Default](Default.docx) is medium. Allowed values are:* short
* medium
* long

[Example:<v:stroke ... startarrowlength="long" ... />end example]The possible values for this attribute are defined by the [ST\_StrokeArrowLength](ST_StrokeArrowLength.docx) simple type (§). |
| startarrowwidth (Line Start Arrowhead Width) | Specifies the width of the arrowhead at the start of a line. [Default](Default.docx) is medium. Allowed values are:* narrow
* medium
* wide

[Example:<v:stroke ... startarrowwidth="wide" ... />end example]The possible values for this attribute are defined by the [ST\_StrokeArrowWidth](ST_StrokeArrowWidth.docx) simple type (§). |
| title (Stroke Title)Namespace: urn:schemas-microsoft-com:office:office | Specifies the title of an embedded stroke image. This is typically set to the comment property of the [image](image.docx), which is often blank.[Example:<v:[fill](fill.docx) ... o:title="alt text" ... ></v:[fill](fill.docx)>end example]The possible values for this attribute are defined by the XML Schema string datatype. |
| weight (Stroke Weight) | Specifies the thickness of a stroke. [Default](Default.docx) is 1. This attribute overrides the shape's strokeweight attribute.The possible values for this attribute are defined by the XML Schema string datatype. |

The following XML Schema fragment defines the contents of this element:

<complexType name="CT\_Stroke">

 <sequence>

 <element ref="o:left" minOccurs="0"/>

 <element ref="o:top" minOccurs="0"/>

 <element ref="o:right" minOccurs="0"/>

 <element ref="o:bottom" minOccurs="0"/>

 <element ref="o:column" minOccurs="0"/>

 </sequence>

 <attributeGroup ref="AG\_Id"/>

 <attributeGroup ref="AG\_StrokeAttributes"/>

</complexType>