

[MS-VSDX]: Visio Graphics Service VSDX File Format

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Revision Summary

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Table of Contents

1 Introduction	23
1.1 Glossary	23
1.2 References.....	24
1.2.1 Normative References.....	24
1.2.2 Informative References	25
1.3 Overview	26
1.4 Relationship to Protocols and Other Structures	26
1.5 Applicability Statement.....	26
1.6 Versioning and Localization	26
1.7 Vendor-Extensible Fields.....	27
2 Structures	28
2.1 File Structure Overview	28
2.1.1 Package	28
2.1.2 Parts.....	28
2.1.3 Relationship.....	28
2.1.4 Markup Compatibility	29
2.2 Conceptual Overview.....	29
2.2.1 Web Drawing	29
2.2.2 Drawing Page	29
2.2.2.1 Page Identification	29
2.2.2.2 Coordinate System	30
2.2.2.3 Drawing Scale	30
2.2.2.4 Foreground Page	31
2.2.2.5 Background Page.....	31
2.2.2.6 Layer	32
2.2.3 Shape.....	32
2.2.3.1 Shape Identification.....	32
2.2.3.1.1 One-Dimensional Shape.....	32
2.2.3.1.2 Two-Dimensional Shape.....	32
2.2.3.2 Geometry Visualization.....	32
2.2.3.2.1 Coordinate System.....	33
2.2.3.2.1.1 Relative Coordinate System	33
2.2.3.2.2 Geometry Path.....	33
2.2.3.2.3 Display Order	34
2.2.3.3 Shape Hierarchy	34
2.2.3.3.1 Parent	34
2.2.3.3.2 Subshape.....	34
2.2.3.4 Shape Selection.....	35
2.2.3.5 Shape Hyperlinks.....	35
2.2.3.6 Shape Data.....	35
2.2.4 Master	36
2.2.4.1 Master Identification	36
2.2.5 Sheet.....	36
2.2.5.1 Sheet Identification.....	36
2.2.5.2 Sheet Types.....	36
2.2.5.2.1 Document Sheet	37
2.2.5.2.2 Page Sheet.....	37
2.2.5.2.3 Shape Sheet.....	37
2.2.5.2.4 Style Sheet	37

2.2.5.2.4.1 Root Style Sheet	37
2.2.5.3 Sheet Structures	37
2.2.5.3.1 Section	37
2.2.5.3.2 Row.....	38
2.2.5.3.3 Cell	38
2.2.5.3.3.1 Cell Default Values.....	38
2.2.5.4 Inheritance	40
2.2.5.4.1 Master-to-Shape Inheritance	40
2.2.5.4.2 Style-to-Shape Inheritance.....	41
2.2.5.4.3 Style-to-Master Inheritance	41
2.2.5.4.4 Style-to-Style Inheritance	42
2.2.5.4.5 Theme Inheritance	42
2.2.5.4.6 Local Properties	43
2.2.5.5 Sheet Extensibility	43
2.2.6 Image.....	43
2.2.6.1 Fallback Image.....	44
2.2.7 Format.....	44
2.2.7.1 Fill Properties	44
2.2.7.2 Line Properties	44
2.2.7.3 Effect Properties	45
2.2.7.3.1 Shadow Effect Set	45
2.2.7.3.1.1 Shadow Distance	46
2.2.7.3.1.2 Page Default Shadow	46
2.2.7.3.2 Bevel Effect Set	46
2.2.7.3.3 Glow Effect Set	47
2.2.7.3.4 Reflection Effect Set	47
2.2.7.3.5 Soft Edges Effect Set	47
2.2.7.3.6 Sketch Effect Set	47
2.2.7.3.7 3D Rotation Effect Set	47
2.2.7.4 Dynamic Theme	48
2.2.7.4.1 Dynamic Theme Components	48
2.2.7.4.2 Dynamic Theme Identification.....	50
2.2.7.4.3 Quick Style Slices.....	51
2.2.7.4.4 Quick Style Identification	51
2.2.7.4.5 Dynamic Theme Functions.....	53
2.2.7.4.6 Custom Dynamic Theme Color Scheme	53
2.2.7.4.7 Connector	53
2.2.7.4.8 Embellishment and Multiformat.....	53
2.2.7.5 Fixed Theme	54
2.2.7.5.1 Custom Fixed Color and Effect Schemes.....	54
2.2.7.6 Color Table	55
2.2.7.7 Font Table	56
2.2.7.8 Custom Pattern	56
2.2.7.9 Data Formatting	57
2.2.7.9.1 Text Field Data Formatting	57
2.2.7.9.2 Shape Data Formatting	57
2.2.8 Text	58
2.2.8.1 Character Properties	58
2.2.8.2 Paragraph Properties.....	58
2.2.8.3 Tabs Properties	59
2.2.8.4 Text Fields.....	59
2.2.8.5 Text Block	59
2.2.8.5.1 Text Block Coordinate System	60

2.2.9	Comments.....	61
2.2.10	Data Connectivity and Refresh	61
2.2.10.1	Data Connections.....	61
2.2.10.2	Recordset	62
2.2.10.2.1	Data Binding	62
2.2.10.3	Recordset Refresh	62
2.2.10.4	Recordset Row Addressing	63
2.2.11	Diagram Update	63
2.2.11.1	Update Triggers	63
2.2.11.2	Formulas	64
2.2.11.2.1	Formula Expression	64
2.2.11.2.2	Parse Tokens	64
2.2.11.2.2.1	Function Tokens	64
2.2.11.2.2.2	Operand Tokens	64
2.2.11.2.2.2.1	String Values	65
2.2.11.2.2.2.2	Numeric Values	65
2.2.11.2.2.2.3	Boolean Values	66
2.2.11.2.2.2.4	Currency Values	66
2.2.11.2.2.2.5	Color Values	66
2.2.11.2.2.2.6	Date Values	66
2.2.11.2.2.2.7	Geometry Function Values	67
2.2.11.2.2.2.8	Error Values	67
2.2.11.2.2.3	Reference Tokens	67
2.2.11.2.3	Formula Evaluation	67
2.2.11.2.4	Reference Context	67
2.2.11.3	Unit Number	68
2.2.11.3.1	One-dimensional Unit Number	68
2.2.11.3.2	Multidimensional Unit Number	69
2.3	Parts	69
2.3.1	Part Enumeration	69
2.3.2	Shared XML Parts and Schema	70
2.3.2.1	App XML Part	70
2.3.2.2	ContentType XML Part	70
2.3.2.3	Core XML Part	70
2.3.2.4	Custom XML Part	71
2.3.2.5	Rels XML Part	71
2.3.3	Visio Parts	72
2.3.3.1	Comments XML Part	72
2.3.3.2	Connections XML Part	72
2.3.3.3	Document XML Part	72
2.3.3.4	Extensions XML Part	73
2.3.3.5	Image Part	73
2.3.3.6	Master XML Part	74
2.3.3.7	Masters XML Part	74
2.3.3.8	Page XML Part	74
2.3.3.9	Pages XML Part	75
2.3.3.10	Recordsets XML Part	75
2.3.3.11	Theme XML Part	76
2.3.4	Visio XML Schema	76
2.3.4.1	Simple Types	76
2.3.4.2	Complex Types	76
2.3.4.2.1	AttachedToolbars_Type	76
2.3.4.2.2	AuthorEntry_Type	76

2.3.4.2.3	AuthorList_Type.....	77
2.3.4.2.4	AutoLinkComparison_Type	77
2.3.4.2.5	Cell_Type.....	78
2.3.4.2.6	CellDef_Type	81
2.3.4.2.7	ColorEntry_Type	82
2.3.4.2.8	Colors_Type	82
2.3.4.2.9	CommentEntry_Type	83
2.3.4.2.10	CommentList_Type.....	83
2.3.4.2.11	Comments_Type	84
2.3.4.2.12	Connect_Type	84
2.3.4.2.13	Connects_Type	85
2.3.4.2.14	cp_Type	85
2.3.4.2.15	CT_Embellishment.....	86
2.3.4.2.16	CT_FmtSchemeEx	86
2.3.4.2.17	CT_LineEx	86
2.3.4.2.18	CT_LineStyle.....	87
2.3.4.2.19	CT_LineStyles	88
2.3.4.2.20	CT_MultiFormat.....	88
2.3.4.2.21	CT_OfficeStyleSheet	89
2.3.4.2.22	CT_SchemeID	91
2.3.4.2.23	CT_SchemeLineStyles	92
2.3.4.2.24	CT_Sketch	92
2.3.4.2.25	CT_ThemeScheme.....	93
2.3.4.2.26	CustomMenusFile_Type	94
2.3.4.2.27	CustomToolbarsFile_Type.....	94
2.3.4.2.28	Data_Type.....	94
2.3.4.2.29	DataColumn_Type	95
2.3.4.2.30	DataColumns_Type.....	96
2.3.4.2.31	DataConnection_Type	96
2.3.4.2.32	DataConnections_Type.....	98
2.3.4.2.33	DataRecordSet_Type	99
2.3.4.2.34	DataRecordSets_Type	101
2.3.4.2.35	DocumentSettings_Type.....	101
2.3.4.2.36	DocumentSheet_Type	103
2.3.4.2.37	DynamicGridEnabled_Type	104
2.3.4.2.38	Extensions_Type	104
2.3.4.2.39	FaceName_Type.....	105
2.3.4.2.40	FaceNames_Type	105
2.3.4.2.41	fld_Type.....	106
2.3.4.2.42	FooterCenter_Type	106
2.3.4.2.43	FooterLeft_Type	107
2.3.4.2.44	FooterMargin_Type.....	107
2.3.4.2.45	FooterRight_Type	107
2.3.4.2.46	ForeignData_Type	108
2.3.4.2.47	FunctionDef_Type.....	109
2.3.4.2.48	GlueSettings_Type	109
2.3.4.2.49	HeaderCenter_Type	110
2.3.4.2.50	HeaderFooter_Type	110
2.3.4.2.51	HeaderFooterFont_Type	111
2.3.4.2.52	HeaderLeft_Type	112
2.3.4.2.53	HeaderMargin_Type.....	113
2.3.4.2.54	HeaderRight_Type	113
2.3.4.2.55	Icon_Type	113

2.3.4.2.56	Master_Type	114
2.3.4.2.57	Masters_Type	116
2.3.4.2.58	MasterShortcut_Type	116
2.3.4.2.59	Page_Type	117
2.3.4.2.60	PageContents_Type	119
2.3.4.2.61	Pages_Type	119
2.3.4.2.62	PageSheet_Type	119
2.3.4.2.63	pp_Type	120
2.3.4.2.64	PrimaryKey_Type	121
2.3.4.2.65	ProtectBkgnds_Type	121
2.3.4.2.66	ProtectMasters_Type	121
2.3.4.2.67	ProtectShapes_Type	122
2.3.4.2.68	ProtectStyles_Type	122
2.3.4.2.69	PublishedPage_Type	122
2.3.4.2.70	PublishSettings_Type	123
2.3.4.2.71	RefBy_Type	123
2.3.4.2.72	RefreshableData_Type	124
2.3.4.2.73	RefreshConflict_Type	124
2.3.4.2.74	Rel_Type	125
2.3.4.2.75	Row_Type	125
2.3.4.2.76	RowDef_Type	126
2.3.4.2.77	RowKeyValue_Type	126
2.3.4.2.78	RowMap_Type	127
2.3.4.2.79	Section_Type	127
2.3.4.2.80	SectionDef_Type	128
2.3.4.2.81	Shapes_Type	129
2.3.4.2.82	ShapeSheet_Type	130
2.3.4.2.83	Sheet_Type	132
2.3.4.2.84	SnapAngle_Type	132
2.3.4.2.85	SnapAngles_Type	133
2.3.4.2.86	SnapExtensions_Type	133
2.3.4.2.87	SnapSettings_Type	133
2.3.4.2.88	StyleSheet_Type	134
2.3.4.2.89	StyleSheets_Type	135
2.3.4.2.90	Text_Type	135
2.3.4.2.91	tp_Type	136
2.3.4.2.92	VisioDocument_Type	136
2.3.4.2.93	EventList_Type	137
2.3.4.2.94	EventItem_Type	137
2.3.4.3	Elements	138
2.3.4.3.1	VisioDocument	138
2.3.4.3.2	Masters	138
2.3.4.3.3	MasterContents	139
2.3.4.3.4	Pages	139
2.3.4.3.5	PageContents	139
2.3.4.3.6	DataConnections	139
2.3.4.3.7	DataRecordSets	139
2.3.4.3.8	Comments	140
2.3.4.3.9	Theme	140
2.3.4.3.10	Extensions	140
2.3.4.4	Attributes	140
2.3.5	Markup Compatibility Schema	140
2.3.5.1	Compatibility-Rule Attributes	141

2.3.5.2	Alternate-Content Elements	141
2.4	ShapeSheet Properties	141
2.4.1	Sections	141
2.4.1.1	Actions	141
2.4.1.2	ActionTag	142
2.4.1.3	Annotation	142
2.4.1.4	Character	142
2.4.1.5	Connection	142
2.4.1.6	Control	142
2.4.1.7	Field	142
2.4.1.8	FillGradient	142
2.4.1.9	Geometry	142
2.4.1.10	Hyperlink	142
2.4.1.11	Layer	142
2.4.1.12	LineGradient	143
2.4.1.13	Paragraph	143
2.4.1.14	Property	143
2.4.1.15	Reviewer	143
2.4.1.16	Scratch	143
2.4.1.17	Tabs	143
2.4.1.18	User	143
2.4.2	GeometryRowTypes	143
2.4.2.1	ArcTo	143
2.4.2.2	Ellipse	144
2.4.2.3	EllipticalArcTo	144
2.4.2.4	InfiniteLine	144
2.4.2.5	LineTo	145
2.4.2.6	MoveTo	145
2.4.2.7	NURBSto	145
2.4.2.8	PolylineTo	146
2.4.2.9	RelCubBezTo	146
2.4.2.10	RelEllipticalArcTo	146
2.4.2.11	RelLineTo	147
2.4.2.12	RelMoveTo	147
2.4.2.13	RelQuadBezTo	147
2.4.2.14	SplineKnot	148
2.4.2.15	SplineStart	148
2.4.3	UserRowNames	148
2.4.3.1	msvShapeCategories	149
2.4.3.2	msvThemeAccentColor	149
2.4.3.3	msvThemeDarkColor	149
2.4.3.4	msvThemeLightColor	149
2.4.3.5	msvThemeAccentColor6	149
2.4.3.6	msvThemeAccentColor2	149
2.4.3.7	msvThemeAccentColor3	150
2.4.3.8	msvThemeAccentColor4	150
2.4.3.9	msvThemeAccentColor5	150
2.4.3.10	msvThemeAsianFont	150
2.4.3.11	msvThemeBackgroundColor	150
2.4.3.12	msvThemeColors	150
2.4.3.13	msvThemeComplexFont	151
2.4.3.14	msvThemeConnectorBegin	151
2.4.3.15	msvThemeConnectorBeginSize	151

2.4.3.16	msvThemeConnectorColor	151
2.4.3.17	msvThemeConnectorEnd	151
2.4.3.18	msvThemeConnectorEnd2	151
2.4.3.19	msvThemeConnectorEndSize	151
2.4.3.20	msvThemeConnectorPattern	152
2.4.3.21	msvThemeConnectorRounding	152
2.4.3.22	msvThemeConnectorTransparency	152
2.4.3.23	msvThemeConnectorWeight	152
2.4.3.24	msvThemeEffects	152
2.4.3.25	msvThemeFillColor	152
2.4.3.26	msvThemeFillColor2	152
2.4.3.27	msvThemeFillPattern	153
2.4.3.28	msvThemeFillTransparency	153
2.4.3.29	msvThemeLatinFont	153
2.4.3.30	msvThemeLineColor	153
2.4.3.31	msvThemeLinePattern	153
2.4.3.32	msvThemeLineRounding	153
2.4.3.33	msvThemeLineTransparency	153
2.4.3.34	msvThemeLineWeight	154
2.4.3.35	msvThemeShadowColor	154
2.4.3.36	msvThemeShadowDirection	154
2.4.3.37	msvThemeShadowMagnification	154
2.4.3.38	msvThemeShadowPattern	154
2.4.3.39	msvThemeShadowStyle	154
2.4.3.40	msvThemeShadowTransparency	154
2.4.3.41	msvThemeShadowXOffset	155
2.4.3.42	msvThemeShadowYOffset	155
2.4.3.43	msvThemeTextColor	155
2.4.3.44	visUSEType	155
2.4.4	Cells	155
2.4.4.1	A	156
2.4.4.2	Action	156
2.4.4.3	Active	156
2.4.4.4	AddMarkup	156
2.4.4.5	Address	156
2.4.4.6	AlignBottom	156
2.4.4.7	AlignCenter	156
2.4.4.8	AlignLeft	157
2.4.4.9	Alignment	157
2.4.4.10	AlignMiddle	157
2.4.4.11	AlignRight	157
2.4.4.12	AlignTop	157
2.4.4.13	Angle	157
2.4.4.14	AsianFont	158
2.4.4.15	AutoGen	158
2.4.4.16	AvenueSizeX	158
2.4.4.17	AvenueSizeY	158
2.4.4.18	AvoidPageBreaks	158
2.4.4.19	B	158
2.4.4.20	BeginArrow	158
2.4.4.21	BeginArrowSize	161
2.4.4.22	BeginGroup	162
2.4.4.23	BeginX	162

2.4.4.24	BeginY.....	162
2.4.4.25	BegTrigger.....	162
2.4.4.26	BevelBottomHeight.....	162
2.4.4.27	BevelBottomType.....	163
2.4.4.28	BevelBottomWidth.....	163
2.4.4.29	BevelContourColor.....	163
2.4.4.30	BevelContourSize.....	163
2.4.4.31	BevelDepthColor.....	163
2.4.4.32	BevelDepthSize.....	163
2.4.4.33	BevelLightingAngle.....	164
2.4.4.34	BevelLightingType.....	164
2.4.4.35	BevelMaterialType.....	165
2.4.4.36	BevelTopHeight.....	165
2.4.4.37	BevelTopType.....	165
2.4.4.38	BevelTopWidth.....	166
2.4.4.39	BlockSizeX.....	166
2.4.4.40	BlockSizeY.....	166
2.4.4.41	Blur.....	166
2.4.4.42	BottomMargin.....	167
2.4.4.43	Brightness.....	167
2.4.4.44	Bullet.....	167
2.4.4.45	BulletFont.....	167
2.4.4.46	BulletFontSize.....	168
2.4.4.47	BulletStr.....	168
2.4.4.48	ButtonFace.....	168
2.4.4.49	C.....	168
2.4.4.50	Calendar.....	168
2.4.4.51	CanGlue.....	169
2.4.4.52	Case.....	169
2.4.4.53	CategoryChanged.....	169
2.4.4.54	CenterX.....	169
2.4.4.55	CenterY.....	169
2.4.4.56	Checked.....	169
2.4.4.57	ClippingPath.....	169
2.4.4.58	Color.....	170
2.4.4.59	ColorSchemeIndex.....	170
2.4.4.60	ColorTrans.....	170
2.4.4.61	Comment.....	171
2.4.4.62	ComplexScriptFont.....	171
2.4.4.63	ComplexScriptSize.....	171
2.4.4.64	CompoundType.....	172
2.4.4.65	ConFixedCode.....	172
2.4.4.66	ConLineJumpCode.....	172
2.4.4.67	ConLineJumpDirX.....	172
2.4.4.68	ConLineJumpDirY.....	172
2.4.4.69	ConLineJumpStyle.....	172
2.4.4.70	ConLineRouteExt.....	173
2.4.4.71	ConnectorSchemeIndex.....	173
2.4.4.72	Contrast.....	173
2.4.4.73	Copyright.....	173
2.4.4.74	CtrlAsInput.....	173
2.4.4.75	CurrentIndex.....	173
2.4.4.76	D.....	173

2.4.4.77	DataLinked.....	174
2.4.4.78	Date.....	174
2.4.4.79	DbUnderline	174
2.4.4.80	Default	174
2.4.4.81	DefaultTabStop.....	174
2.4.4.82	Denoise	174
2.4.4.83	Description.....	175
2.4.4.84	DirX	175
2.4.4.85	DirY	175
2.4.4.86	Disabled	175
2.4.4.87	DisplayLevel.....	175
2.4.4.88	DisplayMode.....	175
2.4.4.89	DistanceFromGround	175
2.4.4.90	DocLangID	176
2.4.4.91	DocLockReplace.....	176
2.4.4.92	DontMoveChildren.....	176
2.4.4.93	DoubleStrikethrough	176
2.4.4.94	DrawingResizeType	176
2.4.4.95	DrawingScale	176
2.4.4.96	DrawingScaleType	176
2.4.4.97	DrawingSizeType	177
2.4.4.98	DropOnPageScale	177
2.4.4.99	DynamicsOff	177
2.4.4.100	DynFeedback.....	177
2.4.4.101	E.....	177
2.4.4.102	EffectSchemeIndex	178
2.4.4.103	EnableFillProps	178
2.4.4.104	EnableGrid	178
2.4.4.105	EnableLineProps.....	178
2.4.4.106	EnableTextProps	178
2.4.4.107	EndArrow	178
2.4.4.108	EndArrowSize	178
2.4.4.109	EndTrigger	179
2.4.4.110	EndX	179
2.4.4.111	EndY	179
2.4.4.112	EventDbClick	179
2.4.4.113	EventDrop.....	179
2.4.4.114	EventMultiDrop	180
2.4.4.115	EventXFMod	180
2.4.4.116	ExtraInfo	180
2.4.4.117	FillBkgnd.....	180
2.4.4.118	FillBkgndTrans	180
2.4.4.119	FillForegnd	180
2.4.4.120	FillForegndTrans	180
2.4.4.121	FillGradientAngle.....	181
2.4.4.122	FillGradientDir	181
2.4.4.123	FillGradientEnabled	182
2.4.4.124	FillPattern	182
2.4.4.125	Flags	185
2.4.4.126	FlipX.....	185
2.4.4.127	FlipY.....	185
2.4.4.128	FlyoutChild	185
2.4.4.129	Font	185

2.4.4.130	FontScale.....	185
2.4.4.131	FontSchemeIndex	186
2.4.4.132	Format	186
2.4.4.133	Frame.....	186
2.4.4.134	Gamma.....	186
2.4.4.135	GlowColor	186
2.4.4.136	GlowColorTrans.....	186
2.4.4.137	GlowSize.....	187
2.4.4.138	Glue	187
2.4.4.139	GlueType	187
2.4.4.140	GradientStopColor.....	187
2.4.4.141	GradientStopColorTrans.....	187
2.4.4.142	GradientStopPosition	187
2.4.4.143	Height	187
2.4.4.144	HelpTopic.....	188
2.4.4.145	HideForApply	188
2.4.4.146	HideText	188
2.4.4.147	HorzAlign	188
2.4.4.148	ImgHeight.....	188
2.4.4.149	ImgOffsetX.....	188
2.4.4.150	ImgOffsetY.....	189
2.4.4.151	ImgWidth.....	189
2.4.4.152	IndFirst.....	189
2.4.4.153	IndLeft	189
2.4.4.154	IndRight	189
2.4.4.155	InhibitSnap	189
2.4.4.156	Initials	189
2.4.4.157	Invisible.....	190
2.4.4.158	IsDropSource	190
2.4.4.159	IsDropTarget.....	190
2.4.4.160	IsSnapTarget.....	190
2.4.4.161	IsTextEditTarget	190
2.4.4.162	KeepTextFlat	190
2.4.4.163	Label	190
2.4.4.164	LangID	190
2.4.4.165	LayerMember	190
2.4.4.166	LeftMargin.....	191
2.4.4.167	Letterspace	191
2.4.4.168	LineAdjustFrom.....	191
2.4.4.169	LineAdjustTo	191
2.4.4.170	LineCap	191
2.4.4.171	LineColor	191
2.4.4.172	LineColorTrans.....	191
2.4.4.173	LineGradientAngle.....	192
2.4.4.174	LineGradientDir.....	192
2.4.4.175	LineGradientEnabled.....	193
2.4.4.176	LineJumpCode	193
2.4.4.177	LineJumpFactorX.....	193
2.4.4.178	LineJumpFactorY	193
2.4.4.179	LineJumpStyle	193
2.4.4.180	LinePattern.....	193
2.4.4.181	LineRouteExt	195
2.4.4.182	LineToLineX.....	195

2.4.4.183	LineToLineY	195
2.4.4.184	LineToNodeX	195
2.4.4.185	LineToNodeY	195
2.4.4.186	LineWeight	195
2.4.4.187	LocalizeMerge	195
2.4.4.188	Lock	195
2.4.4.189	LockAspect	196
2.4.4.190	LockBegin	196
2.4.4.191	LockCalcWH	196
2.4.4.192	LockCrop	196
2.4.4.193	LockCustProp	196
2.4.4.194	LockDelete	196
2.4.4.195	LockEnd	196
2.4.4.196	LockFormat	196
2.4.4.197	LockFromGroupFormat	196
2.4.4.198	LockGroup	197
2.4.4.199	LockHeight	197
2.4.4.200	LockMoveX	197
2.4.4.201	LockMoveY	197
2.4.4.202	LockPreview	197
2.4.4.203	LockReplace	197
2.4.4.204	LockRotate	197
2.4.4.205	LockSelect	197
2.4.4.206	LockTextEdit	198
2.4.4.207	LockThemeColors	198
2.4.4.208	LockThemeConnectors	198
2.4.4.209	LockThemeEffects	198
2.4.4.210	LockThemeFonts	198
2.4.4.211	LockVtxEdit	198
2.4.4.212	LockWidth	198
2.4.4.213	LocPinX	198
2.4.4.214	LocPinY	198
2.4.4.215	MarkerIndex	199
2.4.4.216	Menu	199
2.4.4.217	Name	199
2.4.4.218	NameUniv	199
2.4.4.219	NewWindow	199
2.4.4.220	NoAlignBox	199
2.4.4.221	NoCoauth	199
2.4.4.222	NoCtlHandles	199
2.4.4.223	NoFill	199
2.4.4.224	NoLine	200
2.4.4.225	NoLiveDynamics	200
2.4.4.226	NonPrinting	200
2.4.4.227	NoObjHandles	200
2.4.4.228	NoQuickDrag	200
2.4.4.229	NoShow	200
2.4.4.230	NoSnap	200
2.4.4.231	ObjectKind	200
2.4.4.232	ObjType	201
2.4.4.233	OnPage	201
2.4.4.234	OutputFormat	201
2.4.4.235	Overline	201

2.4.4.236	PageBottomMargin	201
2.4.4.237	PageHeight.....	201
2.4.4.238	PageLeftMargin	201
2.4.4.239	PageLineJumpDirX.....	201
2.4.4.240	PageLineJumpDirY.....	201
2.4.4.241	PageLockReplace	201
2.4.4.242	PageRightMargin	202
2.4.4.243	PageScale	202
2.4.4.244	PageShapeSplit.....	202
2.4.4.245	PagesX	202
2.4.4.246	PagesY.....	202
2.4.4.247	PageTopMargin	202
2.4.4.248	PageWidth.....	202
2.4.4.249	PaperKind	202
2.4.4.250	PaperSource	202
2.4.4.251	Path	202
2.4.4.252	Perspective	203
2.4.4.253	PinX	203
2.4.4.254	PinY.....	203
2.4.4.255	PlaceDepth.....	203
2.4.4.256	PlaceFlip	203
2.4.4.257	PlaceStyle	203
2.4.4.258	PlowCode	203
2.4.4.259	Pos.....	203
2.4.4.260	Position.....	204
2.4.4.261	PreviewQuality.....	204
2.4.4.262	PreviewScope	204
2.4.4.263	Print	204
2.4.4.264	PrintGrid	204
2.4.4.265	PrintPageOrientation.....	204
2.4.4.266	Prompt	204
2.4.4.267	QuickStyleEffectsMatrix	205
2.4.4.268	QuickStyleFillColor	205
2.4.4.269	QuickStyleFillMatrix	206
2.4.4.270	QuickStyleFontColor	206
2.4.4.271	QuickStyleLineColor.....	206
2.4.4.272	QuickStyleLineMatrix	206
2.4.4.273	QuickStyleShadowColor	207
2.4.4.274	QuickStyleType	207
2.4.4.275	ReadOnly	207
2.4.4.276	ReflectionBlur	208
2.4.4.277	ReflectionDist	208
2.4.4.278	ReflectionSize	208
2.4.4.279	ReflectionTrans	208
2.4.4.280	Relationships	208
2.4.4.281	RelChanged	208
2.4.4.282	ReplaceLockFormat	208
2.4.4.283	ReplaceLockShapeData	209
2.4.4.284	ReplaceLockText	209
2.4.4.285	ResizeMode	209
2.4.4.286	ResizePage.....	209
2.4.4.287	ReviewerID	209
2.4.4.288	RightMargin.....	209

2.4.4.289	RotateGradientWithShape	209
2.4.4.290	RotationType	209
2.4.4.291	RotationXAngle	210
2.4.4.292	RotationYAngle	210
2.4.4.293	RotationZAngle	210
2.4.4.294	Rounding	210
2.4.4.295	RouteStyle	210
2.4.4.296	ScaleX	211
2.4.4.297	ScaleY	211
2.4.4.298	SelectMode	211
2.4.4.299	ShapeFixedCode	211
2.4.4.300	ShapeKeywords	211
2.4.4.301	ShapePermeablePlace	211
2.4.4.302	ShapePermeableX	211
2.4.4.303	ShapePermeableY	211
2.4.4.304	ShapePlaceFlip	212
2.4.4.305	ShapePlaceStyle	212
2.4.4.306	ShapePlowCode	212
2.4.4.307	ShapeRouteStyle	212
2.4.4.308	ShapeShdwBlur	212
2.4.4.309	ShapeShdwObliqueAngle	212
2.4.4.310	ShapeShdwOffsetX	212
2.4.4.311	ShapeShdwOffsetY	212
2.4.4.312	ShapeShdwScaleFactor	213
2.4.4.313	ShapeShdwShow	213
2.4.4.314	ShapeShdwType	213
2.4.4.315	ShapeSplit	213
2.4.4.316	ShapeSplittable	213
2.4.4.317	Sharpen	213
2.4.4.318	ShdwForegnd	214
2.4.4.319	ShdwForegndTrans	214
2.4.4.320	ShdwObliqueAngle	214
2.4.4.321	ShdwOffsetX	214
2.4.4.322	ShdwOffsetY	214
2.4.4.323	ShdwPattern	214
2.4.4.324	ShdwScaleFactor	215
2.4.4.325	ShdwType	215
2.4.4.326	Size	215
2.4.4.327	SketchAmount	215
2.4.4.328	SketchEnabled	215
2.4.4.329	SketchFillChange	216
2.4.4.330	SketchLineChange	216
2.4.4.331	SketchLineWeight	216
2.4.4.332	SketchSeed	216
2.4.4.333	Snap	216
2.4.4.334	SoftEdgesSize	216
2.4.4.335	SortKey	217
2.4.4.336	SpAfter	217
2.4.4.337	SpBefore	217
2.4.4.338	SpLine	217
2.4.4.339	Status	217
2.4.4.340	Strikethru	217
2.4.4.341	Style	217

2.4.4.342	SubAddress	218
2.4.4.343	TagName	218
2.4.4.344	TextBkgnd.....	218
2.4.4.345	TextBkgndTrans.....	218
2.4.4.346	TextDirection	219
2.4.4.347	TextPosAfterBullet.....	219
2.4.4.348	TheData	219
2.4.4.349	Theme	219
2.4.4.350	ThemeIndex	219
2.4.4.351	ThemeModern.....	219
2.4.4.352	TheText	220
2.4.4.353	TopMargin	220
2.4.4.354	Transparency.....	220
2.4.4.355	TxtAngle	220
2.4.4.356	TxtHeight.....	220
2.4.4.357	TxtLocPinX	220
2.4.4.358	TxtLocPinY	220
2.4.4.359	TxtPinX	220
2.4.4.360	TxtPinY	221
2.4.4.361	TxtWidth	221
2.4.4.362	Type.....	221
2.4.4.363	UIVisibility.....	221
2.4.4.364	UpdateAlignBox	221
2.4.4.365	UseGroupGradient.....	221
2.4.4.366	Value.....	221
2.4.4.367	Verify	222
2.4.4.368	VerticalAlign	222
2.4.4.369	ViewMarkup	222
2.4.4.370	Visible	222
2.4.4.371	WalkPreference.....	222
2.4.4.372	Width	222
2.4.4.373	X.....	223
2.4.4.374	XCon	223
2.4.4.375	XDyn	223
2.4.4.376	XGridDensity	223
2.4.4.377	XGridOrigin	223
2.4.4.378	XGridSpacing.....	223
2.4.4.379	XJustify.....	223
2.4.4.380	XRulerDensity.....	223
2.4.4.381	XRulerOrigin.....	224
2.4.4.382	Y.....	224
2.4.4.383	YCon	224
2.4.4.384	YDyn	224
2.4.4.385	YGridDensity	224
2.4.4.386	YGridOrigin	224
2.4.4.387	YGridSpacing	224
2.4.4.388	YJustify	224
2.4.4.389	YRulerDensity	225
2.4.4.390	YRulerOrigin	225
2.4.4.391	ZOrderChanged	225
2.5	Formula Expressions and Evaluation.....	225
2.5.1	Formula ABNF and Full Grammar Definition	225
2.5.2	Order of Operations	226

2.5.3	Function Token Definitions.....	227
2.5.3.1	Abs.....	227
2.5.3.2	ACos.....	228
2.5.3.3	Add.....	228
2.5.3.4	And.....	230
2.5.3.5	Ang360.....	230
2.5.3.6	AngleToLoc.....	231
2.5.3.7	AngleToPar.....	231
2.5.3.8	ASin.....	232
2.5.3.9	ATan2.....	232
2.5.3.10	ATan.....	233
2.5.3.11	BitAnd.....	233
2.5.3.12	BitNot.....	234
2.5.3.13	BitOr.....	234
2.5.3.14	BitXor.....	235
2.5.3.15	BkgPageName.....	235
2.5.3.16	Blend.....	236
2.5.3.17	Bound.....	237
2.5.3.18	Cat.....	238
2.5.3.19	Category.....	239
2.5.3.20	Ceiling.....	239
2.5.3.21	CellIsThemed.....	240
2.5.3.22	Char.....	240
2.5.3.23	Company.....	241
2.5.3.24	Cos.....	241
2.5.3.25	CosH.....	241
2.5.3.26	Creator.....	242
2.5.3.27	CY.....	242
2.5.3.28	Date.....	243
2.5.3.29	DateTime.....	243
2.5.3.30	DateValue.....	244
2.5.3.31	Day.....	245
2.5.3.32	DayOfYear.....	245
2.5.3.33	Deg.....	246
2.5.3.34	DependsOn.....	246
2.5.3.35	Description.....	247
2.5.3.36	Directory.....	247
2.5.3.37	Div.....	247
2.5.3.38	DocCreation.....	249
2.5.3.39	DocLastEdit.....	250
2.5.3.40	DocLastPrint.....	250
2.5.3.41	DocLastSave.....	250
2.5.3.42	EEQ.....	250
2.5.3.43	EGE.....	251
2.5.3.44	EGT.....	251
2.5.3.45	ELE.....	252
2.5.3.46	ELT.....	252
2.5.3.47	ENE.....	253
2.5.3.48	FEQ.....	254
2.5.3.49	FGE.....	254
2.5.3.50	FGT.....	255
2.5.3.51	FieldPicture.....	255
2.5.3.52	FileName.....	256

2.5.3.53	Find	256
2.5.3.54	FLE	257
2.5.3.55	Floor	257
2.5.3.56	FLT	258
2.5.3.57	FNE.....	259
2.5.3.58	Format	259
2.5.3.59	FormatEx	260
2.5.3.60	Gravity	261
2.5.3.61	Guard.....	262
2.5.3.62	HasCategory	262
2.5.3.63	Hour	262
2.5.3.64	HSL.....	263
2.5.3.65	Hue.....	264
2.5.3.66	HueDiff	264
2.5.3.67	HyperlinkBase	265
2.5.3.68	ID	265
2.5.3.69	IF	265
2.5.3.70	IfError	266
2.5.3.71	Index	267
2.5.3.72	Int	268
2.5.3.73	IntersectX.....	268
2.5.3.74	IntersectY	269
2.5.3.75	Intup.....	270
2.5.3.76	Is1D.....	270
2.5.3.77	IsErr	271
2.5.3.78	IsErrNA	271
2.5.3.79	IsError.....	272
2.5.3.80	IsErrValue.....	272
2.5.3.81	IsThemed	272
2.5.3.82	Keywords.....	273
2.5.3.83	Language.....	273
2.5.3.84	Left.....	273
2.5.3.85	Len	274
2.5.3.86	Ln	274
2.5.3.87	Loc	275
2.5.3.88	LocToLoc	275
2.5.3.89	LocToPar.....	276
2.5.3.90	Log10.....	277
2.5.3.91	Lookup	277
2.5.3.92	Lower.....	278
2.5.3.93	Lum	278
2.5.3.94	LumDiff	279
2.5.3.95	Magnitude.....	279
2.5.3.96	Manager	280
2.5.3.97	MasterName.....	280
2.5.3.98	Max.....	281
2.5.3.99	Mid	282
2.5.3.100	Min.....	282
2.5.3.101	Minute	283
2.5.3.102	Modulus	283
2.5.3.103	Month.....	284
2.5.3.104	MsoShade	285
2.5.3.105	MsoTint.....	285

2.5.3.106	Mul.....	286
2.5.3.107	NA	287
2.5.3.108	Name	288
2.5.3.109	Not.....	288
2.5.3.110	Now	289
2.5.3.111	Nurbs	289
2.5.3.112	Or	290
2.5.3.113	PageCount	291
2.5.3.114	PageName.....	291
2.5.3.115	PageNumber.....	291
2.5.3.116	Par.....	292
2.5.3.117	Pct	292
2.5.3.118	Pi.....	293
2.5.3.119	Pnt.....	293
2.5.3.120	Pntx	293
2.5.3.121	PntY	294
2.5.3.122	PolyLine.....	294
2.5.3.123	Pow	295
2.5.3.124	Rad	296
2.5.3.125	Rand	297
2.5.3.126	Ref.....	297
2.5.3.127	Replace.....	297
2.5.3.128	RGB	298
2.5.3.129	Right	299
2.5.3.130	Round.....	299
2.5.3.131	Sat.....	300
2.5.3.132	SatDiff.....	300
2.5.3.133	Second	301
2.5.3.134	SetAtRef	302
2.5.3.135	SetAtRefEval	302
2.5.3.136	SetAtRefExpr	302
2.5.3.137	Shade.....	303
2.5.3.138	ShapeText.....	303
2.5.3.139	Sign	304
2.5.3.140	Sin	305
2.5.3.141	SinH.....	305
2.5.3.142	Sqrt	306
2.5.3.143	StrSame	306
2.5.3.144	StrSameEx.....	307
2.5.3.145	Sub	308
2.5.3.146	Subject.....	309
2.5.3.147	Substitute	310
2.5.3.148	Sum	311
2.5.3.149	Tan	311
2.5.3.150	TanH	312
2.5.3.151	TextHeight	312
2.5.3.152	TextWidth	313
2.5.3.153	Theme	313
2.5.3.154	ThemeCBV	314
2.5.3.155	ThemeGuard	315
2.5.3.156	ThemeProp.....	315
2.5.3.157	ThemeRestore	316
2.5.3.158	ThemeVal.....	316

2.5.3.159	Time.....	317
2.5.3.160	TimeValue.....	318
2.5.3.161	Tint.....	318
2.5.3.162	Title.....	319
2.5.3.163	Tone.....	319
2.5.3.164	Trim.....	320
2.5.3.165	Trunc.....	321
2.5.3.166	UMinus.....	322
2.5.3.167	UniChar.....	322
2.5.3.168	UPlus.....	323
2.5.3.169	Upper.....	323
2.5.3.170	Use.....	323
2.5.3.171	Version.....	324
2.5.3.172	WeekDay.....	324
2.5.3.173	Year.....	325
2.5.4	Parse Token Definitions.....	325
2.5.4.1	PtgAcre.....	326
2.5.4.2	PtgAngDD.....	326
2.5.4.3	PtgAngDft.....	326
2.5.4.4	PtgAngDMS.....	327
2.5.4.5	PtgAngRad.....	327
2.5.4.6	PtgBool.....	328
2.5.4.7	PtgByte.....	328
2.5.4.8	PtgColorRGB.....	328
2.5.4.9	PtgCy.....	329
2.5.4.10	PtgDate.....	329
2.5.4.11	PtgEDay.....	329
2.5.4.12	PtgEHour.....	330
2.5.4.13	PtgEMin.....	330
2.5.4.14	PtgErr.....	331
2.5.4.15	PtgESec.....	331
2.5.4.16	PtgEWeek.....	331
2.5.4.17	PtgHectare.....	332
2.5.4.18	PtgInt.....	332
2.5.4.19	PtgNum.....	332
2.5.4.20	PtgNumCM.....	333
2.5.4.21	PtgNumDft.....	333
2.5.4.22	PtgNumF.....	334
2.5.4.23	PtgNumFI.....	334
2.5.4.24	PtgNumI.....	334
2.5.4.25	PtgNumKM.....	335
2.5.4.26	PtgNumM.....	335
2.5.4.27	PtgNumMI.....	335
2.5.4.28	PtgNumMM.....	336
2.5.4.29	PtgNumMultiDim.....	336
2.5.4.30	PtgNumNM.....	338
2.5.4.31	PtgNumPct.....	338
2.5.4.32	PtgNumYards.....	338
2.5.4.33	PtgPageDft.....	339
2.5.4.34	PtgPnt.....	339
2.5.4.35	PtgShort.....	340
2.5.4.36	PtgString.....	340
2.5.4.37	PtgTDurDft.....	340

2.5.4.38	PtgTypCD.....	341
2.5.4.39	PtgTypCi.....	341
2.5.4.40	PtgTypDft	342
2.5.4.41	PtgTypDi.....	342
2.5.4.42	PtgTypPi	342
2.5.4.43	PtgTypPP	343
2.5.4.44	PtgTypPt.....	343
2.5.4.45	PtgUnsShort.....	343
2.5.4.46	PtgNurbs	344
2.5.4.47	PtgPolyLine	345
2.5.5	Reference Token Definitions	346
2.5.5.1	CellRef	346
2.5.5.2	CrossPageRef	346
2.5.5.3	DocSheetRef	346
2.5.5.4	IndexedCellRef	347
2.5.5.5	MasterSheetRef	347
2.5.5.6	NamedCellRef	347
2.5.5.7	PageSheetRef.....	348
2.5.5.8	SectionRef	348
2.5.5.9	ShapeSheetRef.....	349
2.5.5.10	SingleLetterNamedCellRef	349
2.5.5.11	StyleSheetRef	350
2.5.6	Custom Input Type Definitions	350
2.5.6.1	vBoolean	350
2.5.6.2	vColor	350
2.5.6.3	vDouble.....	351
2.5.6.4	vDoubleEx	351
2.5.6.5	vFloat	351
2.5.6.6	vSignedInt.....	352
2.5.6.7	vSignedLong	352
2.5.6.8	vString	352
2.5.6.9	vUnsignedInt	353
2.5.6.10	vUnsignedLong	353
2.5.7	Custom Token Groupings	353
2.5.7.1	vAngle	353
2.5.7.2	vAny	354
2.5.7.3	vLength.....	354
2.5.7.4	vNum.....	354
2.5.7.5	vNumAny	354
2.5.7.6	vScalar.....	354
2.5.7.7	vUnitType	354
2.5.8	Custom Internal Unit Types	354
2.5.8.1	angleInternalUnitNumber.....	355
2.5.8.2	durationInternalUnitNumber	355
2.5.8.3	lengthInternalUnitNumber	355
2.5.8.4	typographicInternalUnitNumber.....	355
2.5.9	Custom Structures	355
2.5.9.1	vCalendar	355
2.5.9.2	vCurrency.....	356
2.5.9.3	vDataType	362
2.5.9.4	vFieldPicture	363
2.5.9.5	vFont	365
2.5.9.6	vFormatString	365

2.5.9.7	vLanguage.....	371
2.5.9.8	vLanguageID	371
2.5.9.9	vLanguageString	371
2.5.9.10	vPanose.....	383
2.5.9.11	vThemeString.....	383
2.5.9.12	vDynamicThemeString.....	385
2.5.9.13	vThemeColor	410
2.5.9.14	vThemeEffect	415
2.5.9.14.1	Asian and Complex Font Properties.....	419
2.5.9.15	vUnitString	422
3	Structure Examples	425
3.1	Document with a Shape on a Page.....	425
3.1.1	Document XML Part	425
3.1.2	Pages XML Part	429
3.1.3	Page XML Part.....	430
3.2	Document with Master Inheritance.....	433
3.2.1	Masters XML Part	433
3.2.2	Master XML Part.....	434
3.2.3	Page XML Part.....	438
4	Security.....	439
4.1	Security Considerations for Implementers.....	439
4.2	Index Of Security Fields.....	439
5	Appendix A: Full XML Schemas.....	440
6	Appendix B: Product Behavior	454
7	Change Tracking.....	455
8	Index	456

1 Introduction

The Visio Graphics Service VSDX File Format describes a [Web Drawing](#), which is a collection of [Drawing Pages](#), [Masters](#), [Shapes](#), [Images](#), [Comments](#), [Data Connections](#), and recalculation information that can be rendered as a **drawing**.

Sections 1.7 and 2 of this specification are normative and contain RFC 2119 language. All other sections and examples in this specification are informative.

1.1 Glossary

The following terms are defined in [\[MS-GLOS\]](#):

American National Standards Institute (ANSI) character set
enhanced metafile format (EMF)
GUID
Hypertext Transfer Protocol (HTTP)
language code identifier (LCID)
Unicode
UTF-16

The following terms are defined in [\[MS-OFCGLOS\]](#):

add-in
assembly name
bitmap (BMP)
Boolean
character set
class name
color space
connection string
culture name
data provider
data source
drawing
embedded image
embedded object
field
floating-point number
font
gamma correction
Graphics Interchange Format (GIF)
header row
hue-saturation-luminance (HSL)
hyperlink location
Joint Photographic Experts Group (JPEG)
list
metafile
ODBC
Office data connection (ODC) file
OLE DB
Portable Network Graphics (PNG)
primary key
query
red-green-blue (RGB)

row
text run
TIFF
token
Uniform Resource Identifier (URI)
Uniform Resource Locator (URL)
URI query
view
whitespace
workbook
zero-based index

The following terms are specific to this document:

MAY, SHOULD, MUST, SHOULD NOT, MUST NOT: These terms (in all caps) are used as described in [\[RFC2119\]](#). All statements of optional behavior use either MAY, SHOULD, or SHOULD NOT.

1.2 References

References to Microsoft Open Specification documents do not include a publishing year because links are to the latest version of the documents, which are updated frequently. References to other documents include a publishing year when one is available.

1.2.1 Normative References

We conduct frequent surveys of the normative references to assure their continued availability. If you have any issue with finding a normative reference, please contact dochelp@microsoft.com. We will assist you in finding the relevant information. Please check the archive site, <http://msdn2.microsoft.com/en-us/library/E4BD6494-06AD-4aed-9823-445E921C9624>, as an additional source.

[GIF89a] CompuServe Incorporated, "Graphics Interchange Format(sm)", Graphics Interchange Format Programming Reference, July 1990, <http://www.w3.org/Graphics/GIF/spec-gif89a.txt>

[IEEE754] Institute of Electrical and Electronics Engineers, "Standard for Binary Floating-Point Arithmetic", IEEE 754-1985, October 1985, <http://ieeexplore.ieee.org/servlet/opac?punumber=2355>

[ISO/IEC-29500-1] International Organization for Standardization, "Information Technology - Document description and processing languages - Office Open XML File Formats - Part 1: Fundamentals and Markup Language Reference", ISO/IEC PRF 29500-1:2008, http://www.iso.org/iso/iso_catalogue/catalogue_tc/catalogue_detail.htm?csnumber=51463

[ISO/IEC-29500-2] International Organization for Standardization, "Information technology -- Document description and processing languages -- Office Open XML File Formats -- Part 2: Open Packaging Conventions", ISO/IEC 29500-2:2008, http://www.iso.org/iso/iso_catalogue/catalogue_tc/catalogue_detail.htm?csnumber=51459

[ISO/IEC-29500-3] International Organization for Standardization, "Information technology -- Document description and processing languages -- Office Open XML File Formats -- Part 3: Markup Compatibility and Extensibility", 2008, http://www.iso.org/iso/catalogue_detail?csnumber=51461

[ISO-15924] International Organization for Standardization, "ISO 15924 Registration Authority", <http://www.unicode.org/iso15924/>

[ISO-8601] International Organization for Standardization, "Data Elements and Interchange Formats - Information Interchange - Representation of Dates and Times", ISO/IEC 8601:2004, December 2004,
<http://www.iso.org/iso/en/CatalogueDetailPage.CatalogueDetail?CSNUMBER=40874&ICS1=1&ICS2=140&ICS3=30>

Note There is a charge to download the specification.

[JFIF] Hamilton, E., "JPEG File Interchange Format, Version 1.02", September 1992,
<http://www.w3.org/Graphics/JPEG/jfif.txt>

[MSDN-BMPST] Microsoft Corporation, "Bitmap Storage", [http://msdn.microsoft.com/en-us/library/dd183391\(VS.85\).aspx](http://msdn.microsoft.com/en-us/library/dd183391(VS.85).aspx)

[MS-EMF] Microsoft Corporation, "[Enhanced Metafile Format](#)".

[MS-OAUT] Microsoft Corporation, "[OLE Automation Protocol Specification](#)".

[MS-ODBCSTR] Microsoft Corporation, "[ODBC Connection String Structure Specification](#)".

[MS-OLEDS] Microsoft Corporation, "[Object Linking and Embedding \(OLE\) Data Structures](#)".

[MS-TIFF] Microsoft Corporation, "[Microsoft Private Tags within Tagged Image File Format \(.tiff\) Structure Specification](#)".

[RFC2083] Boutell, T., "PNG (Portable Network Graphics) Specification Version 1.0", RFC 2083, March 1997, <http://www.ietf.org/rfc/rfc2083.txt>

[RFC2119] Bradner, S., "Key words for use in RFCs to Indicate Requirement Levels", BCP 14, RFC 2119, March 1997, <http://www.rfc-editor.org/rfc/rfc2119.txt>

[RFC3629] Yergeau, F., "UTF-8, A Transformation Format of ISO 10646", STD 63, RFC 3629, November 2003, <http://www.ietf.org/rfc/rfc3629.txt>

[RFC4646] A. Phillips, Ed., and M. Davis, Ed., "Tags for Identifying Languages", BCP 47, RFC 4646, September 2006, <http://www.ietf.org/rfc/rfc4646.txt>

[RFC4647] Phillips, A., and Davis, M., Eds., "Matching of Language Tags", BCP 47, RFC 4647, September 2006, <http://www.rfc-editor.org/rfc/rfc4647.txt>

[RFC5234] Crocker, D., Ed., and Overell, P., "Augmented BNF for Syntax Specifications: ABNF", STD 68, RFC 5234, January 2008, <http://www.rfc-editor.org/rfc/rfc5234.txt>

[XMLSCHEMA1] Thompson, H.S., Ed., Beech, D., Ed., Maloney, M., Ed., and Mendelsohn, N., Ed., "XML Schema Part 1: Structures", W3C Recommendation, May 2001,
<http://www.w3.org/TR/2001/REC-xmlschema-1-20010502/>

[XMLSCHEMA2] Biron, P.V., Ed. and Malhotra, A., Ed., "XML Schema Part 2: Datatypes", W3C Recommendation, May 2001, <http://www.w3.org/TR/2001/REC-xmlschema-2-20010502/>

1.2.2 Informative References

[MSDN-CompareOptions] Microsoft Corporation, "CompareOptions Enumeration", .NET Framework Class Library, <http://msdn.microsoft.com/en-us/library/system.globalization.compareoptions.aspx>

[MSDN-ENCLOC] Microsoft Corporation, "Encoding and Localization", .NET Framework Developer's Guide, <http://msdn.microsoft.com/en-us/library/h6270d0z.aspx>

[MSDN-ToDouble] Microsoft Corporation, "Convert.ToDouble Method", .NET Framework Class Library, <http://msdn.microsoft.com/en-us/library/system.convert.todouble.aspx>

[MS-GLOS] Microsoft Corporation, "[Windows Protocols Master Glossary](#)".

[MS-OFCGLOS] Microsoft Corporation, "[Microsoft Office Master Glossary](#)".

[RFC2616] Fielding, R., Gettys, J., Mogul, J., et al., "Hypertext Transfer Protocol -- HTTP/1.1", RFC 2616, June 1999, <http://www.ietf.org/rfc/rfc2616.txt>

1.3 Overview

This structure describes a ZIP archive that stores all the information needed to describe a [web drawing](#).

A [Document XML Part](#) in the ZIP archive describes the properties of the web drawing.

A collection of [Visio parts](#) in the ZIP archive describes the graphical elements displayed in the web drawing. These graphical elements are presented as [Shapes](#) on [Drawing Pages](#). Shapes are described by the [Master XML Part](#), [Page XML Part](#), and [Themes XML Part](#). Drawing Pages are described by the [Masters XML Part](#) and [Pages XML Part](#).

Graphical elements can be static or dynamic. Dynamic graphical elements have visual properties that are bound to data in a [data source](#), and the appearance of these elements changes as data in the data source refreshes (section [2.2.10](#)). A collection of Visio parts in the ZIP archive describes the [Data Connections](#), bindings (section [2.2.10.2.1](#)) between data and shapes, and recalculation information necessary to update (section [2.2.11](#)) visual properties. Data connections are described by the [Connections XML part](#). Data bindings are described by the [Recordsets XML part](#). Recalculation information is described by a grammar (section [2.2.11.2.1](#)) for [Formula Evaluation](#) that describes how changes in the data are translated into changes in properties of graphical elements. This grammar is described by the Master XML part and Page XML part.

Additional items in the ZIP archive describe the [Images](#) and [Comments](#) in the web drawing.

1.4 Relationship to Protocols and Other Structures

This specification is dependent on the structures and concepts defined in [\[ISO/IEC-29500-2\]](#) and [\[ISO/IEC-29500-1\]](#) section 9 for Open Packaging Conventions.

1.5 Applicability Statement

This document specifies a persistence format for [Web Drawing](#) content, which can include [Drawing Pages](#), [Masters](#), [Shapes](#), [Images](#), [Comments](#), [Data Connections](#), and recalculation information, as specified in Section [2.2.1](#). The persistence format is applicable when the document content is graphical in nature.

This persistence format is applicable for use as a stand-alone document, and for containment within other documents as an embedded object, as described in [\[MS-OLEDS\]](#).

This persistence format provides interoperability with applications that create or read documents conforming to this structure.

1.6 Versioning and Localization

This document covers versioning issues in the following areas:

- [App XML Part](#)
- [Custom XL Part](#)
- [Version](#)

This document covers localization in the [Core XML Part](#).

Local overrides to document language are specified in attributes, properties, and function arguments as described in the [Conceptual Overview](#), [Visio XML Schema](#), [ShapeSheet Properties](#), and [Formula Expressions and Evaluation](#) sections.

1.7 Vendor-Extensible Fields

Persistence format can be extended by storing information in [Parts](#) that are not specified in Section [2](#). Implementations are not required to preserve or remove additional Parts when modifying an existing document.

2 Structures

This section specifies the overall structure of a file that conforms to this specification.

2.1 File Structure Overview

A file of the type specified by this specification MUST be a [Package](#) that is a ZIP archive.

The ZIP Package is used to persist information that is necessary to fully represent a [web Drawing](#). This package contains a collection of [Parts](#) that are used to persist data in XML or standard binary formats, and to specify various aspects of the Web Drawing as well as the structure of the Package.

2.1.1 Package

A file of the type specified by this document MUST be a Package that is a ZIP archive and that conforms to the Open Packaging Conventions as specified in [\[ISO/IEC-29500-2\]](#), the further packaging restrictions specified in [\[ISO/IEC-29500-1\]](#) section 9, and this specification.

2.1.2 Parts

A [Package](#) is composed of multiple parts as specified in [\[ISO/IEC-29500-2\]](#) section 9.1. Each part has an associated content type that specifies the format it is persisted in. Each part can also be the target or the source of a connection between two parts called a relationship (section [2.1.3](#)), as specified in [\[ISO/IEC-29500-2\]](#) section 9.3.

The valid parts, content types, required relationships, and optional relationships between all parts in this package are specified in [Part Enumeration](#).

2.1.3 Relationship

A relationship specifies a connection between a source and a target resource as specified in [\[ISO/IEC-29500-1\]](#) section 8.3. Relationship identifiers are used in binary and XML part (section [2.1.2](#)) content to reference unique relationship elements in relationship parts that in turn target other resources.

There are several different types of relationships:

- A [Package](#) relationship is a relationship where the target is a part and the source is the package as a whole.
- A part-to-part relationship is a relationship where the target is a part and the source is a part in the package.
- An explicit relationship is a relationship where a resource is referenced from the contents of a source part by referencing the **ID** attribute value of a relationship element.
- An implicit relationship is a relationship that is not explicit.
- An internal relationship is a relationship where the target is a part in the package.
- An external relationship is a relationship where the target is an external resource, not part of the package.

2.1.4 Markup Compatibility

A markup specification defines a set of elements and attributes within one or more namespaces. A characteristic of an application that consumes the markup is that it can recognize the elements and attributes within understood namespaces, including those containing elements and attributes defined in the markup specification. Markup consumers **MUST** treat all recognized elements and attributes of any understood namespace according to the requirements of the markup specifications defining those elements or attributes. A markup specification **MAY** require that the presence of unrecognized elements or attributes in an understood namespace be treated as an error condition; however, markup consumers **MUST** always treat the presence of an unrecognized element or attribute from the Markup Compatibility namespace as an error condition.

If a markup consumer encounters an element or attribute from a non-understood namespace, the markup consumer **MUST** treat the presence of that element or attribute as an error condition, unless the markup producer has embedded in the markup document explicit Markup Compatibility elements or attributes that override that behavior.

The valid Markup Compatibility elements and attributes in a [Web Drawing](#) are specified in the Markup Compatibility Schema (section [2.3.5](#)).

2.2 Conceptual Overview

The Conceptual Overview sections that follow specify how higher-level features of the file format are represented by combinations of [parts](#) and XML elements.

2.2.1 Web Drawing

A web drawing is a collection of [Drawing Pages](#), [Masters](#), [Shapes](#), [Images](#), [Comments](#), [Data Connections](#), and recalculation information that can be rendered as a drawing in a web browser.

A web drawing is specified by a [Package](#) as specified in the [File Structure Overview](#). The contents of a web drawing are specified by the [Parts](#) in the [Part Enumeration](#) section.

For examples of various web drawings, see [Structure Examples](#).

2.2.2 Drawing Page

A drawing page is a collection of [Shapes](#) that are viewed together.

A collection of drawing pages in a [web drawing](#) is specified by a [Pages XML Part](#).

2.2.2.1 Page Identification

A [Page_Type](#) element in a [Pages XML Part](#) specifies a single [drawing page](#). A drawing page is uniquely identified by the **ID**, **Name**, and **NameU** attributes in a [Page_Type](#) element. The following elements in [parts](#) of the [web drawing](#) have attributes that are equal to **ID**, **Name**, or **NameU** and specify supplementary information about the drawing page.

- A [PublishedPage_Type](#) element in a [Document XML Part](#) has an **ID** attribute that is equal to the **ID** attribute of the [Page_Type](#) element, and specifies that the drawing page is viewable in the web drawing.
- A **TitlesOfParts** element in an [App XML Part](#) contains an **lpstr** element with contents equal to the **Name** attribute of the [Page_Type](#) element and specifies the name of the drawing page.

- A [Page_Type](#) element in a Pages XML Part can have a **BackPage** attribute that is equal to the **ID** attribute of the [Page_Type](#) element, and specifies that the latter drawing page is to be used as the background page for the former drawing page.
- A [RowMap_Type](#) element in the [Recordsets XML Part](#) contains a **PageID** attribute that is equal to the **ID** attribute of the [Page_Type](#) element, and specifies the data binding between a **row** of a [Recordset](#) and a [Shape](#) on the drawing page.

The graphical information necessary to render a drawing page is specified by the [PageSheet_Type](#) and [ShapeSheet_Type](#) elements in a Pages XML Part and a [Shapes_Type](#) element in a [Page XML Part](#).

A drawing page is also associated with a [Master](#). The graphical information about a Master is specified by the [PageSheet_Type](#) and [Shapes_Type](#) elements in a [Master XML Part](#).

A drawing page can contain **embedded images**. Each [Image](#) used in a drawing page is specified by an [Image Part](#). The [Fallback Image](#) section explains how some embedded image formats and **embedded objects** are rendered using Fallback Images which are also specified by Image Parts.

2.2.2.2 Coordinate System

A point on a [drawing page](#) is specified by coordinates on a two-dimensional Cartesian plane, where the x-coordinate specifies the horizontal position and the y-coordinate specifies the vertical position.

The origin of a drawing page is the lower-left corner of the drawing page.

Increasing the x-coordinate specifies the position of a [Shape](#), group or object rightward, while increasing the y-coordinate specifies the position upward.

Every drawing page defines its own coordinate system.

2.2.2.3 Drawing Scale

The drawing scale of a [drawing page](#) is the ratio of the values of the [PageScale_Cell_Type](#) element to the value of the [DrawingScale_Cell_Type](#) element.

Drawing units specify size or position of objects on the drawing page. Page units specify measurements on the printed page.

The drawing scale multiplied by the drawing units will result in a scaled object.

The following cells are not expressed in drawing units and are not scaled. All other [vLengths](#) are expressed in drawing units and will be scaled.

- [BeginArrowSize](#), [EndArrowSize](#)
- [GlowSize](#)
- [ReflectionBlur](#)
- [ReflectionDist](#)
- [SoftEdgesSize](#)
- [LineWeight](#)
- [FontScale](#), [Size](#)

- [AsianFont](#)
- [Case](#)
- [Color](#), [ColorTrans](#)
- [DblUnderline](#)
- [ComplexScriptFont](#), [ComplexScriptSize](#)
- [DoubleStrikethrough](#)
- [Overline](#)
- [Pos](#)
- [Strikethru](#)
- [Style](#)
- [BevelTopWidth](#), [BevelTopHeight](#), [BevelBottomWidth](#), [BevelBottomHeight](#)
- [BevelDepthSize](#), [BevelContourSize](#)
- [ShdwOffsetX](#), [ShdwOffsetY](#)
- [DistanceFromGround](#)

2.2.2.4 Foreground Page

A [drawing page](#) can be a foreground page. A [web drawing](#) contains at least one foreground page.

The [Page_Type](#) element specifies whether a page is a foreground page in a web drawing. If a [Page_Type](#) element in a [Pages XML Part](#) contains a **Background** attribute equal to zero, it is a foreground page.

A foreground page in a web drawing has zero or one background pages as specified by the **BackPage** attribute of the [Page_Type](#) element associated with the page.

A foreground page can be published or unpublished. Published pages are viewable in a web drawing while unpublished pages are hidden. The [PublishSettings_Type](#) child element of the [VisioDocument_Type](#) element for the web drawing determines whether a page is published or unpublished.

2.2.2.5 Background Page

A background page is a [drawing page](#) that can appear behind [foreground pages](#) and other background pages in a [web drawing](#).

A background page can have a different [drawing scale](#) than a foreground page.

A background page in a web drawing is specified by the [Page_Type](#) element associated with the page.

If the [Page_Type](#) element associated with the page contains a **Background** attribute equal to one, it is a background page.

A background page in a web drawing has zero or one background pages as specified by the **BackPage** attribute of the Page_Type element associated with the page.

2.2.2.6 Layer

A [web drawing](#) can have layers. A [shape](#) belongs to zero or more layers. A layer can contain zero or more shapes. A layer specifies additional information about the shapes that it contains such as color, color transparency, and visibility.

A layer in a web drawing is specified by the [Row_Type](#) child element of a [Layer Section_Type](#) element. A Layer Section_Type element is a child of a [PageSheet_Type](#) element associated with the [page](#).

Each Row_Type child element of the Layer Section_Type element contains information for a single layer. A layer is uniquely identified by the **IX** attribute of that layer's Row_Type.

A collection of [Cell_Type](#) elements that define a layer's properties is composed of [Color](#), [Visible](#), [Lock](#), and [ColorTrans](#).

The layer membership of a shape is specified by the [LayerMember](#) Cell_Type element in the [ShapeSheet_Type](#) element of the shape.

2.2.3 Shape

A shape is a collection of [Geometry Visualization](#), [Format](#), [Text](#), [Images](#), and [Shape Data](#) in a [Drawing Page](#).

2.2.3.1 Shape Identification

A [Shape](#) in a [Web Drawing](#) is specified by a [ShapeSheet_Type](#) child element of a [Shapes_Type](#) descendant element of either a [PageContents](#) element in a [Page_XML_Part](#), or a [MasterContents](#) element in a [Master_XML_Part](#).

A Shape is uniquely identified within a [Drawing Page](#) by the **ID** attribute of its ShapeSheet_Type element. The following elements in other [Parts](#) of the document have attributes that reference shapes by their **ID** attributes to specify supplementary information about them.

- A [RowMap_Type](#) element specifies the shape it is bound to in its **ShapeID** attribute.
- A [CommentEntry_Type](#) element specifies the shape it relates to in its **ShapeID** attribute.
- The [ShapeSheetRef Reference Token](#) references a shape.

2.2.3.1.1 One-Dimensional Shape

A [Shape](#) is one-dimensional if its [ShapeSheet_Type](#) element has [BeginX](#), [BeginY](#), [EndX](#), and [EndY](#) child elements of the type [Cell_Type](#).

2.2.3.1.2 Two-Dimensional Shape

A [Shape](#) is two-dimensional if its [ShapeSheet_Type](#) element has no [BeginX](#), [BeginY](#), [EndX](#), or [EndY](#) child elements of the type [Cell_Type](#).

2.2.3.2 Geometry Visualization

Geometry on [Shapes](#) in a [Web Drawing](#) can be visualized.

The following sections specify the concepts and elements of geometry visualization.

2.2.3.2.1 Coordinate System

A point on a [Drawing Page](#) or a [Shape](#) is specified by coordinates on a two-dimensional Cartesian plane, where the x-coordinate specifies the horizontal position and the y-coordinate specifies the vertical position.

Every Shape defines a local coordinate system. A point on a shape is specified either in its local coordinates or in the coordinate system of the shape's [Parent](#), depending on the **N** attribute of the [Cell_Type](#) element specifying this point.

A point specified in local coordinates can be converted into parent coordinates by applying the following transformations in the following order:

1. Subtract the value of the [LocPinX](#) property of the Cell_Type element from the x-coordinate.
2. Subtract the value of the [LocPinY](#) property of the Cell_Type from the y-coordinate.
3. Mirror the point about the y-axis if the value of the [FlipX](#) property of the Cell_Type is equal to one.
4. Mirror the point about the x-axis if the value of the [FlipY](#) property of the Cell_Type is equal to one.
5. Rotate the point counterclockwise around the origin by the value of the [Angle](#) property of the Cell_Type.
6. Add the value of the [PinX](#) Cell_Type to the x-coordinate.
7. Add the value of the [PinY](#) Cell_Type to the y-coordinate.

2.2.3.2.1.1 Relative Coordinate System

A relative coordinate system is a [Coordinate System](#) where the coordinates are determined by multiplying a scalar value by the width or height of the [Shape](#).

It is used to represent x-coordinate or y-coordinate by the [Cell_Type](#) element that has a [RelCubBezTo](#), [RelEllipticalArcTo](#), [RelLineTo](#), [RelMoveTo](#) or [RelQuadBezTo](#) properties of the [Row_Type](#) parent element.

It is also used to represent formula by [E](#) Cell_Type element that has a [NURBSTo](#) Row_Type parent element and [A](#) Cell_Type element that has a [PolylineTo](#) Row_Type parent element.

The width and height are specified by the [Width](#) and [Height](#) Cell_Type elements.

2.2.3.2.2 Geometry Path

A path is a collection of vertices and line or curve segments that specifies an enclosed area. The geometry of a [shape](#) is specified by a collection of paths.

Each [Geometry Section_Type](#) element specifies a path. Each [Row_Type](#) child element specifies a vertex of that path, a segment of that path, or both.

If the Row_Type element is of type [Ellipse](#) or [InfiniteLine](#), it specifies the only segment of the path.

Otherwise, if the Row_Type element is of type [MoveTo](#) or [RelMoveTo](#), it specifies the first vertex in the path or the first vertex after a break in the path.

Otherwise, the Row_Type element specifies a vertex and a segment that connects the vertex of the previous Row_Type element to the vertex specified in the current Row_Type element.

For a path to be visible, the following conditions are necessary.

- The shape containing the path is not on a [layer](#) whose [Visible Cell_Type](#) element has a value equal to zero.
- The value of the [NoShow](#) Cell_Type child of the path's Geometry Section_Type element is not equal to one.

The visibility of the path's line and the visibility of the path's fill are specified, respectively, by the [NoLine](#) and [NoFill](#) Cell_Type child elements of the path's Geometry Section_Type element.

The [format](#) of the path's line and the format of the path's fill are specified, respectively, by the [line property](#) and [fill property](#) of the shape containing the path.

2.2.3.2.3 Display Order

The display order of [shapes](#) in a [drawing page](#) is a strict ordering that is used to determine their [visualization](#) behavior. If one shape has a higher position than another in the display order, the former shape is displayed in front of the latter.

If one [ShapeSheet_Type](#) element appears before another ShapeSheet_Type element in the same [XML Part](#), the shape specified by the latter ShapeSheet_Type element has a higher position in the display order.

If one shape is a [member shape](#) of another shape, the relative positions of the two shapes in the display order is specified by the [DisplayMode Cell_Type](#) of the latter shape.

2.2.3.3 Shape Hierarchy

[Shapes](#) can be hierarchically grouped. A shape contains zero or more [subshapes](#).

2.2.3.3.1 Parent

If a [ShapeSheet_Type](#) element has a parent [Shapes_Type](#) element whose parent is a ShapeSheet_Type element, the [shape](#) specified by the latter ShapeSheet_Type element is called that shape's parent.

If a ShapeSheet_Type element has an ancestor Shapes_Type element whose parent is a ShapeSheet_Type element, the shape specified by the latter ShapeSheet_Type element is called an ancestor shape of the shape specified by the former ShapeSheet_Type element.

If a ShapeSheet_Type element has no ShapeSheet_Type ancestors, the shape specified by that ShapeSheet_Type element is called a top-level shape, and its parent is the [drawing page](#).

2.2.3.3.2 Subshape

If a [ShapeSheet_Type](#) element has a parent [Shapes_Type](#) element whose parent is a ShapeSheet_Type element, the [shape](#) specified by the former ShapeSheet_Type element is called a subshape of the shape specified by the latter ShapeSheet_Type element.

If a ShapeSheet_Type element has an ancestor Shapes_Type element whose parent is a ShapeSheet_Type element, the shape specified by the former ShapeSheet_Type element is called a member shape of the shape specified by the former ShapeSheet_Type element.

2.2.3.4 Shape Selection

[Shapes](#) in a [Web drawing](#) can be selected.

For a shape to be selectable, all the following conditions are necessary.

- The value of the [LockSelect Cell_Type](#) element of the shape is equal to zero, or value of the ProtectShape Cell_Type element of the shape is equal to one.
- The shape is not on a [layer](#) whose [Visible Cell_Type](#) element has a value equal to zero.
- The shape is not on a layer whose [Lock Cell_Type](#) element has a value equal to zero.
- None of the shape's [ancestor shapes](#) has a [SelectMode](#) cell whose value is equal to zero.
- The shape has at least one visible [geometry path](#) that is not obscured by shapes with a higher [display order](#).
- The shape is on a [foreground page](#).

2.2.3.5 Shape Hyperlinks

A [shape](#) has zero or more hyperlinks associated with it. Hyperlinks point to [drawing pages](#) within the [Web drawing](#), shapes within the Web drawing, or destinations outside the Web drawing.

The set of hyperlinks associated with a shape is specified by the [Hyperlink Section_Type](#) element.

Each hyperlink is specified by a [Row_Type](#) child element of the Hyperlink Section_Type element for the shape. This Row_Type element specifies the information about the hyperlink properties using a collection of [Cell_Type](#) elements. It is either contained under a [ShapeSheet_Type](#) element for the shape or [inherited](#).

A collection of Cell_Type elements that define the properties of the hyperlink is composed of [Description](#), [Address](#), [SubAddress](#), [ExtraInfo](#), [Default](#), [Invisible](#), and [SortKey](#) Cell_Type elements.

2.2.3.6 Shape Data

A [shape](#) can have data associated with it that provides information about its meaning. A shape's data is stored as a set of shape data **fields**.

Each shape data field is specified by a [Row_Type](#) child element of the [Property Section_Type](#) element for the shape. This Row_Type element specifies the information about the shape data field properties using a collection of [Cell_Type](#) elements. It is either contained under a [ShapeSheet_Type](#) element for the shape or it is [inherited](#).

A collection of Cell_Type elements that define the properties of the shape data field is composed of [Calendar](#), [DataLinked](#), [Format](#), [Invisible](#), [Label](#), [LangID](#), [Type](#), and [Value](#) Cell_Type elements.

The name of a shape data field is specified by the **N** attribute of the Row_Type element for the field. The value of a shape data field is specified by the Value Cell_Type element. The data type of a shape data field is specified by the Type Cell_Type element.

2.2.4 Master

Masters specify [shapes](#) that can be reused throughout a [web drawing](#).

A shape on a [drawing page](#) can be linked to a master, which can affect various properties of the shape including its visual appearance. A relationship to such a master is called [master-to-shape inheritance](#).

2.2.4.1 Master Identification

A master is specified by the combination of a [Master Type](#) element in a [Masters XML Part](#), and the [ShapeSheet_Type](#) elements in the [Master XML Part](#) specified by the Master_Type element's [Rel_Type](#) child element. These ShapeSheet_Type elements are called master shapes.

The following elements in other [parts](#) of the document have attributes that reference masters.

- A ShapeSheet_Type element in a [Page XML Part](#) can specify with its **Master** attribute the master it inherits from.
- The [Use function token](#) accepts as its argument the name or **GUID** of a master.
- The [MasterSheetRef reference token](#) references a master.

2.2.5 Sheet

A sheet is a collection of properties that specify information for a [shape](#), [master](#), [drawing page](#), style, or [web drawing](#).

2.2.5.1 Sheet Identification

A [sheet](#) for a [shape](#) is a collection of [sections](#), [rows](#), and [cells](#) contained in a [ShapeSheet_Type](#) element in a [Page XML Part](#). A sheet for a shape is uniquely identified by the **ID** attribute in a [Shapes_Type](#) element.

A sheet for a [master](#) is a collection of sections, rows, and cells contained in a ShapeSheet_Type element in a [Master XML Part](#). A sheet for a master is uniquely identified by the **UniqueID** attribute in a [Shapes_Type](#) element.

A sheet for a [drawing page](#) is a collection of sections, rows, and cells contained in a [PageSheet_Type](#) element in a [Masters XML Part](#) or [Pages XML Part](#). A sheet for a drawing page is uniquely identified by the **ID**, **Name**, and **NameU** attributes in a [Pages_Type](#) element. A sheet for a drawing page is unique in a [Master_Type](#) or [Page_Type](#) element.

A sheet for a style is a collection of sections, rows, and cells contained in a [StyleSheet_Type](#) element in a [Document XML Part](#). A sheet for a style is uniquely identified by the **ID** attribute in a [StyleSheets_Type](#) element.

A sheet for a [web drawing](#) is a collection of sections, rows, and cells contained in a [DocumentSheet_Type](#) element in a Document XML Part. A sheet for a Web drawing is unique in a [VisioDocument_Type](#) element.

2.2.5.2 Sheet Types

A [sheet](#) is specified by a [Sheet_Type](#) abstract complex type. A sheet in a [web drawing](#) can be one of four distinct types that extend the Sheet_Type. The distinct types are [shape sheet](#), [page sheet](#), [style sheet](#), and [document sheet](#).

2.2.5.2.1 Document Sheet

A document sheet specifies information pertaining to a [web drawing](#). It is a collection of [sections](#), [rows](#), and [cells](#) in a [DocumentSheet_Type](#) child element of the [VisioDocument_Type](#) element in the [Document XML Part](#).

2.2.5.2.2 Page Sheet

A page sheet specifies information pertaining to a [drawing page](#). It is a collection of [sections](#), [rows](#), and [cells](#) contained in a [Pages XML Part](#) or [Masters XML Part](#). Each page sheet is specified by a [PageSheet_Type](#) child element of a [Page_Type](#) child element of a [Pages_Type](#) element in either a [Pages XML Part](#) or [PageSheet_Type](#) child element of a [Master_Type](#) child element of a [Masters_Type](#) element in a [Masters XML Part](#).

2.2.5.2.3 Shape Sheet

A shape sheet specifies information pertaining to a [shape](#) or [master](#).

A shape sheet pertaining to a shape in a [web drawing](#) is a collection of [sections](#), [rows](#), and [cells](#) contained in a [Page_XML_Part](#). Each shape sheet is specified by a [ShapeSheet_Type](#) child element of a [Shapes_Type](#) descendant element of a [PageContents](#) element in a [part](#).

A shape sheet pertaining to a master in a web drawing is a collection of sections, rows, and cells contained in a [Master XML Part](#). Each shape sheet is specified by a [ShapeSheet_Type](#) child element of a [Shapes_Type](#) descendant element of a [MasterContents](#) element in a [part](#).

2.2.5.2.4 Style Sheet

A style sheet specifies information pertaining to a style and is used in [inheritance](#).

A style sheet in a [web drawing](#) is a collection of [sections](#), [rows](#), and [cells](#) contained in a [Document XML Part](#). Each style sheet is specified by a [StyleSheet_Type](#) child element of the [StyleSheets_Type](#) child element of the [VisioDocument](#) element in a [part](#).

2.2.5.2.4.1 Root Style Sheet

The root style sheet is a [style sheet](#) in a [web drawing](#) that all other style sheets [inherit](#) from.

The root style sheet is specified by the [StyleSheet_Type](#) element whose **ID** attribute value is equal to zero and whose **NameU** attribute value is equal to "No Style".

2.2.5.3 Sheet Structures

A sheet structure is where the property information of a [sheet](#) has been hierarchically grouped into [sections](#), [rows](#), and [cells](#).

2.2.5.3.1 Section

A section specifies a collection of related properties of a [sheet](#). A section contains [cells](#) and [rows](#).

Sections are specified by [Section_Type](#) child elements of the [ShapeSheet_Type](#), [PageSheet_Type](#), [StyleSheet_Type](#), and [DocumentSheet_Type](#) elements. The **N** attribute of a [Section_Type](#) element specifies the name of the section that identifies the collection of properties that it pertains to. The properties specified by a section are specified by the [Cell_Type](#) and [Row_Type](#) child elements of the [Section_Type](#) element.

2.2.5.3.2 Row

A row specifies a subset of the properties in a [section](#). A row contains [cells](#).

Rows are specified by [Row_Type](#) child elements of the [Section_Type](#) child elements of the [ShapeSheet_Type](#), [PageSheet_Type](#), [StyleSheet_Type](#), and [DocumentSheet_Type](#) elements. The **N** attribute of a [Row_Type](#) element specifies the name of the row that identifies the subset of properties that it pertains to. The properties specified by a row are specified by the [Cell_Type](#) child elements of the [Row_Type](#) element.

2.2.5.3.3 Cell

A cell specifies a single property in a [row](#), [section](#), or [sheet](#).

Cells are specified by [Cell_Type](#) child elements of the [Section_Type](#), [Row_Type](#), [ShapeSheet_Type](#), [PageSheet_Type](#), [StyleSheet_Type](#), and [DocumentSheet_Type](#) elements. The **N** attribute of a [Cell_Type](#) element specifies the name of the cell that identifies the property that it pertains to.

The **V** attribute of a [Cell_Type](#) element specifies the value of the property of the cell. The **F** attribute of a [Cell_Type](#) element specifies the [formula expression](#) of the property of the cell.

If the **F** attribute is present, the value of the property is used until it is replaced by a value from the most recent [formula evaluation](#) that does not result in an [error value](#).

2.2.5.3.3.1 Cell Default Values

The property value assigned to a missing or malformed cell is called a cell default value. If the [Cell_Type](#) element of a [cell](#) in a [web drawing](#) is not specified directly in a [sheet](#) or through [inheritance](#), the cell is called a missing cell. If the [Cell_Type](#) element of a cell in a web drawing does not specify a **V** attribute, the cell is called a malformed cell.

The cell default value of a missing cell depends on its [parse token](#), [custom structure](#), or [custom token grouping](#). The cell default value for parse tokens and custom structures is specified in the following table. Where the default value for all the parse tokens in a custom token grouping is the same, the custom token grouping is specified in the table instead of individual parse tokens.

Parse token, custom structure, or custom token grouping	Cell default value
PtgNum	0.00
PtgBool	0
PtgString	""
PtgByte	0
PtgColorRGB	#000000
PtgShort	0
PtgDate	0.00 days
PtgInt	0
PtgUnsShort	0
PtgNumI	0.00 inches

Parse token, custom structure, or custom token grouping	Cell default value
vLanguageString	""
vFont	"0"
vAny	0.00 days
vAngle	0.00 radians
vLength	0.00 inches
vColor	#000000
vFormatString	""

The cell default value of a malformed cell depends on the **U** attribute value of its Cell_Type element. If the **U** attribute of the Cell_Type element of a malformed cell is not specified, the cell default value is specified in the previous table.

If the **U** attribute of the Cell_Type element of a malformed cell is specified, the cell default value is specified in the following table.

U attribute value	Cell default value
AC	0.00 inches
DEG	0.00 radians
DA	0.00 radians
AD	0.00 radians
RAD	0.00 radians
BOOL	0
COLOR	#000000
CY	0.00
DATE	0.00
ED	0.00 days
EH	0.00 days
EM	0.00 days
ES	0.00 days
EW	0.00 days
HA	0.00 inches
CM	0.00 inches
DL	0.00 inches
FT	0.00 inches

U attribute value	Cell default value
F_I	0.00 inches
IN	0.00 inches
IN_F	0.00 inches
KM	0.00 inches
M	0.00 inches
MI	0.00 inches
MI_F	0.00 inches
MM	0.00 inches
NM	0.00 inches
PER	0.00
YD	0.00 inches
DP	0.00 inches
PNT	PNT(0.00, 0.00)
STR	""
DE	0.00 days
C_D	0.00 inches
C	0.00 inches
D	0.00 inches
DT	0.00 inches
P	0.00 inches
P_PT	0.00 inches
PT	0.00 inches

2.2.5.4 Inheritance

This section describes how properties are inherited in [sheets](#) in a [web drawing](#).

2.2.5.4.1 Master-to-Shape Inheritance

A [shape](#) on a [drawing page](#) can be linked to a [master](#), which can affect various properties of the shape including its visual appearance. A relationship to such a master is called master-to-shape inheritance, and the shape is called an instance of that master. A shape has zero or one master-to-shape inheritance relationships.

If the **Master** attribute of the [ShapeSheet_Type](#) element of a shape on a drawing page is equal to the **ID** attribute of a [Master_Type](#) element of a master, the shape is an instance of the master. Any [sections](#), [rows](#), [cells](#), or [subshapes](#) not specified in the instance are inherited from the master.

An instance can modify the sections, rows, and cells taken on from [inheritance](#) by specifying [local properties](#). In addition, if an instance contains a subshape whose ShapeSheet_Type element has a **MasterShape** attribute that matches the **ID** attribute of a subshape of the master, the local properties specified in this subshape will override those of the corresponding subshape in the master.

If a master has one [top-level](#) master shape, a shape that inherits from that master inherits the descendant elements of that master shape. If a master has more than one master shape, a shape that inherits from that master inherits those master shapes as subshapes.

2.2.5.4.2 Style-to-Shape Inheritance

[Shapes](#) in a [web drawing](#) can be linked to a style, which can affect various properties of the shape including its visual appearance. A relationship to such a style is called style-to-shape inheritance. A style-to-shape inheritance allows a shape to take on properties from the style it inherits from. A shape can have zero to three style-to-shape inheritance relationships.

The style-to-shape inheritances in a web drawing are specified by the [Page XML Part](#). Each style-to-shape inheritance is specified by the attributes of a [ShapeSheet_Type](#) child element of the [Shapes_Type](#) descendant element of the [PageContents](#) element in a [part](#). Style-to-shape inheritance information is specified by the ShapeSheet_Type element and a [StyleSheet_Type](#) child element of a [StyleSheets_Type](#) child element of the [VisioDocument](#) element in the [Document XML Part](#).

If the **LineStyle**, **FillStyle**, and **TextStyle** attributes of the ShapeSheet_Type element are empty, a style-to-shape inheritance is not specified. If the **LineStyle**, **FillStyle**, or **TextStyle** attributes of the ShapeSheet_Type element are not empty, a style-to-shape inheritance exists individually for each attribute between the ShapeSheet_Type element and the StyleSheet_Type element whose **ID** attribute value is equal to the value of a **LineStyle**, **FillStyle**, or **TextStyle** attribute of the ShapeSheet_Type element.

The **LineStyle**, **FillStyle**, and **TextStyle** attributes of a ShapeSheet_Type element each specify a set of [Cell_Type](#) child elements of the StyleSheet_Type element as specified in the following table.

Attribute	Cell_Type elements
LineStyle	Specifies Cell_Type elements related to line properties except for Cell_Type child elements of a FillGradient Section_Type .
FillStyle	Specifies Cell_Type elements related to fill properties and effect properties including Cell_Type child elements of a FillGradient Section_Type.
TextStyle	Specifies Cell_Type elements related to text .

2.2.5.4.3 Style-to-Master Inheritance

[Masters](#) in a [web drawing](#) can be linked to a style, which can affect various properties of the master including its visual appearance. A relationship to such a style is called style-to-master inheritance. A style-to-master inheritance allows a master to take on properties from the style it inherits from. A master can have zero to three style-to-master inheritance relationships.

The style-to-master inheritances in a web drawing are specified by the [Master XML Part](#). Each style-to-master inheritance is specified by the attributes of a [ShapeSheet_Type](#) child element of the

[Shapes_Type](#) descendant element of the [MasterContents](#) element in a [part](#). Style-to-master inheritance information is specified by the [ShapeSheet_Type](#) element and a [StyleSheet_Type](#) child element of a [StyleSheets_Type](#) child element of the [VisioDocument](#) element in the [Document XML Part](#).

If the **LineStyle**, **FillStyle**, and **TextStyle** attributes of the [ShapeSheet_Type](#) element are empty, a style-to-master inheritance is not specified. If the **LineStyle**, **FillStyle**, or **TextStyle** attributes of the [ShapeSheet_Type](#) element are not empty, a style-to-master inheritance exists individually for each attribute between the [ShapeSheet_Type](#) element and the [StyleSheet_Type](#) element whose **ID** attribute value is equal to the value of a **LineStyle**, **FillStyle**, or **TextStyle** attribute of the [ShapeSheet_Type](#) element.

The **LineStyle**, **FillStyle**, and **TextStyle** attributes of a [ShapeSheet_Type](#) element each specify a set of [Cell_Type](#) child elements of the [StyleSheet_Type](#) element as specified in the table found in section [2.2.5.4.2](#).

2.2.5.4.4 Style-to-Style Inheritance

Styles in a [web drawing](#) can be linked to other styles, which can affect various properties of the style. A relationship to such a style is called style-to-style inheritance. A style-to-style inheritance allows a [style sheet](#) to take on properties from the style it inherits from. A style can have zero to three style-to-style inheritance relationships.

The style-to-style inheritances in a web drawing are specified by the [Document XML Part](#). Each style-to-style inheritance is specified by the attributes of a [StyleSheet_Type](#) child element of the [StyleSheets_Type](#) child element of the [VisioDocument](#) element in a [part](#). Style-to-style inheritance information is specified by the [StyleSheet_Type](#) element and other [StyleSheet_Type](#) elements in the [Document XML Part](#).

If the **LineStyle**, **FillStyle**, and **TextStyle** attributes of the [StyleSheet_Type](#) element are empty, a style-to-style inheritance is not specified. If the **LineStyle**, **FillStyle**, or **TextStyle** attributes of the [StyleSheet_Type](#) element are not empty, a style-to-style inheritance exists individually for each attribute between the [StyleSheet_Type](#) element and another [StyleSheet_Type](#) element whose **ID** attribute value is equal to the value of a **LineStyle**, **FillStyle**, or **TextStyle** attribute of the [StyleSheet_Type](#) element.

The **LineStyle**, **FillStyle**, and **TextStyle** attributes of a [StyleSheet_Type](#) element each specify a set of [Cell_Type](#) child elements of the [StyleSheet_Type](#) element as specified in the table found in section [2.2.5.4.2](#).

2.2.5.4.5 Theme Inheritance

A [shape](#) in a [web drawing](#) takes on the [format](#) properties specified by its [dynamic theme components](#) and [quick style slices](#) through [inheritance](#). Format properties from the [dynamic theme](#) are represented as a dynamic theme [style sheet](#) that is linked to from other style sheets, [masters](#), and shapes. A relationship to a dynamic theme style sheet is called theme inheritance.

Theme inheritance allows a style sheet, master, or shape to take on properties from the [cells](#) of the dynamic theme style sheet it inherits from. These inheritances in a web drawing are specified as [style-to-shape inheritance](#), [style-to-master inheritance](#), and [style-to-style inheritance](#).

A dynamic theme style sheet in a web drawing is specified by a [StyleSheet_Type](#) child element of the [StyleSheets_Type](#) child element of the [VisioDocument](#) element in the [Document XML Part](#). A dynamic theme style sheet is uniquely identified by a [StyleSheet_Type](#) element whose **NameU** attribute is equal to "Theme".

2.2.5.4.6 Local Properties

[Sheets](#) corresponding to styles, [masters](#), and [shapes](#) in a [web drawing](#) can specify that their own properties replace properties taken on from [inheritance](#). These properties are called local properties.

Local properties are specified by [Cell_Type](#), [Row_Type](#), or [Section_Type](#) descendant elements of [Sheet_Type](#) elements. A local property replaces the properties of an inherited [Cell_Type](#), [Row_Type](#), or [Section_Type](#) element, if the value of the local property's **N** attribute is equal to the value of the **N** attribute of the inherited [Cell_Type](#), [Row_Type](#), or [Section_Type](#) element.

2.2.5.5 Sheet Extensibility

Sheet extensibility is a mechanism whereby a [web drawing](#) specifies certain extensions to the rules about [sections](#), [rows](#), [cells](#), and [function tokens](#) as defined in this specification. Such extensions are specified in [SectionDef_Type](#), [RowDef_Type](#), [CellDef_Type](#), and [FunctionDef_Type](#) descendant elements of the [Extensions](#) element of the [Extensions XML Part](#).

The valid **N** attributes of a [Section_Type](#) element are specified in section [2.4.1](#). However, [SectionDef_Type](#) elements can specify additional valid **N** attributes.

The valid **N** attributes of a [Cell_Type](#) element and the locations where a [Cell_Type](#) element with a given **N** attribute can occur are specified in section [2.4.4](#). However, [CellDef_Type](#) elements can specify additional valid **N** attributes. Additionally, a [CellDef_Type](#) element specifies the valid locations where a [CellDef_Type](#) element with a given **N** attribute can occur, based on the [CellDef_Type](#) element's ancestor [SectionDef_Type](#) and [RowDef_Type](#) elements. Cells defined through sheet extensibility are used for [formula evaluation](#) only.

The valid function tokens are specified in section [2.5.3](#). However, [FunctionDef_Type](#) elements can specify additional valid function tokens. A function token defined through sheet extensibility consumes all argument, and returns a [PtgErr](#) parse token with an error code equal to #VALUE!.

2.2.6 Image

A [web drawing](#) can have embedded images. Each embedded image is associated with a [shape](#), which provides information about the image placement, size, and properties.

The [ShapeSheet_Type](#) element of a shape that specifies an image MUST have its **Type** attribute equal to "Foreign" and MUST have a [ForeignData_Type](#) child element.

The [ShapeSheet_Type](#) element specifies the position, width, and height of the image using the [ImgOffsetX](#), [ImgOffsetY](#), [ImgWidth](#), and [ImgHeight](#) [Cell_Type](#) child elements.

The [ShapeSheet_Type](#) element specifies image formatting properties using the [Blur](#), [Brightness](#), [Contrast](#), [Denoise](#), [Gamma](#), and [Sharpen](#), and [Transparency](#) [Cell_Type](#) child elements.

Additional image properties, such as format and compression, are specified by attributes of the [ForeignData_Type](#) child element. This element MUST have a [Rel_Type](#) child element that specifies an explicit [relationship](#) to another [part](#). The following embedded image formats are supported:

- **bitmap (BMP)**
- **enhanced metafile format (EMF)**
- **Graphics Interchange Format (GIF)**
- **Joint Photographic Experts Group (JPEG)**

- **Portable Network Graphics (PNG)**
- **TIFF**

For these formats, the Rel_Type child element of the ForeignData_Type element MUST specify an [Image](#) part that contains the embedded image.

Other embedded image formats and embedded objects are supported using [fallback images](#).

2.2.6.1 Fallback Image

If an [Image part](#) that is in a format that is not supported (section 2.2.6) has a [relationship](#) to another Image part that is in a supported format, the latter Image part is called a fallback image and is rendered in place of the former. Otherwise, neither Image part is rendered.

2.2.7 Format

A format is a collection of properties that affect the visual appearance of [shapes](#) in a [web drawing](#).

2.2.7.1 Fill Properties

A [shape](#), [master](#), or style in a [web drawing](#) can possess a variety of properties relating to the visual appearance of fills in closed [geometry paths](#). A collection of properties defining the visual appearance of a shape, master, or style's fill is called a fill property. Each shape, master, or style has one fill property.

Fill properties allow a shape, master, or style to take on a variety of fill styles, including full transparency, solid colors, gradients, and patterns. These properties can be combined with a [line property](#) and an [effect property](#).

The fill properties of shapes in a web drawing are specified in the [Page XML Part](#). Each fill property is specified in a [ShapeSheet_Type](#) child element of the [Shapes_Type](#) descendant element of the [PageContents](#) element in a [part](#).

The fill properties of masters in a web drawing are specified in the [Master XML Part](#). Each fill property is specified in a [ShapeSheet_Type](#) child element of the [Shapes_Type](#) descendant element of the [MasterContents](#) element in a [part](#).

The fill properties of styles in a web drawing are specified in the [Document XML Part](#). Each fill property is specified in a [StyleSheet_Type](#) child element of the [StyleSheets_Type](#) child element of the [VisioDocument](#) element in a [part](#).

Fill property information in shapes, masters, and styles is specified by the [FillForegnd](#), [FillForegndTrans](#), [FillBkgnd](#), [FillBkgndTrans](#), [FillPattern](#), [FillGradientDir](#), [FillGradientAngle](#), [FillGradientEnabled](#), [RotateGradientWithShape](#), and [UseGroupGradientCell_Type](#) elements, and the [Cell_Type](#) elements belonging to the [FillGradient Section_Type](#).

2.2.7.2 Line Properties

A [shape](#), [master](#), or style in a [web drawing](#) can possess a variety of properties relating to the visual appearance of lines. A collection of properties defining the visual appearance of a shape, master, or style's line is called a line property. Each shape, master, or style has one line property.

Line properties allow a shape, master, or style to take on a variety of line styles, including full transparency, solid colors, gradients, and strokes. These properties can be combined with a [fill property](#) and an [effect property](#).

The line properties of shapes in a web drawing are specified in the [Page XML Part](#). Each line property is specified in a [ShapeSheet_Type](#) child element of the [Shapes_Type](#) descendant element of the [PageContents](#) element in a [part](#).

The line properties of masters in a web drawing are specified in the [Master XML Part](#). Each line property is specified in a [ShapeSheet_Type](#) child element of the [Shapes_Type](#) descendant element of the [MasterContents](#) element in a [part](#).

The line properties of styles in a web drawing are specified in the [Document XML Part](#). Each line property is specified in a [StyleSheet_Type](#) child element of the [StyleSheets_Type](#) child element of the [VisioDocument](#) element in a [part](#).

Line property information in shapes, masters, and styles is specified by the [LineColor](#), [LinePattern](#), [LineWeight](#), [LineCap](#), [BeginArrow](#), [EndArrow](#), [LineColorTrans](#), [CompoundType](#), [BeginArrowSize](#), [EndArrowSize](#), [Rounding](#), [LineGradientDir](#), [LineGradientAngle](#), and [LineGradientEnabled Cell_Type](#) elements, and the [Cell_Type](#) elements belonging to the [LineGradient Section_Type](#).

2.2.7.3 Effect Properties

A [shape](#), [master](#), or style in a [web drawing](#) can possess a variety of properties relating to effects which can affect the visual appearance of the web drawing. Each distinct effect is called an effect set. A collection of properties defining the effect sets of a shape, master, or style is called an effect property. Each shape, master, or style has one effect property consisting of distinct effect sets.

Effect properties allow a shape, master, or style to take on a variety of distinct effect sets, including shadows, bevels, glows, reflections, soft edges, sketch, and 3D rotation. These properties can be combined with a [fill property](#) and a [line property](#).

The effect properties of shapes in a web drawing are specified in the [Page XML Part](#). Each effect property is specified in a [ShapeSheet_Type](#) child element of the [Shapes_Type](#) descendant element of the [PageContents](#) element in a [part](#).

The effect properties of masters in a web drawing are specified in the [Master XML Part](#). Each effect property is specified in a [ShapeSheet_Type](#) child element of the [Shapes_Type](#) descendant element of the [MasterContents](#) element in a [part](#).

The effect properties of styles in a web drawing are specified in the [Document XML Part](#). Each effect property is specified in a [StyleSheet_Type](#) child element of the [StyleSheets_Type](#) child element of the [VisioDocument](#) element in a [part](#).

2.2.7.3.1 Shadow Effect Set

A shadow effect set allows a [shape](#), [master](#), or style to take on one of a variety of shadows as cast by light sources of different orientations and brightness. It can be combined with other distinct effect sets. Each shape, master, or style has at most one shadow effect set.

Shadow effect set information in shapes, masters, and styles is specified by the [ShdwForegnd](#), [ShdwForegndTrans](#), [ShdwPattern](#), [ShapeShdwType](#), [ShapeShdwOffsetX](#), [ShapeShdwOffsetY](#), [ShapeShdwObliqueAngle](#), [ShapeShdwScaleFactor](#), and [ShapeShdwBlur Cell_Type](#) elements.

Shadow effect set information is partially specified in the [Cell_Type](#) elements [ShdwType](#), [ShdwOffsetX](#), [ShdwOffsetY](#), [ShdwObliqueAngle](#), and [ShdwScaleFactor](#), in [page sheets](#).

2.2.7.3.1.1 Shadow Distance

The Euclidean distance between the point specified by the x and y coordinates of a [shadow effect set](#) and its origin is called a shadow distance.

The x-coordinate of a shadow effect set applied to a [shape](#), [master](#), or style is specified by the [ShapeShdwOffsetX Cell_Type](#) element. The y-coordinate of a shadow effect set applied to a shape, master, or style is specified by the [ShapeShdwOffsetY Cell_Type](#) element.

The x-coordinate of a shadow effect set applied to a [page sheet](#) is specified by the [ShdwOffsetX Cell_Type](#) element. The y-coordinate of a shadow effect set applied to a page sheet is specified by the [ShdwOffsetY Cell_Type](#) element.

2.2.7.3.1.2 Page Default Shadow

The parts of a [shadow effect set](#) specified in [Cell_Type](#) elements in a [page sheet](#) are called a page default shadow. A shadow effect set of a [shape](#), [master](#), or style can be partially specified by the page default shadow specified in the page sheet of the [drawing page](#) that the shape, master, or style resides on.

If the value of the structure of a [ShapeShdwType Cell_Type](#) element in a shape, master, or style is zero, the values of the structures of the [ShapeShdwType](#), [ShapeShdwOffsetX](#), [ShapeShdwOffsetY](#), [ShapeShdwObliqueAngle](#), and [ShapeShdwScaleFactor Cell_Type](#) elements of the shape, master, or style are specified by the page default shadow during rendering. These elements are not modified.

The values of the structures of [Cell_Type](#) elements of a page sheet relating to a page default shadow specify the values of the structures of [Cell_Type](#) elements of a shape, master, or style relating to a shadow effect set according to the following table:

Page sheet Cell_Type elements	Shape, master, or style Cell_Type elements
ShdwType	ShapeShdwType
ShdwOffsetX	ShapeShdwOffsetX
ShdwOffsetY	ShapeShdwOffsetY
ShdwObliqueAngle	ShapeShdwObliqueAngle
ShdwScaleFactor	ShapeShdwScaleFactor

2.2.7.3.2 Bevel Effect Set

A bevel effect set allows a [shape](#), [master](#), or style to take on three-dimensional sloping edges of various types on its top and bottom faces. It can be combined with other distinct effect sets. Each shape, master, or style has at most one bevel effect set.

Bevel effect set information in shapes, masters, and styles is specified by the [BevelTopType](#), [BevelTopWidth](#), [BevelTopHeight](#), [BevelBottomType](#), [BevelBottomWidth](#), [BevelBottomHeight](#), [BevelDepthColor](#), [BevelDepthSize](#), [BevelContourColor](#), [BevelContourSize](#), [BevelMaterialType](#), [BevelLightingType](#), and [BevelLightingAngle Cell_Type](#) elements.

2.2.7.3.3 Glow Effect Set

A glow effect set allows a [shape](#), [master](#), or style to take on a colored, blurred outline surrounding the outer edges of the shape, master, or style. It can be combined with other distinct effect sets. Each shape, master, or style has at most one glow effect set.

Glow effect set information in shapes, masters, and styles is specified by the [GlowColor](#), [GlowColorTrans](#), and [GlowSize Cell Type](#) elements.

2.2.7.3.4 Reflection Effect Set

A reflection effect set allows a [shape](#), [master](#), or style to take on a duplicate image of its self, reflected across its bottom edge. Transparency and blur can be applied to the duplicate image to convey the reflective properties of various surfaces. A reflection effect set can be combined with other distinct effect sets. Each shape, master, or style has at most one reflection effect set.

Reflection effect set information in shapes, masters, and styles is specified by the [ReflectionSize](#), [ReflectionTrans](#), [ReflectionDist](#), and [ReflectionBlur Cell Type](#) elements.

2.2.7.3.5 Soft Edges Effect Set

A soft edges effect set allows a [shape](#), [master](#), or style to take on a blur affecting its outer edges. It can be combined with other distinct effect sets. Each shape, master, or style has at most one soft edges effect set.

Soft edges effect set information in shapes, masters, and styles is specified by the [SoftEdgesSize Cell Type](#) element.

2.2.7.3.6 Sketch Effect Set

A sketch effect set allows a [shape](#), [master](#), or style to take on a less polished appearance as if drawn by hand. It cannot be combined with other distinct effect sets. Each shape, master, or style has at most one sketch effect set.

Sketch effect set information in shapes, masters, and styles is specified by the [SketchEnabled](#), [SketchSeed](#), [SketchAmount](#), [SketchLineWeight](#), [SketchLineChange](#), and [SketchFillChange Cell Type](#) elements.

A sketch effect set renders a new [geometry path](#) for a shape, master, or style's fill and distorts both the shape, master, or style's geometry path and the fill's geometry by rendering each path segment with randomized perturbations. The [geometry section](#) of the shape, master, or style is not modified.

The value of the structure of a SketchSeed Cell_Type element is used to randomize path segment perturbations in both the geometry path and the fill's geometry. If the value of the structure of a SketchSeed Cell_Type element is equivalent for shapes, masters, or styles with identical geometry paths, the shapes, masters, or styles render identical sketch effect sets.

If a sketch effect set is active on a shape, master, or style, other effect sets do not render.

2.2.7.3.7 3D Rotation Effect Set

A 3D rotation effect set allows a [shape](#), [master](#), or style to take on rotations in the z-axis and perspective rotations. A 3D rotation effect set can be combined with other distinct effect sets. Each shape, master, or style has at most one 3D rotation effect set.

3D rotation effect set information in shapes, masters, and styles is specified by the [RotationXAngle](#), [RotationYAngle](#), [RotationZAngle](#), [RotationType](#), [Perspective](#), [DistanceFromGround](#), and [KeepTextFlatCell_Type](#) elements.

2.2.7.4 Dynamic Theme

A [shape](#), [master](#), or style in a [Web drawing](#) can specify pre-defined, dynamic sets of properties which can affect its visual appearance. A set of pre-defined, dynamic properties specified in this manner is called a dynamic theme.

A dynamic theme defines properties that specify properties for color, font, [fill](#), [line properties](#), and [effect](#). The properties of a dynamic theme are separated into five distinct groupings called [dynamic theme components](#). A unique set of properties is specified by the combination of the five dynamic theme components. A shape, master, or style specifies distinct dynamic theme components from one or more dynamic themes.

The specified dynamic theme components of a shape, master, or style define more properties than the shape, master, or style can visually express at any one time. A shape, master, or style further specifies subsets of properties which actively affect its visual appearance from its specified dynamic theme components. These subsets of properties are called a quick style.

A quick style defines seven distinct subsets of properties from a shape, master, or style's specified dynamic theme components. A subset is called a [quick style slice](#). The combination of the specified quick style slices and the specified dynamic theme components directly determines the visual appearance of the shape, master, or style.

2.2.7.4.1 Dynamic Theme Components

A [dynamic theme](#) defines properties that specify color, font, [fill](#), [line](#), and [effect](#). It is composed of multiple parts as specified in **[ISO/IEC-29500-1]** section 20.1.6.9 and this specification.

The properties of a dynamic theme are grouped into five distinct dynamic theme components that are specified in the following table.

Dynamic theme component	Description	Location
Color scheme	Specifies a set of twelve color properties as specified in [ISO/IEC-29500-1] section 20.1.6.2, and one additional color property extension as specified in [ISO/IEC-29500-1] section 18.2.10.	Specified by a clrScheme child element as specified by the CT_ColorScheme type (specified in [ISO/IEC-29500-1] section 20.1.6.2) of a themeElements child element as specified by the CT_BaseStyles type (specified in [ISO/IEC-29500-1] section 20.1.6.10) of a CT_OfficeStyleSheet element in a Theme_XML_Part .
Font scheme	Specifies a set of font face properties as specified in [ISO/IEC-29500-1] section 20.1.4.1.18.	Specified by a fontScheme child element as specified by the CT_FontScheme type (specified in [ISO/IEC-29500-1] section 20.1.4.1.18) of a themeElements child element as specified by the CT_BaseStyles type (specified in [ISO/IEC-29500-1] section 20.1.6.10) of a CT_OfficeStyleSheet element in a Theme_XML_Part .
Effect scheme	Specifies a set of three quick style slices of fill, line, and	Specified by a fmtScheme child element as specified by the CT_StyleMatrix type (specified in [ISO/IEC-

Dynamic theme component	Description	Location
	effect properties as specified in [ISO/IEC-29500-1] section 20.1.4.1.14. These formats are used in non-connector shapes , masters , and styles.	29500-1] section 20.1.4.1.14) of a themeElements child element as specified by the CT_BaseStyles type (specified in [ISO/IEC-29500-1] section 20.1.6.10) of a CT_OfficeStyleSheet element in a Theme_XML_Part. Additional line properties and sketch effect set information are specified by CT_LineStyle child elements of a CT_SchemeLineStyles child element of a CT_LineStyles child element of an ext child element as specified by the CT_OfficeArtExtension type (specified in [ISO/IEC-29500-1] section 20.1.2.2.14) of an extLst child element as specified by the CT_OfficeArtExtensionList type (specified in [ISO/IEC-29500-1] section 20.1.2.2.15) of a themeElements child element as specified by the CT_BaseStyles type (specified in [ISO/IEC-29500-1] section 20.1.6.10) of a CT_OfficeStyleSheet element in a Theme_XML_Part.
Connector scheme	Specifies a set of three quick style slices of fill, line, and effect properties as specified in [ISO/IEC-29500-1] section 20.1.4.1.14. These formats are used in connector shapes, masters, and styles.	Specified by an fmtConnectorScheme child element as specified by the CT_StyleMatrix type (specified in [ISO/IEC-29500-1] section 20.1.4.1.14) of a themeElements child element as specified by the CT_BaseStyles type (specified in [ISO/IEC-29500-1] section 20.1.6.10) of a CT_OfficeStyleSheet element in a Theme_XML_Part. Additional line properties and sketch effect set information are specified by CT_LineStyle child elements of a CT_SchemeLineStyles child element of a CT_LineStyles child element of an ext child element as specified by the CT_OfficeArtExtension type (specified in [ISO/IEC-29500-1] section 20.1.2.2.14) of an extLst child element as specified by the CT_OfficeArtExtensionList type (specified in [ISO/IEC-29500-1] section 20.1.2.2.15) of a themeElements child element as specified by the CT_BaseStyles type (specified in [ISO/IEC-29500-1] section 20.1.6.10) of a CT_OfficeStyleSheet element in a Theme_XML_Part.
Primary scheme	Specifies multiformat and embellishment properties.	Specified by a CT_ThemeScheme child element of a CT_LineStyles child element of an ext child element as specified by the CT_OfficeArtExtension type (specified in [ISO/IEC-29500-1] section 20.1.2.2.14) of an extLst child element as specified by the CT_OfficeArtExtensionList type (specified in [ISO/IEC-29500-1] section 20.1.2.2.15) of a themeElements child element as specified by the CT_BaseStyles type (specified in [ISO/IEC-29500-1] section 20.1.6.10) of a CT_OfficeStyleSheet element in a Theme_XML_Part.

The additional complex types in the following table that are not specified in **[ISO/IEC-29500-1]** partially specify a dynamic theme.

The additional complex types that partially specify a dynamic theme and are not specified in **[ISO/IEC-29500-1]** are listed in the following table.

Complex Type	Description
CT_LineEx	Specifies line properties information in an effect or connector scheme dynamic theme component.
CT_Sketch	Specifies sketch effect set information in an effect or connector scheme dynamic theme component.
CT_SchemeID	Specifies the index of a color, font, effect, connector or primary scheme dynamic theme component, or the GUID of a custom dynamic theme color scheme dynamic theme component.
CT_LineStyle	Specifies line properties and sketch effect set information in an effect or connector scheme dynamic theme component.
CT_LineStyles	Specifies a set of line properties and sketch effect set information in an effect and connector scheme dynamic theme component.
CT_Embellishment	Specifies embellishment information in a primary scheme dynamic theme component.
CT_MultiFormat	Specifies multiformat information in a primary scheme dynamic theme component.
CT_ThemeScheme	Specifies the primary scheme dynamic theme component.
CT_FmtSchemeEx	Specifies the index of an effect scheme dynamic theme component or a connector scheme dynamic theme component.
CT_SchemeLineStyles	Specifies a set of line properties and sketch effect set information in an effect or connector scheme dynamic theme component.

2.2.7.4.2 Dynamic Theme Identification

A shape, [master](#), or style in a [web drawing](#) can specify distinct [dynamic theme components](#).

The dynamic theme components used in a shape are specified in the [Page XML part](#). Each dynamic theme component is specified by a [Cell_Type](#) child element of a [ShapeSheet_Type](#) child element of a [Shapes_Type](#) descendant element of the [PageContents](#) element in a [part](#).

The dynamic theme components used in a master are specified in the [Master XML part](#). Each dynamic theme component is specified by a [Cell_Type](#) child element of a [ShapeSheet_Type](#) child element of a [Shapes_Type](#) descendant element of the [MasterContents](#) element in a [part](#).

The dynamic theme components used in a style are specified in the [Document XML part](#). Each dynamic theme component is specified by a [Cell_Type](#) child element of a [StyleSheet_Type](#) child element of a [StyleSheets_Type](#) child element of the [VisioDocument](#) element in a [part](#).

The location of a dynamic theme component in a shape, master, or style is specified in the following table.

Dynamic theme components	Location
Color scheme	For a shape or master, specified by a ColorSchemeIndex Cell_Type child element of a ShapeSheet_Type element. For a style, specified by a ColorSchemeIndex Cell_Type child element of a StyleSheet_Type element.

Dynamic theme components	Location
Font scheme	For a shape or master, specified by a FontSchemeIndex Cell_Type child element of a ShapeSheet_Type element. For a style, specified by a FontSchemeIndex Cell_Type child element of a StyleSheet_Type element.
Effect scheme	For a shape or master, specified by an EffectSchemeIndex Cell_Type child element of a ShapeSheet_Type element. For a style, specified by an EffectSchemeIndex Cell_Type child element of a StyleSheet_Type element.
Connector scheme	For a shape or master, specified by a ConnectorSchemeIndex Cell_Type child element of a ShapeSheet_Type element. For a style, specified by a ConnectorSchemeIndex Cell_Type child element of a StyleSheet_Type element.
Primary scheme	For a shape or master, specified by a ThemeIndex Cell_Type child element of a ShapeSheet_Type element. For a style, specified by a ThemeIndex Cell_Type child element of a StyleSheet_Type element.

2.2.7.4.3 Quick Style Slices

Quick style slices define properties that specify color, font, [fill](#), [line](#), and [effect properties](#) that directly affect the visual appearance of a [shape](#), [master](#), or style. These properties are subsets of the properties provided by the [dynamic theme components](#) specified by the shape, master, or style, and are grouped into the seven distinct quick style slices specified in the following table.

Quick style slice	Description
Line matrix	Specifies one of the three quick style slices of line properties from the effect scheme dynamic theme component for non-connector shapes, masters or styles, or from the connector scheme dynamic theme component for connector shapes, masters or styles.
Fill matrix	Specifies one of the three quick style slices of fill properties from the effect scheme dynamic theme component for non-connector shapes, masters or styles, or from the connector scheme dynamic theme component for connector shapes, masters or styles.
Effect matrix	Specifies one of the three quick style slices of effect properties from the effect scheme dynamic theme component for non-connector shapes, masters or styles, or from the connector scheme dynamic theme component for connector shapes, masters or styles.
Line color	Specifies one of nine colors from the color scheme dynamic theme component.
Fill color	Specifies one of nine colors from the color scheme dynamic theme component.
Shadow color	Specifies one of nine colors from the color scheme dynamic theme component.
Font color	Specifies one of nine colors from the color scheme dynamic theme component.

2.2.7.4.4 Quick Style Identification

A shape, [master](#), or style in a [web drawing](#) can specify distinct [quick style slices](#).

The quick style slices of a shape are specified in the [Page XML part](#). Each quick style slice is specified by a [Cell_Type](#) child element of a [ShapeSheet_Type](#) child element of a [Shapes_Type](#) descendant element of the [PageContents](#) element in a [part](#).

The quick style slices of a master are specified in the [Master XML part](#). Each quick style slice is specified by a [Cell_Type](#) child element of a [ShapeSheet_Type](#) child element of a [Shapes_Type](#) descendant element of the [MasterContents](#) element in a [part](#).

The quick style slices of a style are specified in the [Document XML part](#). Each quick style slice is specified by a [Cell_Type](#) child element of a [StyleSheet_Type](#) child element of a [StyleSheets_Type](#) child element of the [VisioDocument](#) element in a [part](#).

The location of a quick style slice in a shape, master, or style is specified in the following table.

Quick style slices	Location
Line matrix	For a shape or master, specified by a QuickStyleLineMatrix Cell_Type child element of a ShapeSheet_Type element. For a style, specified by a QuickStyleLineMatrix Cell_Type child element of a StyleSheet_Type element.
Fill matrix	For a shape or master, specified by a QuickStyleFillMatrix Cell_Type child element of a ShapeSheet_Type element. For a style, specified by a QuickStyleFillMatrix Cell_Type child element of a StyleSheet_Type element.
Effect matrix	For a shape or master, specified by a QuickStyleEffectsMatrix Cell_Type child element of a ShapeSheet_Type element. For a style, specified by a QuickStyleEffectsMatrix Cell_Type child element of a StyleSheet_Type element.
Line color	For a shape or master, specified by a QuickStyleLineColor Cell_Type child element of a ShapeSheet_Type element. For a style, specified by a QuickStyleLineColor Cell_Type child element of a StyleSheet_Type element.
Fill color	For a shape or master, specified by a QuickStyleFillColor Cell_Type child element of a ShapeSheet_Type element. For a style, specified by a QuickStyleFillColor Cell_Type child element of a StyleSheet_Type element.
Shadow color	For a shape or master, specified by a QuickStyleShadowColor Cell_Type child element of a ShapeSheet_Type element. For a style, specified by a QuickStyleShadowColor Cell_Type child element of a StyleSheet_Type element.
Font color	For a shape or master, specified by a QuickStyleFontColor Cell_Type child element of a ShapeSheet_Type element. For a style, specified by a QuickStyleFontColor Cell_Type child element of a StyleSheet_Type element.

A [QuickStyleType](#) [Cell_Type](#) element of a shape, master, or style specifies whether the [QuickStyleLineMatrix](#), [QuickStyleFillMatrix](#), and [QuickStyleEffectsMatrix](#) [Cell_Type](#) elements of the shape, master, or style refer to the effect or connector scheme [dynamic theme component](#) regardless of whether the shape, master, or style is a [connector](#).

2.2.7.4.5 Dynamic Theme Functions

The properties specified by a [dynamic theme](#) of a [shape](#), [master](#), or style are referenced through two [function tokens](#) persisted in [formula expressions](#) in a [web drawing](#).

The [ThemeVal](#) function token, when called without argument, returns the property value from the dynamic theme for the [Cell Type](#) child element that it resides in directly without invoking [theme inheritance](#). The ThemeVal function token, when called with an argument, returns the property value from the dynamic theme specified by the argument directly without invoking theme inheritance.

The [ThemeProp](#) function token accepts an argument to retrieve the [multiformat](#) and embellishment property values from a [dynamic theme](#) as specified by the argument.

2.2.7.4.6 Custom Dynamic Theme Color Scheme

The set of color properties in a [dynamic theme](#) can be specified by a [master](#) instead of a color scheme dynamic theme component. A set of color properties specified in this manner is called a custom dynamic theme color scheme.

The set of color property values in a custom dynamic theme color scheme is specified by the [Value Cell Type](#) child elements of the [msvThemeDarkColor](#), [msvThemeLightColor](#), [msvThemeAccentColor](#), [msvThemeAccentColor2](#), [msvThemeAccentColor3](#), [msvThemeAccentColor4](#), [msvThemeAccentColor5](#), [msvThemeAccentColor6](#) and [msvThemeBackgroundColor](#) [Row Type](#) child elements of a [User Section Type](#) element descendant of a [MasterContents](#) element of a master.

A custom dynamic theme color scheme is specified by a [CT_SchemeID](#) child element of a **ext** child element as specified by the **CT_OfficeArtExtension** type (specified in [ISO/IEC-29500-1] section 20.1.2.2.14) of an **extLst** child element as specified by the **CT_OfficeArtExtensionList** type (specified in [ISO/IEC-29500-1] section 20.1.2.2.15) of a **themeElements** element as specified by the **CT_BaseStyles** type (specified in [ISO/IEC-29500-1] section 20.1.6.10) in a [Theme XML part](#).

If the value of the **schemeEnum** attribute of the [CT_SchemeID](#) element is equal to 65535 and the value of the **schemeGUID** attribute of the [CT_SchemeID](#) element is equal to the value of the **UniqueID** attribute of the [Master Type](#) child element of a [Masters Type](#) element in the [Masters XML part](#), the custom dynamic theme color scheme is specified by the master with the matching **UniqueID** attribute.

2.2.7.4.7 Connector

A [shape](#), [master](#), or style in a [web drawing](#) can be either a connector or a non-connector in terms of a [dynamic theme](#).

If a shape, master, or style [inherits](#) from a [style sheet](#) whose **NameU** attribute value is equal to "Connector", the shape, master, or style is a connector; otherwise, the shape, master, or style is a non-connector.

2.2.7.4.8 Embellishment and Multiformat

The primary scheme [dynamic theme component](#) of a [dynamic theme](#) specifies two [PtgByte](#) parse tokens that are used in formula evaluation only. One is called **embellishment**, and the other is called **multiformat**.

Embellishment is specified by a [CT_Embellishment](#) child element of a [CT_ThemeScheme](#) child element of an **ext** child element as specified by the **CT_OfficeArtExtension** type (specified in

[ISO/IEC-29500-1] section 20.1.2.2.14) of an **extLst** child element as specified by the **CT_OfficeArtExtensionList** type (specified in [ISO/IEC-29500-1] section 20.1.2.2.15) of a **themeElements** element as specified by the **CT_BaseStyles** type (specified in [ISO/IEC-29500-1] section 20.1.6.10) in a [Theme XML Part](#).

MultiFormat is specified by a [CT_MultiFormat](#) child element of a CT_ThemeScheme child element of an **ext** child element as specified by the **CT_OfficeArtExtension** type (specified in [ISO/IEC-29500-1] section 20.1.2.2.14) of an **extLst** child element as specified by the **CT_OfficeArtExtensionList** type (specified in [ISO/IEC-29500-1] section 20.1.2.2.15) of a **themeElements** element as specified by the **CT_BaseStyles** type (specified in [ISO/IEC-29500-1] section 20.1.6.10) in a Theme_XML_Part.

2.2.7.5 Fixed Theme

A [shape](#), [master](#), or style in a [web drawing](#) can specify pre-defined, fixed sets of properties which can affect its visual appearance. A set of pre-defined, fixed properties specified in this manner is called a fixed theme.

A fixed theme defines properties that specify color, font, [fill](#), [line](#), and [effect properties](#). The properties of a fixed theme are separated into two groupings: a fixed color scheme and a fixed effect scheme. A shape, master, or style specifies a fixed theme by specifying a fixed color scheme and a fixed effect scheme.

The set of property values in a fixed color scheme is specified by the [vThemeColor](#) custom structure. The set of property values in a fixed effect scheme is specified by the [vThemeEffect](#) custom structure.

A fixed color scheme is specified by the [Value Cell Type](#) child element of a [msvThemeColors Row Type](#) child element of a [User Section Type](#) element in a shape, master, or style. A fixed effect scheme is specified by the [Value Cell Type](#) child element of a [msvThemeEffects Row Type](#) child element of a [User Section Type](#) element in a shape, master, or style.

A [Theme function token](#) returns the property values from the set of properties specified by a fixed color scheme and a fixed effect scheme of a shape, master, or style.

2.2.7.5.1 Custom Fixed Color and Effect Schemes

The set of property values specified by a fixed color scheme or a fixed effect scheme can be specified by a [master](#) instead of a [vThemeColor](#) or [vThemeEffect](#) custom structure. A fixed color scheme of this description is called a custom fixed color scheme. A fixed effect scheme of this description is called a custom fixed effect scheme. A [shape](#), master, or style in a [web drawing](#) can specify a custom fixed color scheme in place of a fixed color scheme and/or a custom fixed effect scheme in place of a fixed effect scheme.

The set of property values in a custom fixed color scheme is specified by the [Value Cell Type](#) child elements of the [msvThemeTextColor](#), [msvThemeFillColor](#), [msvThemeFillColor2](#), [msvThemeLineColor](#), [msvThemeConnectorColor](#), [msvThemeShadowColor](#), [msvThemeAccentColor](#), [msvThemeAccentColor2](#), [msvThemeAccentColor3](#), [msvThemeAccentColor4](#), [msvThemeAccentColor5](#), and [msvThemeBackgroundColor Row Type](#) child elements of a [User Section Type](#) element in a master.

The set of property values in a custom fixed effect scheme is specified by the [Value Cell Type](#) child elements of the [msvThemeLatinFont](#), [msvThemeAsianFont](#), [msvThemeComplexFont](#), [msvThemeLineTransparency](#), [msvThemeLineWeight](#), [msvThemeLinePattern](#), [msvThemeLineRounding](#), [msvThemeConnectorTransparency](#), [msvThemeConnectorPattern](#), [msvThemeConnectorWeight](#), [msvThemeConnectorRounding](#), [msvThemeConnectorBegin](#),

[msvThemeConnectorEnd](#), [msvThemeConnectorEnd2](#), [msvThemeConnectorBeginSize](#), [msvThemeConnectorEndSize](#), [msvThemeFillTransparency](#), [msvThemeFillPattern](#), [msvThemeShadowTransparency](#), [msvThemeShadowPattern](#), [msvThemeShadowStyle](#), [msvThemeShadowXOffset](#), [msvThemeShadowYOffset](#), [msvThemeShadowMagnification](#), and [msvThemeShadowDirection](#) Row_Type child elements of a User Section_Type element in a master.

A custom fixed color scheme is specified by the Value Cell_Type child element of a [msvThemeColors](#) Row_Type child element of a User Section_Type element in a shape, master, or style. If the **V** attribute of the Value Cell_Type element is equal to 254 and the argument of the [USE function token](#) of the **F** attribute of the Value Cell_Type element is equal to the **UniqueID** attribute of the master specified by the [Master_Type](#) child element of a [Masters_Type](#) element in the [Masters XML part](#), the custom fixed color scheme of the shape, master, or style is specified by the master.

A custom fixed effect scheme is specified by the Value Cell_Type child element of a [msvThemeEffects](#) Row_Type child element of a User Section_Type element in a shape, master, or style. If the **V** attribute of the Value Cell_Type element is equal to 254 and the argument of the [USE function token](#) of the **F** attribute of the Value Cell_Type element is equal to the **UniqueID** attribute of a master specified by the [Master_Type](#) child element of a [Masters_Type](#) element in the [Masters XML Part](#), the custom fixed effect scheme of the shape, master, or style is specified by the master.

A [Theme](#) function token returns the property values from the set of properties specified by a custom fixed color scheme and/or a custom fixed effect scheme of a shape, master, or style.

2.2.7.6 Color Table

A color value in a [web drawing](#) can be specified as either a [PtgColorRGB](#) parse token or an unsigned long integer.

If a color value specified as an unsigned long integer is greater than or equal to zero and less than or equal to 23, the [color-value](#) of the specified color is specified by the following table.

Unsigned Long Integer	Color-value
0	#000000
1	#FFFFFF
2	#FF0000
3	#00FF00
4	#0000FF
5	#FFFF00
6	#FF00FF
7	#00FFFF
8	#800000
9	#008000
10	#000080
11	#808000
12	#800080

Unsigned Long Integer	Color-value
13	#008080
14	#C0C0C0
15	#E6E6E6
16	#CDCDCD
17	#B3B3B3
18	#9A9A9A
19	#808080
20	#666666
21	#4D4D4D
22	#333333
23	#1A1A1A

If a color value specified as an unsigned long integer is greater than 23, the **RGB** value of the specified color is specified by a [ColorEntry_Type](#) child element of a [Colors_Type](#) child element of a [VisioDocument](#) element in a [Document XML part](#). If the value of an **IX** attribute of a [ColorEntry_Type](#) element is equal to the specified unsigned long integer, the **RGB** value of the specified color is equal to the **RGB** attribute specified by the [ColorEntry_Type](#) element.

2.2.7.7 Font Table

A font table specifies the **fonts** used in a [web drawing](#). It is specified by a [FaceNames_Type](#) child element of a [VisioDocument](#) element in a [Document XML part](#). Each **font** is specified by a [FaceName_Type](#) child element of the [FaceNames_Type](#) element.

A [shape](#), [master](#), or style specifies its **fonts** using the [Font](#), [AsianFont](#), and [ComplexFont Cell_Type](#) elements. If the value of the **V** attribute of a [Font](#), [AsianFont](#), or [ComplexFont Cell_Type](#) element of a shape, master, or style is equal to the value of the **NameU** attribute of a [FaceName_Type](#) element, the shape, master, or style specifies the **font** specified by the [FaceName_Type](#) element.

2.2.7.8 Custom Pattern

A fill, line, or line end in a [shape](#), [master](#), or style in a [web drawing](#) can be specified by a master. A fill, line, or line end specified in this way is called a custom pattern.

Custom patterns are specified by a [Masters XML part](#). Each custom pattern is specified in a [Master_Type](#) child element of a [Masters_Type](#) element in a [part](#). The **PatternFlags** attribute of a [Master_Type](#) element specifies the type and behavior of the custom pattern.

The visual appearance of a custom pattern is specified by the shapes in the [Master XML part](#) that corresponds to the master. Each shape is specified by a [ShapeSheet_Type](#) child element of the [Shapes_Type](#) descendant element of the [MasterContents](#) element in a [part](#).

A shape, master, or style in a web drawing specifies a custom pattern according to the following table.

Custom pattern	Description
Fill	Specified by a FillPattern Cell_Type element whose V attribute value is equal to 254. If the argument of the USE function token of the F attribute of the FillPattern Cell_Type element is equal to the NameU attribute of a master specified by a Master_Type element, the shape, master or style specifies a fill custom pattern specified by a Master_Type element.
Line	Specified by a LinePattern Cell_Type element whose V attribute value is equal to 254. If the argument of the USE function token of the F attribute of the LinePattern Cell_Type element is equal to the NameU attribute of a master specified by a Master_Type element, the shape, master, or style specifies a line custom pattern specified by a Master_Type element.
Line end	Specified by a BeginArrow or EndArrow Cell_Type element whose V attribute value is equal to 254. If the argument of the USE function token of the F attribute of the BeginArrow or EndArrow Cell_Type element is equal to the NameU attribute of a master specified by a Master_Type element, the shape, master, or style specifies a line end custom pattern specified by a Master_Type element.

2.2.7.9 Data Formatting

The [text field](#) or [shape data](#) in a [shape](#) or [master](#) in a [web drawing](#) can specify a format that affects the visual appearance of its **field**. Formatting specified in this manner is called a data format.

2.2.7.9.1 Text Field Data Formatting

The [text field](#) in a [shape](#) or [master](#) in a [web drawing](#) can specify a data format that affects the visual appearance of its field that is used in a **text run**.

A text field data format is specified in a [Field Section_Type](#) element in a shape or master. Each data format is specified by a [Row_Type](#) child element of the Field Section_Type element. A [Value Cell_Type](#) child element of the Row_Type element specifies a value to be formatted. A [Format Cell_Type](#) child element of the Row_Type element specifies the data format to apply to the value specified by its sibling Value Cell_Type.

The **V** attribute of the Format Cell_Type element is a [vFormatString](#) custom structure that specifies the data format information designating how the value is displayed.

2.2.7.9.2 Shape Data Formatting

The [shape data](#) in a [shape](#) or [master](#) in a [web drawing](#) can specify a data format that affects the visual appearance of its shape data field.

The shape data formats are specified in a [Property Section_Type](#) element in a shape or master. The data format for a shape data field is specified by its corresponding [Row_Type](#) child element of the Property Section_Type element. A [Value Cell_Type](#) child element of the Row_Type element specifies a shape data field value to be formatted.

The **V** attribute of the Value Cell_Type element specifies the shape data field value. A [Type Cell_Type](#) child element of the Row_Type element specifies the type of shape data field value that is stored in its sibling Value Cell_Type element. The **V** attribute of the Type Cell_Type element is a [vDataType](#) custom structure that specifies the shape data field value type. A [Format Cell_Type](#) child element of the Row_Type element specifies the data format to apply to shape data field value specified by its sibling Value Cell_Type. The **V** attribute of the Format Cell_Type element is a [vFormatString](#) custom structure that specifies the data format information designating how the shape data field value is displayed.

2.2.8 Text

A [shape](#) or [master](#) can contain text that is specified by one or more text runs. The text runs associated with a shape are specified by the contents of a [Text_Type](#) element contained in the [ShapeSheet_Type](#) element of the shape. The characters in a text run can be specified explicitly or can be a reference to a [text field](#).

A text run has characters and properties of [character](#), [paragraph](#), and [tabs](#) specified as follows:

- Character properties are specified by [cp_Type](#) elements.
- Paragraph properties are specified by [pp_Type](#) elements.
- Tabs properties are specified by [tp_Type](#) elements.
- Text fields are specified by [fld_Type](#) elements.

The content of a [Text_Type](#) element is composed of the text characters associated with the shape, interspersed with [cp_Type](#), [pp_Type](#), [tp_Type](#), and [fld_Type](#) elements.

The beginning of a text run on a shape is specified by a [Text_Type](#), [cp_Type](#), [pp_Type](#), or [tp_Type](#) element.

2.2.8.1 Character Properties

The [cp_Type](#) element in a [shape](#) or [master](#) specifies the beginning of a text run and the set of character properties used for the text run. These character properties are used until the end of the [Text_Type](#) element, or until another [cp_Type](#) element specifies new character properties.

The [cp_Type](#) element specifies the index of a [Row_Type](#) element that is contained in a [Character Section_Type](#) element. This [Row_Type](#) element specifies the information about the character properties using a collection of [Cell_Type](#) elements. It is either contained under the [ShapeSheet_Type](#) element for the shape or it is [inherited](#).

A collection of [Cell_Type](#) elements that define the character properties are composed of [AsianFont](#), [Case](#), [Color](#), [ColorTrans](#), [ComplexScriptFont](#), [ComplexScriptSize](#), [DblUnderline](#), [DoubleStrikethrough](#), [Font](#), [FontScale](#), [LangID](#), [Letterspace](#), [Overline](#), [Pos](#), [Size](#), [Strikethru](#), and [Style](#) [Cell_Type](#) elements.

2.2.8.2 Paragraph Properties

The [pp_Type](#) element in a [shape](#) or [master](#) specifies the beginning of a text run and the set of paragraph properties used for the text run. These paragraph properties are used until the end of the [Text_Type](#) element, or until another [pp_Type](#) element specifies new paragraph properties.

The [pp_Type](#) element specifies the index of a [Row_Type](#) element that is contained in a [Paragraph Section_Type](#) element. This [Row_Type](#) element specifies the information about the paragraph properties using a collection of [Cell_Type](#) elements. It is either contained under the [ShapeSheet_Type](#) element for the shape or it is [inherited](#).

A collection of [Cell_Type](#) elements that define the paragraph properties are composed of [Bullet](#), [BulletFont](#), [BulletFontSize](#), [BulletStr](#), [Flags](#), [HorzAlign](#), [IndFirst](#), [IndLeft](#), [IndRight](#), [SpAfter](#), [SpBefore](#), [SpLine](#), and [TextPosAfterBullet](#) [Cell_Type](#) elements.

2.2.8.3 Tabs Properties

The [tp_Type](#) element in a [shape](#) or [master](#) specifies the beginning of a text run and the set of tab stops used for the text run. These tab stops are used until the end of the [Text_Type](#) element, or until another [tp_Type](#) element specifies new tab stops.

The [tp_Type](#) element specifies the index of a [Row_Type](#) element that is contained in a [Tabs Section_Type](#) element. This [Row_Type](#) element specifies the information about the tab stops using a collection of [Cell_Type](#) elements. It is either contained under the [ShapeSheet_Type](#) element for the shape or it is [inherited](#).

A [Row_Type](#) element in a [Tabs Section_Type](#) element contains a series of [Position](#) and [Alignment](#) [Cell_Type](#) element pairs with **N** attributes equal to [Position#](#) and [Alignment#](#), where the **#** represents the tab stop index. A [Position](#) and [Alignment](#) pair specifies the stop position and alignment for a single tab stop.

2.2.8.4 Text Fields

The [fld_Type](#) element in a [shape](#) or [master](#) specifies a field that is used in a text run. It specifies the index of a [Row_Type](#) element that is contained in a [Field Section_Type](#) element. This [Row_Type](#) element specifies the information about the field using a collection of [Cell_Type](#) elements. It is either contained under the [ShapeSheet_Type](#) element for the shape or it is [inherited](#).

If the value of the **IX** attribute of a [fld_Type](#) element is equal to the value of the **IX** attribute of a [Row_Type](#) element that is contained in a [Field Section_Type](#) element in the shape or master, the [Cell_Type](#) elements contained under the [Row_Type](#) element specify information about the field of the [fld_Type](#) element.

A collection of [Cell_Type](#) elements that define a text field composed of [Calendar](#), [Format](#), [ObjectKind](#), [Type](#), and [Value](#) [Cell_Type](#) elements. The [Value](#) [Cell_Type](#) element specifies the value of the field. The [Calendar](#), [Format](#), [ObjectKind](#), and [Type](#) [Cell_Type](#) elements specify how the value of the field is displayed in the text run.

2.2.8.5 Text Block

The text runs associated with a [shape](#) are rendered using a rectangular composition area called a text block. A text block specifies information related to the visual appearance of the text runs as a whole.

A text block uses a collection of [Cell_Type](#) elements contained under the [ShapeSheet_Type](#) element for a shape to specify position, transform, margin, alignment, direction, and background information for the text runs associated with the shape. A collection of [Cell_Type](#) elements that define how **text** is arranged in the composition area of a text block that is detailed in the following table.

Cell_Type element(s)	Description
TxtPinX , TxtPinY , TxtLocPinX , and TxtLocPinY	Specifies the text block coordinate system .
TxtAngle	Specifies the angle of counterclockwise rotation of the text block in the coordinate system of the shape it is associated with.
TxtWidth and TxtHeight	Specifies the width and height of the text block.

Cell_Type element(s)	Description
LeftMargin , RightMargin , TopMargin , and BottomMargin	Specifies the positioning of the text runs against the borders of the text block.
TextDirection	Specifies whether the text runs are rendered in an upright alignment with the top border of the text block or in an upright alignment with the right border of the text block within the text block coordinate system.
VerticalAlign	Specifies the vertical alignment of the text runs. If the value of the TextDirection Cell_Type element structure is equal to zero, text runs are rendered starting from the top border, middle, or bottom border of the text block within the text block coordinate system. If the value of the TextDirection Cell_Type element structure is equal to one, text runs are rendered starting from the right border, center, or left border of the text block with the text block coordinate system.
TextBkgnd	Specifies the solid fill color property of the background of the text block.
TextBkgndTrans	Specifies the transparency level of the solid fill color property of the background of the text block.

2.2.8.5.1 Text Block Coordinate System

A point on a [text block](#) is specified by coordinates on a two-dimensional Cartesian plane where the x-coordinate specifies the horizontal position and the y-coordinate specifies the vertical position. Every text block defines a coordinate system.

The [TxtPinX](#) and [TxtPinY](#) Cell_Type child elements of a [ShapeSheet_Type](#) element of a [shape](#) specify the pin of the text block in the [coordinate system](#) of the shape. The [TxtLocPinX](#) and [TxtLocPinY](#) Cell_Type child elements of a [ShapeSheet_Type](#) element of a shape specify the pin of the block in local coordinates.

A point on a text block specified in local coordinates can be converted into its associated shape coordinates by applying transformations in the following order:

1. Subtract the value of the [TxtLocPinX](#) Cell_Type element from the x-coordinate.
2. Subtract the value of the [TxtLocPinY](#) Cell_Type element from the y-coordinate.
3. Mirror the point about the y-axis if the value of the [FlipX](#) Cell_Type element is equal to one.
4. Mirror the point about the x-axis if the value of the [FlipY](#) Cell_Type element is equal to one.
5. Rotate the point counterclockwise around the origin by the value of the [TxtAngle](#) Cell_Type element.
6. Add the value of the [TxtPinX](#) Cell_Type element to the x-coordinate.
7. Add the value of the [TxtPinY](#) Cell_Type element to the y-coordinate.

2.2.9 Comments

Comments are plain text annotations in a [web drawing](#). Each comment has an associated author and [drawing page](#). It can have an associated [shape](#) on the drawing page. A collection of comments in a web drawing is specified by a [Comments XML part](#).

A [Comments Type](#) element in a Comments XML part contains the [AuthorList Type](#) element and the [CommentList Type](#) elements, which specifies the comment authors and comments respectively.

Each [AuthorEntry Type](#) child of an AuthorList_Type parent element contains information for a single author. An author can be associated with one or more comments. The author is uniquely identified by the **ID** and **ResolutionID** attributes. Additional author information is provided by the **Name** and **Initials** attributes.

Each [CommentEntry Type](#) child of a CommentList_Type parent element represents a single comment. The text runs associated with a comment are specified by the contents of a [CommentEntry_Type](#) element. The following attributes specify additional properties of the comment:

- The **AuthorID** attribute specifies the author of a comment. This attribute is equal to the **ID** attribute of the [AuthorEntry_Type](#) element that corresponds to the author.
- The **PageID** attribute specifies the page a comment refers to. This attribute is equal to the **ID** attribute of a [Page Type](#) element of the drawing page.
- The **ShapeID** attribute can specify a shape on the drawing page that the comment refers to. The **ShapeID** attribute is equal to the **ID** attribute of the [ShapeSheet Type](#) element of the shape.

2.2.10 Data Connectivity and Refresh

This section describes how data sources can be referenced, queried and connected to from within a [web drawing](#).

2.2.10.1 Data Connections

A [web drawing](#) can be linked to data in databases and other data sources which can affect various attributes of the web drawing, including its visual appearance. A relationship to such data sources is called a data connection.

A data connection contains properties that specify how the application connects to and queries the data source, including the type of **data provider** (for example, **OLE DB** or **ODBC**) required to access a data source, the name of the server on which the data source is hosted, security information to access the data source, and a **query** to execute on the server.

The data connections in a web drawing are specified by the [Connections XML part](#). Each data connection is specified by a [DataConnection Type](#) child element of the [DataConnections](#) element in a [part](#).

Data connection information can be specified solely by the [DataConnection_Type](#) element or partially by information in an external file. If the **FileName** attribute of the [DataConnection_Type](#) element is empty, a data connection is solely specified by the [DataConnection_Type](#) element. If the **FileName** attribute is not empty, a data connection is specified by the [DataConnection_Type](#) element and the information contained in the file found at the path described by the value of the **FileName** attribute.

The following elements in parts of a web drawing specify supplementary information about the data connection.

- A [DataRecordSet_Type](#) element in the [Recordsets XML Part](#) contains a **ConnectionID** attribute that is equal to the **ID** attribute of the [DataConnection_Type](#) element for the data connection and specifies a [recordset](#) that uses this data connection to connect to and query a data source.

Data connections can be established for the types of data sources listed in the **ConnectionString** attribute of the [DataConnection_Type](#) element.

2.2.10.2 Recordset

A recordset is the data that is returned from a data source, organized into sets of rows and fields. The recordset is related to a specific data source using a [data connection](#). The operation of replacing the contents of a recordset with data queried from a data source, using the associated data connection, is called [refreshing](#) the recordset.

The rows of a recordset can be linked to [shapes](#) in [drawing pages](#) in a [web drawing](#) through [data binding](#). This allows additional properties of the web drawing to be updated when the recordset is refreshed.

The recordsets in a web drawing are specified by the [Recordsets XML part](#). Each recordset is specified by a [DataRecordSet_Type](#) child element of the [DataRecordSets](#) element in a [part](#). The fields of the recordset are specified by the [DataColumns_Type](#) child element of the [DataRecordSet_Type](#) element.

2.2.10.2.1 Data Binding

Data binding is the association between a row of a [recordset](#) and a [shape](#) in a [drawing page](#). A row can be bound to zero or more shapes. A shape can have zero or one recordset rows bound to it.

The rows of a recordset that are bound to shapes are specified by the [RowMap_Type](#) child elements of the [DataRecordSet_Type](#) element for the recordset. In each [RowMap_Type](#) element, the row is identified by a **RowID** attribute, the shape is identified by a **ShapeID** attribute, and the drawing page containing the shape is identified by a **PageID** attribute.

The fields of a recordset are mapped to [shape data](#) items in the bound shapes. A field can be mapped to zero or one shape data item in each shape that is bound to a row in the recordset. A shape data item can have zero or one fields bound to it.

The mapping between each field of the recordset and shape data item of the bound shape is specified by the [DataColumn_Type](#) element for the field and a [Row_Type](#) child element of the [Property Section_Type](#) element for the shape. A mapping exists if there is a [Row_Type](#) element with an **N** attribute that is equal to the **Name** attribute of the [DataColumn_Type](#) element.

2.2.10.3 Recordset Refresh

A recordset refresh is the operation of replacing the contents of a [recordset](#) with data queried from a data source. Refresh information is specified by the recordset and its associated [data connection](#).

The refresh query is specified by the **Command** attribute of the [DataRecordSet_Type](#) element for the recordset. If the **Command** attribute of the [DataRecordSet_Type](#) element is empty, the refresh query is specified by the **Command** attribute of the [DataConnection_Type](#) element for the data connection.

Only recordsets that are enabled for data refresh participate in refresh operations. A recordset is enabled for data refresh when both of the following conditions are true:

- A [PublishSettings_Type](#) child element of the [VisioDocument_Type](#) element for the [web drawing](#) is missing, or the [PublishSettings_Type](#) element contains a [RefreshableData_Type](#) child element with an **ID** attribute equal to the **ID** attribute of the [DataRecordSet_Type](#) element for the recordset.
- The [DataRecordSet_Type](#) element for the recordset contains an **Options** attribute with a value that is not a bitwise OR combination of the value one.

When the data in the rows of a recordset change, [shape data](#) in [shapes](#) with [data bindings](#) to the recordset are also updated. The **RefreshOverwriteAll** attribute of the [DataRecordSet_Type](#) element for the recordset determines which shape data items are updated. Individual shape data items are then updated in the following manner:

- If the [cell](#) associated with the shape data item contains a [formula expression](#) containing a [Guard function token](#), the shape data item is not updated.
- If the cell associated with the shape data item contains a formula expression containing a [SetAtRef](#) function token, the value of the cell referenced by the first argument of the function is updated with the value of the recordset for the mapped field and row.
- Otherwise, the value of the shape data item is updated with the value of the recordset for the mapped field and row. This could involve a data type conversion from the data type of the field, as specified by the **Data Type** attribute of its corresponding [DataColumn_Type](#) element, to the data type of the shape data item.

All [formulas](#) in cells that have been updated are recalculated as part of a [diagram update](#).

2.2.10.4 Recordset Row Addressing

Specific [recordset](#) rows are tracked across a [recordset refresh](#) operation using a **primary key**. A recordset can explicitly specify a primary key, or it can specify that the current ordering of the rows be used as a primary key.

If the **RowOrder** attribute of the [DataRecordSet_Type](#) element for the recordset is zero, the primary key is specified by a collection of [PrimaryKey_Type](#) child elements of the [DataRecordSet_Type](#) element. If the **RowOrder** attribute is one, the primary key is specified by the position of each row in the recordset regardless of its contents.

2.2.11 Diagram Update

This section describes how the properties of a [web drawing](#) are changed from their current state to an updated state by a diagram update operation. A diagram update is initiated following a [recordset refresh](#) or through [update triggers](#). These actions each specify a set of properties to change.

Additional properties of the web drawing can have [formulas](#) that are dependent on the initial set of updated properties. [Expressions](#) in the formulas are [evaluated](#) to calculate new property values.

2.2.11.1 Update Triggers

An update trigger is a structure in a [web drawing](#) that signifies a [diagram update](#) is needed. The trigger is specified by the presence of a special [function token](#) in the [formula expression](#) of a property of the web drawing.

The [Category](#), [Creator](#), [Description](#), [DocLastEdit](#), [DocLastSave](#), [Keywords](#), [Now](#), [Subject](#), and [Title functions](#) function tokens specify update triggers.

2.2.11.2 Formulas

The properties that are specified in [cells](#) can have formulas. Formulas specify how the properties of a [web drawing](#) are modified during a [diagram update](#) operation.

A formula is specified by the **F** attribute of a [Cell Type](#) child element in a [Section Type](#), [Row Type](#), [ShapeSheet Type](#), [PageSheet Type](#), [StyleSheet Type](#), or [DocumentSheet Type](#) element.

The following sections describe the concepts and elements of a formula.

2.2.11.2.1 Formula Expression

A formula expression is a sequence of functions, values, and references that make up a [formula](#) and that produce a value when [evaluated](#).

A formula expression contains a sequence of [parse tokens](#). The [Formula ABNF and Full Grammar Definition](#) section in this specification defines the valid formula expressions in a [web drawing](#).

2.2.11.2.2 Parse Tokens

A parse token is a string of characters that specifies a **token** in a [formula expression](#). A parse token in a [web drawing](#) is a [function](#), a [operand](#), or a [reference token](#).

2.2.11.2.2.1 Function Tokens

A function token represents a function in a [formula expression](#). The [Formula ABNF and Full Grammar Definition](#) section in this specification defines the valid function tokens in a formula expression. The syntax for each function token is described in the [Function Token Definitions](#) section.

A function can specify a set of arguments used in the [evaluation](#) of the function token. The arguments of a function are additional [parse tokens](#) in the formula expression. The value returned by an evaluated function is an [operand token](#).

2.2.11.2.2.2 Operand Tokens

An operand token represents a value in a [formula expression](#). This token can be either the solitary value in a [formula](#), an argument of a function, the [evaluation](#) result of a function, or the evaluation result of a [cell reference](#).

The [Formula ABNF and Full Grammar Definition](#) section in this specification defines the valid operand tokens in a formula expression. The syntax for each operand token is described in the [Parse Token Definitions](#) section.

In addition to its use in a formula expression, an operand token also specifies a single value that can be persisted in the file and represents one of the tokens specified in the token group [vAny](#).

An operand token can have **Value**, **Unit**, **Dimension**, **Currency**, and **Error State** properties.

The **Value** of an operand token is the value of the structure. When stored in a [Cell Type](#) element, the **Value** of an operand token is stored in the **V** attribute with the following exceptions:

- For a [Boolean value](#), the **Value** is "FALSE" or "TRUE" but is stored as zero or one, respectively, in the [Cell Type](#) element **V** attribute.
- For a [currency value](#), both the **Value** and **Currency** are stored in the **V** attribute.

- For a [multi-dimensional value](#), the **Value**, **Unit**, and **Dimension** are stored in the **V** attribute.
- For a [two-dimensional point](#), the **Value** and **Unit** are stored in the **V** attribute.
- For an [error code](#), the operand token has no **Value**.

The **Unit**, **Dimension**, and **Currency** of an operand token give additional meaning to the token's **Value**. Not all operand tokens have a **Unit**, **Dimension**, or **Currency**. When stored in a Cell_Type element, the **Unit** of an operand token is stored in the **U** attribute.

A **Dimension** is not persisted unless the token is a PtgNumMultiDim. For a PtgNumMultiDim, the **Value** and the **Dimension** are stored in the **V** attribute as specified by the PtgNumMultiDim format.

Currency values are the only operand tokens to have a **Currency**. For a currency value, the **Value** is concatenated with the **Currency** and stored in the **V** attribute as specified by the [PtgCy](#) parse token format.

The **Error State** of an operand token represents an error obtained during formula evaluation. Depending on the function, the **Error State** of an operand token can either be used or ignored during formula evaluation. When stored in a Cell_Type element, the **Error State** of an operand token is stored in the **E** attribute.

An operand token represents, and can be converted into, one of the following types of values.

- A [string value](#)
- A [numeric value](#)
- A Boolean value
- A currency value
- A [color value](#)
- A [date value](#)
- A [geometry function value](#)
- An [error value](#)

These conversions translate many different source operand tokens into tokens representing different classes of inputs that are required by functions. Functions typically operate on the converted tokens but can also refer to elements of the source token. See the [Custom Input Types](#) section for details on common token conversions used by functions.

2.2.11.2.2.2.1 String Values

A string value represents textual information and is specified as a [PtgString](#) parse token. For a string operand token, the **Value** property is the string and the **Unit** property is equal to "STR". The token does not have a **Dimension** or **Currency** property.

Other tokens can specify a string value according to the conversion specified in the [vString](#) custom input type.

2.2.11.2.2.2.2 Numeric Values

A numeric value represents a number with or without units. [Boolean values](#), [currency values](#), [color values](#), and [date values](#) are classified separately.

A numeric value is specified as one of the tokens in the custom token group [vNum](#) (except [PtgDate](#)). Other token types can also represent numeric values as specified in the [vDouble](#), [vFloat](#), [vSignedInt](#), [vSignedLong](#), [vUnsignedInt](#), and [vUnsignedLong](#) custom input types.

Numeric values that represent length, angle, duration, and typographic units, as well as higher dimensional forms of these units, are described in the [Unit Number](#) section. These numeric values have the special property so that their **Value** property is specified as a [Custom Internal Unit Type](#). When found in a [formula expression](#), the **Value** is converted to the **Unit** and **Dimension** properties of the operand token; this is called the display value. During [formula evaluation](#), the operand token **Value** (not the display value) from the formula expression is used.

A numeric value that represents a percentage value is specified as a [PtgNumPct](#) parse token. The **Value** is a number as a fraction of 100, the **Unit** is equal to "PER", and the **Dimension** is zero.

If the numeric value has no units, it represents a number and is persisted in the file as a [PtgNum](#) parse token or equivalent member of the [vScalar](#) custom token group. The **Value** is equal to the numeric value, and the **Dimension** is zero. It does not have a **Unit**.

2.2.11.2.2.2.3 Boolean Values

A value that represents a Boolean value is specified as a [PtgBool](#) parse token. The **Value** property is either "FALSE" or "TRUE", the **Unit** is equal to "BOOL" or does not exist, and the **Dimension** property is zero. It does not have a **Currency** property.

When stored in a [Cell Type](#) element, the **Value** of an operand token is converted to zero or one, where zero represents "FALSE" and one represents "TRUE", and is stored in the **V** attribute.

Other tokens can also represent a Boolean value according to the conversion specified in the [vBoolean](#) custom input type.

2.2.11.2.2.2.4 Currency Values

A value that represents a currency is specified as a [PtgCy](#) parse token. No other token type can represent a currency value. The only custom input type that preserves both a currency value and its associated currency is [vDoubleEx](#).

The **Value** is the numeric value of the currency, the **Currency** is the associated currency string as specified in [vCurrency](#) custom structure, the **Unit** is equal to "CY" and the **Dimension** is zero.

2.2.11.2.2.2.5 Color Values

A value that represents a **red-green-blue (RGB)** color value is specified as a [PtgColorRGB](#) parse token. The **Value** represents the hexadecimal value of the color or the index in the [color table](#), the **Unit** property is equal to "COLOR" or does not exist, and the **Dimension** property is zero. It does not have a **Currency** property.

Other tokens can also represent a color value according to the conversion specified in the [vColor](#) custom input type.

2.2.11.2.2.2.6 Date Values

A value that represents a date is specified as a [PtgDate](#) parse token. The **Value** property is a date and time of day, the **Unit** property is equal to "DATE", and the **Dimension** property is one. It does not have a **Currency** property.

Other token types can represent a date according to the conversion specified in the [DateTime](#) function.

2.2.11.2.2.2.7 Geometry Function Values

A geometry function value represents [geometry path](#) data that is specified by a [PtgPnt](#), [PtgNURBS](#), or [PtgPolyline](#) parse token. The **Value** property is a set of numeric values that specify individual properties of the geometry path. These numeric values are arranged in a syntax that matches the [Pnt](#), [NURBS](#), and [Polyline](#) function token definitions.

The **Unit** property of the token is equal to "PNT" for a [PtgPnt](#) or "POLYLINE" for a [PtgPolyline](#); the [PtgNURBS](#) does not have a **Unit**. The **Dimension** property is zero, and it does not have a **Currency** property. No other token types can represent a geometry function value.

2.2.11.2.2.2.8 Error Values

An error code that is returned as a result of a [formula evaluation](#) is specified as a [PtgErr](#) parse token. When a function encounters a [PtgErr](#) as one of its arguments, it returns the same error value. The exceptions are the functions [IsErr](#), [IsErrNA](#), [IsError](#), and [IsErrValue](#), which are specifically designed to detect certain error values.

2.2.11.2.2.3 Reference Tokens

A reference token represents a [cell](#), other than the cell containing the [formula expression](#), whose value is used in the [evaluation](#) of a formula expression. A reference token allows a formula expression to depend on the values of other properties in the [web drawing](#).

The [Formula ABNF and Full Grammar Definition](#) section defines the valid reference tokens in a formula expression. The syntax for each reference token is described in the [Reference Token Definitions](#) section.

The result of a reference token that is evaluated is an [operand token](#).

2.2.11.2.3 Formula Evaluation

Formula evaluation is the process of taking a complex [formula expression](#) and computing a single resulting [parse token](#).

The parse tokens that make up the formula expression are evaluated in sequence as specified by the [Order of Operations](#). Each [function token](#) and [reference token](#) in the formula expression is evaluated to produce an [operand token](#).

The logic for evaluating a particular function token is specified by the [Function Token Definitions](#). A reference token is evaluated by returning the value of the [cell](#) specified by the reference token. Functions and references are evaluated within a [reference context](#), which is the specification of the [sheet](#) containing the properties to be used in the evaluation.

When the formula expression of a cell is evaluated, the formula expressions of other cells that contain reference tokens that reference the cell are also evaluated.

2.2.11.2.4 Reference Context

A reference context is the [sheet](#) containing the properties to be used in the [evaluation](#) of a [function token](#) or [reference token](#).

The reference context can vary for each function token or reference token in a [formula expression](#). The current reference context is the context used for the current token being evaluated.

The [CrossPageRef](#), [DocSheetRef](#), [MasterSheetRef](#), [PageSheetRef](#), [ShapeSheetRef](#), and [StyleSheetRef](#) reference tokens specify the reference context of the function token or reference token that immediately follows them in the formula expression. If one of these reference tokens does not precede the token to be evaluated, the default reference context is the sheet containing the formula expression that contains the function token or reference token.

2.2.11.3 Unit Number

A unit number is a numeric value with a unit of measure. Unit numbers represent length, angle, duration and typographic units, higher dimensional forms of these units, and dates.

All unit numbers have a **Dimension** property. [One-dimensional unit numbers](#) are used to represent length, angle, duration, and typographic measurements. Two-dimensional units are used to represent area measurements, and three-dimensional units are used to represent volume measurements. A numeric value that has a **Dimension** greater than one is called a [multidimensional unit number](#).

The **Value** property of a one-dimensional unit number is specified as a [Custom Internal Unit Type](#) or a date and time as specified by a [PtgDate](#) parse token. The **Value** of a multidimensional unit number is specified as a Custom Internal Unit Type for the [PtgAcre](#) and [PtgHectare](#) operand tokens or as a value as specified by the [PtgNumMultiDim](#) parse token.

For numeric values where the **Value** is expressed as a Custom Internal Unit Types, the **Unit** property determines how the numeric value is formatted and displayed in a [formula expression](#), or the user interface. When found in a formula expression or the user interface, the **Value** is converted to the **Unit** and **Dimension** of the operand token; this is called the display value. During [formula evaluation](#), the operand token **Value**, not the display value from the formula expression, is used.

2.2.11.3.1 One-dimensional Unit Number

If the numeric value represents a length or distance measurement, the **Value** property is expressed as a [lengthInternalUnitNumber](#) custom internal unit type. The operand tokens that represent length or distance measurements are [PtgNumCM](#), [PtgNumDft](#), [PtgNumF](#), [PtgNumFI](#), [PtgNumI](#), [PtgNumKM](#), [PtgNumM](#), [PtgNumMI](#), [PtgNumMM](#), [PtgNumNM](#), and [PtgNumYards](#).

If the numeric value represents an angle measurement, the **Value** is expressed as an [angleInternalUnitNumber](#) custom internal unit type. The operand tokens that represent angles are specified in the [vAngle](#) custom token grouping.

If the numeric value represents a duration measurement, the **Value** is expressed as a [durationInternalUnitNumber](#) custom internal unit type. The operand tokens that represent durations are [PtgEDay](#), [PtgEHour](#), [PtgEMin](#), [PtgESec](#), [PtgEWeek](#), and [PtgTDurDft](#).

If the numeric value represents a length measurement used in typography, the **Value** is expressed as a [typographicInternalUnitNumber](#) custom internal unit type. The operand tokens that represent typographic measurements are [PtgTypCD](#), [PtgTypCi](#), [PtgTypDft](#), [PtgTypDi](#), [PtgTypPi](#), [PtgTypPP](#), and [PtgTypPt](#).

A numeric value with units specified as a [PtgPageDft](#) parse token indicates that the internal units are determined by the default values of the [drawing page](#), as specified by [PtgPageDft](#). The **Value** is a number expressed as a [Custom Internal Unit Types](#). For this operand token, the **Unit** of the numeric value is not specified in the [PtgPageDft](#) token itself. It is computed as specified by [PtgPageDft](#), and is determined by the default values of the drawing page.

If a numeric value represents a [date value](#), the **Value** is expressed as a date and time of day, in complete extended format, as specified in [\[ISO-8601\]](#) section 4.3.2. The operand token that represents dates is a [PtgDate](#) parse token.

The **Value** and **Unit** properties for each unit number is described in the [Parse Token Definitions](#) section. The **Dimension** property of one-dimensional unit numbers is equal to one. They do not have a **Currency** property.

2.2.11.3.2 Multidimensional Unit Number

If the numeric value represents an acre or hectare, the **Value** property is expressed as the square of a [lengthInternalUnitNumber](#) custom internal unit type. The operand tokens that represent these measurements are [PtgAcre](#) and [PtgHectare](#), respectively.

Higher dimensional forms of other [unit numbers](#) are specified as a [PtgNumMultiDim](#) operand token. The **Value**, **Unit**, and **Dimension** properties of the unit number are stored in the **V** attribute of the [Cell_Type](#) element containing the token as specified by the PtgNumMultiDim format.

Multidimensional unit numbers do not have a **Currency** property.

2.3 Parts

The Parts sections that follow specify the structure of the [parts](#) that are in the ZIP archive of a [web drawing](#).

2.3.1 Part Enumeration

The [web drawing](#) contains the following ZIP [package parts](#) and [relationships](#).

Part Name	Relationship target of...	Root Element
App	package	Specified outside this document
Comments	Document	Comments
Connections	Document	DataConnections
Content_Type	package	Specified outside this document
Core	package	Specified outside this document
Custom	package	Specified outside this document
Document	package	VisioDocument
Extensions	Document	Extensions
Image	Image or Page	Specified outside this document
Master	Masters	MasterContents
Masters	Document	Masters
Page	Pages	PageContents
Pages	Document	Pages
Recordsets	Document	DataRecordSets

Part Name	Relationship target of...	Root Element
Rels	package	Specified outside this document
Theme	Document	Theme

All other parts are unused and MUST be ignored.

2.3.2 Shared XML Parts and Schema

The Shared XML Parts and Schema sections that follow lists the [parts](#) in a [web drawing](#) that are specified outside this document in their entirety.

2.3.2.1 App XML Part

The App XML part is specified in [\[ISO/IEC-29500-1\]](#) section 15.2.12.3.

This is an optional [part](#) that specifies the **Extended Properties** of a [web drawing](#), as specified by [\[ISO/IEC-29500-1\]](#) section 22.2.

The following properties in the App XML part are defined in a web drawing.

Property Name	Specified in
Application	[ISO/IEC-29500-1] section 22.2.2.1
AppVersion	[ISO/IEC-29500-1] section 22.2.2.2
Company	[ISO/IEC-29500-1] section 22.2.2.5
HeadingPairs	[ISO/IEC-29500-1] section 22.2.2.8
HyperlinkBase	[ISO/IEC-29500-1] section 22.2.2.11
HyperlinksChanged	[ISO/IEC-29500-1] section 22.2.2.12
LinksUpToDate	[ISO/IEC-29500-1] section 22.2.2.14
Manager	[ISO/IEC-29500-1] section 22.2.2.15
ScaleCrop	[ISO/IEC-29500-1] section 22.2.2.22
SharedDoc	[ISO/IEC-29500-1] section 22.2.2.23
Template	[ISO/IEC-29500-1] section 22.2.2.25
TitlesOfParts	[ISO/IEC-29500-1] section 22.2.2.26

2.3.2.2 ContentType XML Part

The ContentType XML part and its syntax are specified in [\[ISO/IEC-29500-2\]](#) section 10.1.2.

This [part](#) identifies the type of content for each [package](#) part.

2.3.2.3 Core XML Part

The Core XML part is specified in [\[ISO/IEC-29500-1\]](#) section 15.2.12.1.

This is an optional [part](#) that specifies the Core Properties of a [web drawing](#), specified by [\[ISO/IEC-29500-2\]](#) section 11.

The following properties in the Core XML part are defined in a web drawing, specified by [\[ISO/IEC-29500-2\]](#) Table 11-1.

Property Name
category
created
creator
description
keywords
language
lastModifiedBy
lastPrinted
modified
subject
title

2.3.2.4 Custom XML Part

The Custom XML part is specified in [\[ISO/IEC-29500-1\]](#) section 15.2.12.2.

This is an optional [part](#) that specifies the Custom Properties of a [web drawing](#), as specified by [\[ISO/IEC-29500-1\]](#) section 22.3. The syntax of the Custom Properties is specified by [\[ISO/IEC-29500-1\]](#) section 22.3.2.2.

The following properties in the Custom XML Part are defined in a web drawing.

Property Name	Data Type	Data Type Specified in
BuildNumberEdited	i4	[ISO/IEC-29500-1] section 22.4.2.14
IsMetric	bool	[ISO/IEC-29500-1] section 22.4.2.3

The lower 16 bits of the **BuildNumberEdited** property MUST be greater than 2714.

2.3.2.5 Rels XML Part

The Rels XMP part and its syntax are specified in [\[ISO/IEC-29500-2\]](#) section 9.3.

Each set of [relationships](#) sharing a common source is represented by XML stored in a Rels XML part.

2.3.3 Visio Parts

The following sections specify the Visio [parts](#) that are unique to [web drawings](#) and specified in this document.

2.3.3.1 Comments XML Part

An instance of a Comments XML part type that specifies [comments](#) in a [web drawing](#). The following properties identify this [part](#):

Content Type:	application/vnd.ms-visio.comments+xml
Root Namespace:	http://schemas.openxmlformats.org/officeDocument/2006/relationships
Source Relationship:	http://schemas.microsoft.com/visio/2010/relationships/comments

The Comments XML part MUST be a target of an explicit relationship from a [Document XML part](#). Implicit or explicit relationships to any other parts are unused and MUST be ignored.

The root element for this part MUST be a [Comments](#) element.

2.3.3.2 Connections XML Part

An instance of a Connections XML part type that specifies the [data connection](#) information needed to query data sources and refresh the [recordsets](#) referenced by a [web drawing](#). The following properties identify this [part](#):

Content Type:	application/vnd.ms-visio.connections+xml
Root Namespace:	http://schemas.microsoft.com/office/visio/2011/1/core
Source Relationship:	http://schemas.microsoft.com/visio/2010/relationships/connections

The Connections XML part MUST be a target of an explicit relationship from a [Document XML Part](#). Implicit or explicit relationships to any other parts are unused and MUST be ignored.

The root element for this part MUST be a [DataConnections](#) element.

2.3.3.3 Document XML Part

An instance of a Document XML part type that contains properties of a [web drawing](#). There MUST be exactly one Document XML part in the [package](#). The following properties identify this [part](#):

Content Types:	application/vnd.ms-visio.drawing.main+xml application/vnd.ms-visio.drawing.macroEnabled.main+xml
Root Namespace:	http://schemas.microsoft.com/office/visio/2011/1/core
Source Relationship:	http://schemas.microsoft.com/visio/2010/relationships/document

The Document XML part MUST be a target of an explicit relationship in the package-relationship item.

The Document XML part is permitted to have explicit relationships to the following parts:

- [Connections XML Part](#)
- [Masters XML Part](#)
- Pages XML Part
- [Recordsets XML Part](#)
- [Theme XML Part](#)
- [Comments XML Part](#)
- [Extensions XML Part](#)

Implicit or explicit relationships to any other parts are unused and MUST be ignored.

The root element for this part MUST be a [VisioDocument](#) element.

2.3.3.4 Extensions XML Part

An instance of an Extensions XML part type that specifies [extensibility](#) in a [web drawing](#). The following properties identify this [part](#):

Content Type:	application/vnd.ms-visio.extensions+xml
Root Namespace:	http://schemas.microsoft.com/office/visio/2011/1/core
Source Relationship:	http://schemas.microsoft.com/visio/2010/relationships/extensions

The Extensions XML part MUST be a target of an explicit relationship from a [Document XML Part](#). Implicit or explicit relationships to any other parts are unused and MUST be ignored.

The root element for this part MUST be an [Extensions](#) element.

2.3.3.5 Image Part

An instance of an Image part type that specifies an [image](#) resource used in rendering a [web drawing](#). The following properties identify this [part](#):

Content Type:	image/bmp image/x-emf image/gif image/jpeg image/png image/tiff
Source Relationship:	http://schemas.openxmlformats.org/officeDocument/2006/relationships/image

Each part of this type is an image file that conforms to one of the following formats:

- The bitmap (BMP) format specified in [\[MSDN-BMPST\]](#).
- The enhanced metafile format (EMF) format specified in [\[MS-EMF\]](#).
- The Graphics Interchange Format (GIF) format specified in [\[GIF89a\]](#).

- The Joint Photographic Experts Group (JPEG) format specified in [\[JFIF\]](#).
- The Portable Network Graphics (PNG) format specified in [\[RFC2083\]](#).
- The TIFF format specified in [\[MS-TIFF\]](#).

An Image part MUST be a target of an explicit [relationship](#) from a [Page XML Part](#) except in the case of a [fallback image](#). An Images part MUST NOT have implicit or explicit relationships to any other part specified in this specification.

2.3.3.6 Master XML Part

An instance of a Master XML part type that specifies contents of a [master](#) in a [web drawing](#). The following properties identify this [part](#):

Content Type:	application/vnd.ms-visio.master+xml
Root Namespace:	http://schemas.microsoft.com/office/visio/2011/1/core
Source Relationship:	http://schemas.microsoft.com/visio/2010/relationships/master

The Master XML part MUST be a target of an explicit relationship from a [Masters](#) part. The Master XML part is permitted to have explicit relationships to the following parts:

- [Image](#) Part

Implicit or explicit relationships to any other parts are unused and MUST be ignored except in the case of [fallback images](#).

The root element for this part MUST be a [MasterContents](#) element.

2.3.3.7 Masters XML Part

An instance of a Masters XML part type that specifies a collection of masters in a [web drawing](#). The following properties identify this [part](#):

Content Type:	application/vnd.ms-visio.masters+xml
Root Namespace:	http://schemas.microsoft.com/office/visio/2011/1/core
Source Relationship:	http://schemas.microsoft.com/visio/2010/relationships/masters

The Masters part MUST be a target of an explicit relationship from a [Document XML Part](#). The Masters part is permitted to have explicit relationships to the following parts:

- [Master XML Part](#)

Implicit or explicit relationships to any other parts are unused and MUST be ignored.

The root element for this part MUST be a [Masters](#) element.

2.3.3.8 Page XML Part

An instance of a Page XML part type specifies the contents of a [drawing page](#) in a [web drawing](#). The following properties identify this [part](#):

Content Type:	application/vnd.ms-visio.page+xml
Root Namespace:	http://schemas.microsoft.com/office/visio/2011/1/core
Source Relationship:	http://schemas.microsoft.com/visio/2010/relationships/page

The Page XML part MUST be a target of an explicit relationship from a [Pages XML Part](#). The Page XML part is permitted to have explicit relationships to the following parts:

- [Image](#) Part

Implicit or explicit relationships to any other parts are unused and MUST be ignored except in the case of [fallback images](#).

The root element for this part MUST be a [PageContents](#) element (section [2.3.4.3.5](#)).

2.3.3.9 Pages XML Part

An instance of a Pages XML part type that specifies a collection of [drawing pages](#) in a [web drawing](#). The following properties identify this [part](#):

Content Type:	application/vnd.ms-visio.pages+xml
Root Namespace:	http://schemas.microsoft.com/office/visio/2011/1/core
Source Relationship:	http://schemas.microsoft.com/visio/2010/relationships/pages

There MUST be at most one Pages XML part in the [package](#).

The Pages XML part MUST be a target of an explicit relationship from a [Document XML Part](#). The Pages XML part is permitted to have explicit relationships to the following parts:

- [Page XML Part](#)

Implicit or explicit relationships to any other parts are unused and MUST be ignored.

The root element for this part MUST be a [Pages](#) element.

2.3.3.10 Recordsets XML Part

An instance of a Recordsets XML part type specifies the [recordsets](#) and [data bindings](#) in a [web drawing](#). The following properties identify this [part](#):

Content Type:	application/vnd.ms-visio.recordsets+xml
Root Namespace:	http://schemas.microsoft.com/office/visio/2011/1/core
Source Relationship:	http://schemas.microsoft.com/visio/2010/relationships/recordsets

The Recordsets XML part MUST be a target of an explicit relationship from a [Document XML Part](#). Implicit or explicit relationships to any other parts are unused and MUST be ignored.

The root element for this part MUST be a [DataRecordSets](#) element.

2.3.3.11 Theme XML Part

An instance of a Theme XML part type specifies a [dynamic theme](#) in a [web drawing](#). The following properties identify this [part](#):

Content Type:	application/vnd.openxmlformats-officedocument.theme+xml
Root Namespace:	http://schemas.openxmlformats.org/drawingml/2006/main
Source Relationship:	http://schemas.openxmlformats.org/officeDocument/2006/relationships/theme

The Theme XML part MUST be a target of an explicit relationship from a [Document XML Part](#). Implicit or explicit relationships to any other parts are unused and MUST be ignored.

The root element for this part MUST be a [Theme](#) element.

2.3.4 Visio XML Schema

The Visio XML Schema sections that follows specifies the XML simple types, complex types, elements and attributes contained in the [parts](#) of a [web drawing](#).

2.3.4.1 Simple Types

This specification does not define any simple types.

2.3.4.2 Complex Types

The following Complex Type sections specifies the XML complex types contained in the [parts](#) of a [web drawing](#).

2.3.4.2.1 AttachedToolbars_Type

Target namespace: <http://schemas.microsoft.com/office/visio/2011/1/core>

Referenced by: [DocumentSettings_Type](#)

A complex type that is unused and MUST be ignored.

The following W3C XML Schema ([\[XMLSCHEMA1\]](#) section 2.1) fragment specifies the contents of this complex type.

```
<xsd:complexType name="AttachedToolbars_Type">
  <xsd:simpleContent>
    <xsd:extension base="xsd:base64Binary"/>
  </xsd:simpleContent>
</xsd:complexType>
```

2.3.4.2.2 AuthorEntry_Type

Target namespace: <http://schemas.microsoft.com/office/visio/2011/1/core>

Referenced by: [AuthorList_Type](#)

A complex type that specifies properties used to identify a author in a [Web drawing](#).

Attributes:

Name: A xsd:string ([XMLSCHEMA2] section 3.2.1) attribute that specifies the name of the author.

Initials: A xsd:string ([XMLSCHEMA2] section 3.2.1) attribute that specifies the initials of the author.

ResolutionID: A xsd:string ([XMLSCHEMA2] section 3.2.1) attribute that is unused and MUST be ignored.

ID: A xsd:unsignedInt ([XMLSCHEMA2] section 3.3.22) attribute that identifies the author within the Web drawing. It MUST be equal to or greater than one. It MUST be unique amongst all the **ID** attributes of the AuthorEntry_Type child elements of the containing AuthorList_Type element.

The following W3C XML Schema ([XMLSCHEMA1] section 2.1) fragment specifies the contents of this complex type.

```
<xsd:complexType name="AuthorEntry_Type">
  <xsd:attribute name="Name" type="xsd:string"/>
  <xsd:attribute name="Initials" type="xsd:string"/>
  <xsd:attribute name="ResolutionID" type="xsd:string"/>
  <xsd:attribute name="ID" type="xsd:unsignedInt" use="required"/>
</xsd:complexType>
```

2.3.4.2.3 AuthorList_Type

Target namespace: http://schemas.microsoft.com/office/visio/2011/1/core

Referenced by: [Comments_Type](#)

A complex type that specifies the authors in a [web drawing](#).

Child Elements:

AuthorEntry: An [AuthorEntry_Type](#) element that specifies properties used to identify an author in a web drawing.

The following W3C XML Schema ([XMLSCHEMA1] section 2.1) fragment specifies the contents of this complex type.

```
<xsd:complexType name="AuthorList_Type">
  <xsd:sequence>
    <xsd:element name="AuthorEntry" type="AuthorEntry_Type" minOccurs="0"
      maxOccurs="unbounded"/>
  </xsd:sequence>
</xsd:complexType>
```

2.3.4.2.4 AutoLinkComparison_Type

Target namespace: http://schemas.microsoft.com/office/visio/2011/1/core

Referenced by: [DataRecordSet_Type](#)

A complex type that is unused and MUST be ignored.

Attributes:

ColumnName: A xsd:string ([\[XMLSCHEMA2\]](#) section 3.2.1) attribute that is unused and MUST be ignored.

ContextType: A xsd:unsignedInt ([\[XMLSCHEMA2\]](#) section 3.3.22) attribute that is unused and MUST be ignored.

ContextTypeLabel: A xsd:string ([\[XMLSCHEMA2\]](#) section 3.2.1) attribute that is unused and MUST be ignored.

The following W3C XML Schema ([\[XMLSCHEMA1\]](#) section 2.1) fragment specifies the contents of this complex type.

```
<xsd:complexType name="AutoLinkComparison_Type">
  <xsd:attribute name="ColumnName" type="xsd:string" use="required"/>
  <xsd:attribute name="ContextType" type="xsd:unsignedInt" use="required"/>
  <xsd:attribute name="ContextTypeLabel" type="xsd:string"/>
</xsd:complexType>
```

2.3.4.2.5 Cell_Type

Target namespace: <http://schemas.microsoft.com/office/visio/2011/1/core>

Referenced by: [StyleSheet_Type](#), [Section_Type](#), [Row_Type](#), [Sheet_Type](#), [DocumentSheet_Type](#), [PageSheet_Type](#), [ShapeSheet_Type](#)

A complex type that specifies a single property, which can also be used to represent an [operand token](#).

Child Elements:

RefBy: A complex type that is unused and MUST be ignored.

Attributes:

N: A xsd:string ([\[XMLSCHEMA2\]](#) section 3.2.1) attribute that specifies the language-independent name of the property. It MUST be unique amongst all of the Cell_Type elements of the containing Row_Type element, and MUST be equal to a value specified in the Cells (section [2.4.4](#)) section of this specification.

U: A xsd:string ([\[XMLSCHEMA2\]](#) section 3.2.1) attribute that specifies how this property is formatted and displayed in a user interface, and how it is used in a [formula expression](#). If present, it MUST be equal to a value from the following table.

Value	Meaning
AC	Acres
DEG	Degrees
DA	Radians
AD	Degrees-minutes-seconds
RAD	Radians
BOOL	Boolean

Value	Meaning
COLOR	RGB color value
CY	Currency
DATE	Days
ED	Days
EH	Hours
EM	Minutes
ES	Seconds
EW	Weeks
HA	Hectare
CM	Centimeters
DL	Inches
FT	Feet
F_I	Feet and inches
IN	Inches
IN_F	Inches
KM	Kilometers
M	Meters
MI	Miles
MI_F	Miles
MM	Millimeters
NM	Nautical miles
PER	Percentage
YD	Yards
DP	Inches
PNT	Coordinates of a two-dimensional point
STR	String
DE	Days
C_D	Ciceros and didots
C	Ciceros
D	Didots

Value	Meaning
DT	Points
P	Picas
P_PT	Picas and points
PT	Points

E: A xsd:string ([XMLSCHEMA2] section 3.2.1) attribute that specifies the error state of the property, obtained during a [formula evaluation](#). If present, it MUST be equal to a value from the following table.

Value	Meaning
#DIM!	An error value that specifies that a dimensional value exceeds the dimension range.
#DIV/0!	An error value that specifies division by zero.
#VALUE!	An error value that specifies that an operand token is of the wrong type.
#REF!	An error value that specifies that a reference to a cell does not exist.
#NUM!	An error value that specifies an invalid number.
#N/A	An error value that specifies that a value is not available.

F: A xsd:string ([XMLSCHEMA2] section 3.2.1) attribute that specifies the formula expression of the property. It MUST be either a formula expression that satisfies the [Formula ABNF and Full Grammar Definition](#) in this specification or equal to a value in the following table.

Value	Meaning
No Formula	Specifies that no formula exists.
Inh	Specifies a formula that is inherited .

V: A xsd:string ([XMLSCHEMA2] section 3.2.1) attribute that specifies the value of the property. It MUST be equal to "1.#INF" if it specifies a **floating-point number** that is larger than 1.7976e308. If the value of the **V** attribute is equal to "themed", the value of the property is specified by [theme inheritance](#).

When the **F** attribute is present, the value of the **V** attribute MUST be used until a formula evaluation is triggered on the **F** attribute that does not result in an error value. After formula evaluation is triggered on the **F** attribute, the value of the property is specified by the most recent result of the formula evaluation that does not produce an error value.

The following W3C XML Schema ([XMLSCHEMA1] section 2.1) fragment specifies the contents of this complex type.

```
<xsd:complexType name="Cell_Type" mixed="true">
  <xsd:sequence>
    <xsd:element name="RefBy" type="RefBy_Type" minOccurs="0" maxOccurs="unbounded"/>
  </xsd:sequence>
  <xsd:attribute name="N" type="xsd:string" use="required"/>
  <xsd:attribute name="U" type="xsd:string"/>
</xsd:complexType>
```

```

<xsd:attribute name="E" type="xsd:string"/>
<xsd:attribute name="F" type="xsd:string"/>
<xsd:attribute name="V" type="xsd:string"/>
</xsd:complexType>

```

2.3.4.2.6 CellDef_Type

Target namespace: <http://schemas.microsoft.com/office/visio/2011/1/core>

Referenced by: [Extensions_Type](#), [SectionDef_Type](#), [RowDef_Type](#)

A complex type that specifies the definition of a [cell](#) that is not specified in this specification.

Attributes:

N: A xsd:string ([\[XMLSCHEMA2\]](#) section 3.2.1) attribute that specifies the name of the cell. It MUST be unique amongst all the [FunctionDef_Type](#), [CellDef_Type](#), and [SectionDef_Type](#) elements in the [Web drawing](#). It MUST NOT be equal to the name of a [function token](#) listed in the [Function Token Definitions](#) section of this specification. It MUST NOT be equal to the name of a [section](#) listed in the [Sections](#) section of this specification. It MUST NOT be equal to the name of a cell listed in the [Cells](#) section of this specification.

T: A xsd:token ([\[XMLSCHEMA2\]](#) section 3.3.2) attribute that specifies the [operand token](#) used to specify the **Value** of the cell. It MUST be equal to a value from the following table.

Value	Operand Token
BYTE	PtgByte
BOOL	PtgBool
WORD	PtgUnsShort
SHORT	PtgShort
LONG	PtgInt
DOUBLE	PtgNum
PERCENT	PtgNum
MULTIDIM	PtgNumMultiDim
CAL	vCalendar

F: A xsd:string ([\[XMLSCHEMA2\]](#) section 3.2.1) attribute that specifies the default [formula expression](#) of the cell.

IX: A xsd:unsignedByte ([\[XMLSCHEMA2\]](#) section 3.3.24) attribute that specifies the zero-based identifier of a collection of cells. It MUST be unique amongst all of the [CellDef_Type](#) elements of the containing [RowDef_Type](#) element. It MUST be greater than the **IX** attribute of any preceding [CellDef_Type](#) element of the containing [Extensions_Type](#), [SectionDef_Type](#) or [RowDef_Type](#) element. If the containing element is a [RowDef_Type](#) element, **IX** MUST exist. If the containing element is not a [RowDef_Type](#) element, **IX** MUST NOT exist.

The following W3C XML Schema ([\[XMLSCHEMA1\]](#) section 2.1) fragment specifies the contents of this complex type.

```

<xsd:complexType name="CellDef_Type">
  <xsd:attribute name="N" type="xsd:string" use="required"/>
  <xsd:attribute name="T" type="xsd:token" use="required"/>
  <xsd:attribute name="F" type="xsd:string"/>
  <xsd:attribute name="IX" type="xsd:unsignedByte"/>
</xsd:complexType>

```

2.3.4.2.7 ColorEntry_Type

Target namespace: <http://schemas.microsoft.com/office/visio/2011/1/core>

Referenced by: [Colors_Type](#)

A complex type that specifies a color available in a [color table](#).

Attributes:

IX: A xsd:unsignedInt ([\[XMLSCHEMA2\]](#) section 3.3.22) attribute that specifies the zero-based index of the element. It MUST be less than or equal to 253. It MUST be unique amongst all of the ColorEntry_Type elements of the containing Colors_Type.

RGB: A xsd:string ([\[XMLSCHEMA2\]](#) section 3.2.1) attribute that specifies the hexadecimal value of a color in the color table.

The following W3C XML Schema ([\[XMLSCHEMA1\]](#) section 2.1) fragment specifies the contents of this complex type.

```

<xsd:complexType name="ColorEntry_Type">
  <xsd:attribute name="IX" type="xsd:unsignedInt" use="required"/>
  <xsd:attribute name="RGB" type="xsd:string" use="required"/>
</xsd:complexType>

```

2.3.4.2.8 Colors_Type

Target namespace: <http://schemas.microsoft.com/office/visio/2011/1/core>

Referenced by: [VisioDocument_Type](#)

A complex type that specifies the [color table](#) of a [web drawing](#).

Child Elements:

ColorEntry: A [ColorEntry_Type](#) element that specifies the colors available in a color table.

The following W3C XML Schema ([\[XMLSCHEMA1\]](#) section 2.1) fragment specifies the contents of this complex type.

```

<xsd:complexType name="Colors_Type">
  <xsd:sequence>
    <xsd:element name="ColorEntry" type="ColorEntry_Type" minOccurs="1"
      maxOccurs="unbounded"/>
  </xsd:sequence>
</xsd:complexType>

```

2.3.4.2.9 CommentEntry_Type

Target namespace: <http://schemas.microsoft.com/office/visio/2011/1/core>

Referenced by: [CommentList_Type](#)

A complex type that specifies properties used to identify a comment in a [web drawing](#).

Attributes:

AuthorID: A xsd:unsignedInt ([\[XMLSCHEMA2\]](#) section 3.3.22) attribute that is a value that identifies the author. It MUST be equal to or greater than one.

PageID: A xsd:unsignedInt ([\[XMLSCHEMA2\]](#) section 3.3.22) attribute that is a value that identifies the [drawing page](#) the comment is on. The shape MUST be contained in the drawing page specified by **PageID**.

ShapeID: A xsd:unsignedInt ([\[XMLSCHEMA2\]](#) section 3.3.22) attribute that is a value that identifies the [shape](#) the comment is on. If no **ShapeID** is specified, the comment refers to the drawing page.

Date: A xsd:dateTime ([\[XMLSCHEMA2\]](#) section 3.2.7) attribute that specifies when a comment was created.

EditDate: A xsd:dateTime ([\[XMLSCHEMA2\]](#) section 3.2.7) attribute that specifies when a comment was last changed. The **EditDate** MUST be greater than or equal to the value of **Date**.

Done: A xsd:boolean ([\[XMLSCHEMA2\]](#) section 3.2.2) attribute that specifies the current state of the comment.

CommentID: A xsd:unsignedInt ([\[XMLSCHEMA2\]](#) section 3.3.22) attribute that is a unique value that identifies the comment in a drawing page. It MUST be unique amongst all the CommentEntry_Type child elements of the containing [Masters Type](#).

The following W3C XML Schema ([\[XMLSCHEMA1\]](#) section 2.1) fragment specifies the contents of this complex type.

```
<xsd:complexType name="CommentEntry_Type">
  <xsd:simpleContent>
    <xsd:extension base="xsd:string">
      <xsd:attribute name="AuthorID" type="xsd:unsignedInt" use="required"/>
      <xsd:attribute name="PageID" type="xsd:unsignedInt" use="required"/>
      <xsd:attribute name="ShapeID" type="xsd:unsignedInt"/>
      <xsd:attribute name="Date" type="xsd:dateTime" use="required"/>
      <xsd:attribute name="EditDate" type="xsd:dateTime"/>
      <xsd:attribute name="Done" type="xsd:boolean"/>
      <xsd:attribute name="CommentID" type="xsd:unsignedInt" use="required"/>
    </xsd:extension>
  </xsd:simpleContent>
</xsd:complexType>
```

2.3.4.2.10 CommentList_Type

Target namespace: <http://schemas.microsoft.com/office/visio/2011/1/core>

Referenced by: [Comments_Type](#)

A complex type that specifies the comments in a [web drawing](#).

Child Elements:

CommentEntry: A [CommentEntry Type](#) element that specifies properties used to identify a comment in a web drawing.

The following W3C XML Schema ([\[XMLSCHEMA1\]](#) section 2.1) fragment specifies the contents of this complex type.

```
<xsd:complexType name="CommentList_Type">
  <xsd:sequence>
    <xsd:element name="CommentEntry" type="CommentEntry_Type" minOccurs="0"
      maxOccurs="unbounded"/>
  </xsd:sequence>
</xsd:complexType>
```

2.3.4.2.11 Comments_Type

Target namespace: <http://schemas.microsoft.com/office/visio/2011/1/core>

Referenced by: [Comments](#)

A complex type that specifies properties used to identify the authors and comments in a [web drawing](#).

Child Elements:

AuthorList: An [AuthorList Type](#) element that specifies the authors in a web drawing.

CommentList: A [CommentList Type](#) element that specifies the comments in a web drawing.

The following W3C XML Schema ([\[XMLSCHEMA1\]](#) section 2.1) fragment specifies the contents of this complex type.

```
<xsd:complexType name="Comments_Type">
  <xsd:sequence>
    <xsd:element name="AuthorList" type="AuthorList_Type" minOccurs="0" maxOccurs="1"/>
    <xsd:element name="CommentList" type="CommentList_Type" minOccurs="0" maxOccurs="1"/>
  </xsd:sequence>
</xsd:complexType>
```

2.3.4.2.12 Connect_Type

Target namespace: <http://schemas.microsoft.com/office/visio/2011/1/core>

Referenced by: [Connects Type](#)

A complex type that is unused and MUST be ignored.

Attributes:

FromSheet: A `xsd:unsignedInt` ([\[XMLSCHEMA2\]](#) section 3.3.22) attribute that is unused and MUST be ignored.

FromCell: A `xsd:string` ([\[XMLSCHEMA2\]](#) section 3.2.1) attribute that is unused and MUST be ignored.

FromPart: A xsd:int ([XMLSCHEMA2] section 3.3.17) attribute that is unused and MUST be ignored.

ToSheet: A xsd:unsignedInt ([XMLSCHEMA2] section 3.3.22) attribute that is unused and MUST be ignored.

ToCell: A xsd:string ([XMLSCHEMA2] section 3.2.1) attribute that is unused and MUST be ignored.

ToPart: A xsd:int ([XMLSCHEMA2] section 3.3.17) attribute that is unused and MUST be ignored.

The following W3C XML Schema ([XMLSCHEMA1] section 2.1) fragment specifies the contents of this complex type.

```
<xsd:complexType name="Connect_Type">
  <xsd:attribute name="FromSheet" type="xsd:unsignedInt" use="required"/>
  <xsd:attribute name="FromCell" type="xsd:string"/>
  <xsd:attribute name="FromPart" type="xsd:int"/>
  <xsd:attribute name="ToSheet" type="xsd:unsignedInt" use="required"/>
  <xsd:attribute name="ToCell" type="xsd:string"/>
  <xsd:attribute name="ToPart" type="xsd:int"/>
</xsd:complexType>
```

2.3.4.2.13 Connects_Type

Target namespace: http://schemas.microsoft.com/office/visio/2011/1/core

Referenced by: [PageContents_Type](#)

A complex type that is unused and MUST be ignored.

Child Elements:

Connect: A Connect_Type element that is unused and MUST be ignored

The following W3C XML Schema ([XMLSCHEMA1] section 2.1) fragment specifies the contents of this complex type.

```
<xsd:complexType name="Connects_Type">
  <xsd:sequence>
    <xsd:element name="Connect" type="Connect_Type" minOccurs="0" maxOccurs="unbounded"/>
  </xsd:sequence>
</xsd:complexType>
```

2.3.4.2.14 cp_Type

Target namespace: http://schemas.microsoft.com/office/visio/2011/1/core

Referenced by: [Text_Type](#)

A complex type that specifies the beginning of a text run, and specifies an index designating the set of [character properties](#) to use.

Attributes:

IX: A xsd:unsignedInt ([XMLSCHEMA2] section 3.3.22) attribute that specifies the character properties used in the text run. It MUST be the **IX** attribute of a [Row_Type](#) that has a [Character Section_Type](#) parent element.

The following W3C XML Schema ([\[XMLSCHEMA1\]](#) section 2.1) fragment specifies the contents of this complex type.

```
<xsd:complexType name="cp_Type">
  <xsd:attribute name="IX" type="xsd:unsignedInt" use="required"/>
</xsd:complexType>
```

2.3.4.2.15 CT_Embellishment

Target namespace: <http://visThemeSchemaUri>

Referenced by: [CT_ThemeScheme](#)

Specifies [embellishment](#) information of a primary scheme [dynamic theme component](#) in a [dynamic theme](#).

Attributes:

val: A `xsd:unsignedByte` ([\[XMLSCHEMA2\]](#) section 3.3.24) attribute that specifies the embellishment value. It MUST be a value greater than or equal to zero, and less than or equal to three.

The following W3C XML Schema ([\[XMLSCHEMA1\]](#) section 2.1) fragment specifies the contents of this complex type.

```
<xsd:complexType name="CT_Embellishment" oxsd:cname="Embellishment">
  <xsd:attribute name="val" type="xsd:unsignedByte" use="required"/>
</xsd:complexType>
```

2.3.4.2.16 CT_FmtSchemeEx

Target namespace: <http://visThemeSchemaUri>

Referenced by: **Ext** element as specified by the **CT_OfficeArtExtension** type specified in **[ISO/IEC-29500-1]** section 20.1.2.2.14.

Child Elements:

schemeID: A [CT_SchemeID](#) element that specifies the index of an effect scheme [dynamic theme component](#) or a connector scheme dynamic theme component.

The following W3C XML Schema ([\[XMLSCHEMA1\]](#) section 2.1) fragment specifies the contents of this complex type.

```
<xsd:complexType name="CT_FmtSchemeEx" oxsd:cname="StyleMatrixEx" oxsd:cwrap="noTemplate">
  <xsd:sequence>
    <xsd:element name="schemeID" type="CT_SchemeID" minOccurs="1" maxOccurs="1"/>
  </xsd:sequence>
</xsd:complexType>
```

2.3.4.2.17 CT_LineEx

Target namespace: <http://visThemeSchemaUri>

Referenced by: [CT_LineStyle](#)

A complex type that specifies [line properties](#) information of an effect scheme or a connector scheme [dynamic theme component](#) in a [dynamic theme](#).

Attributes:

rndg: An a:ST_PositiveCoordinate ([ISO/IEC-29500-1] section 20.1.10.42) attribute that specifies the rounding radius of the outline of a [shape](#). The value of the structure MUST be greater than or equal to zero inches. The value of zero specifies that there is no rounding. A value greater than zero specifies that any corner between two line segments, a line segment and an elliptical arc, or two elliptical arcs within the outline is rounded with a radius equal to the value.

start: A xsd:unsignedByte ([XMLSCHEMA2] section 3.3.24) attribute that specifies an arrowhead at the first vertex of a one-dimensional shape.

The value of the structure MUST be specified by the table in the [BeginArrow Cell_Type](#) element, and it MUST NOT be 254.

startSize: A xsd:unsignedByte ([XMLSCHEMA2] section 3.3.24) attribute that specifies the size of the arrowhead at the first vertex of a shape.

The value of the structure MUST be specified by the table in the [BeginArrowSize Cell_Type](#) element.

end: A xsd:unsignedByte ([XMLSCHEMA2] section 3.3.24) attribute that specifies an arrowhead at the last vertex of a one-dimensional shape.

The value of the structure MUST be specified by the table in the [BeginArrow Cell_Type](#) element, and it MUST NOT be 254.

endSize: A xsd:unsignedByte ([XMLSCHEMA2] section 3.3.24) attribute that specifies the size of the arrowhead at the last vertex of a shape.

The value of the structure MUST be specified by the table in the [BeginArrowSize Cell_Type](#) element.

The following W3C XML Schema ([XMLSCHEMA1] section 2.1) fragment specifies the contents of this complex type.

```
<xsd:complexType name="CT_LineEx" xmlns:oxsd="http://schemas.microsoft.com/visio/2012/visio" xmlns:a="http://schemas.microsoft.com/visio/2012/visio" base="xsd:complexType" content="attributeOnly">
  <xsd:attribute name="rndg" type="a:ST_PositiveCoordinate" use="optional"
    xmlns:oxsd="http://schemas.microsoft.com/visio/2012/visio" />
  <xsd:attribute name="start" type="xsd:unsignedByte" use="optional"
    xmlns:oxsd="http://schemas.microsoft.com/visio/2012/visio" />
  <xsd:attribute name="startSize" type="xsd:unsignedByte" use="optional"
    xmlns:oxsd="http://schemas.microsoft.com/visio/2012/visio" />
  <xsd:attribute name="end" type="xsd:unsignedByte" use="optional"
    xmlns:oxsd="http://schemas.microsoft.com/visio/2012/visio" />
  <xsd:attribute name="endSize" type="xsd:unsignedByte" use="optional"
    xmlns:oxsd="http://schemas.microsoft.com/visio/2012/visio" />
</xsd:complexType>
```

2.3.4.2.18 CT_LineStyle

Target namespace: <http://visioThemeSchemaUri>

Referenced by: [CT_SchemeLineStyles](#)

Specifies [line properties](#) and [sketch effect set](#) information of an effect scheme [dynamic theme component](#) or a connector scheme dynamic theme component in a [dynamic theme](#).

Child Elements:

lineEx: A [CT_LineEx](#) element that specifies the line properties information.

sketch: A [CT_Sketch](#) element that specifies sketch effect set information.

extLst: An a:CT_OfficeArtExtensionList ([ISO/IEC-29500-1] section 20.1.2.2.15) type which is unused and MUST be ignored.

The following W3C XML Schema ([XMLSCHEMA1](#) section 2.1) fragment specifies the contents of this complex type.

```
<xsd:complexType name="CT_LineStyle" oxsd:cname="LineStyle" oxsd:cwrap="noTemplate">
  <xsd:sequence>
    <xsd:element name="lineEx" oxsd:cname="lineEx" type="CT_LineEx" minOccurs="1"
      maxOccurs="1"/>
    <xsd:element name="sketch" oxsd:cname="sketch" type="CT_Sketch" minOccurs="0"
      maxOccurs="1" oxsd:dataStructure="optional"/>
    <xsd:element name="extLst" oxsd:cname="ext" type="a:CT_OfficeArtExtensionList"
      minOccurs="0" maxOccurs="1" oxsd:dataStructure="optional"/>
  </xsd:sequence>
</xsd:complexType>
```

2.3.4.2.19 CT_LineStyles

Target namespace: http://visThemeSchemaUri

Referenced by: **Ext** element as specified by the **CT_OfficeArtExtension** type specified in [ISO/IEC-29500-1] section 20.1.2.2.14.

Child Elements:

fmtConnectorSchemeLineStyles: A [CT_SchemeLineStyles](#) element that specifies [line properties](#) and [sketch effect set](#) information of a connector scheme [dynamic theme component](#) in a [dynamic theme](#).

fmtSchemeLineStyles: A CT_SchemeLineStyles element that specifies line properties and sketch effect set information of an effect scheme dynamic theme component in a dynamic theme.

The following W3C XML Schema ([XMLSCHEMA1](#) section 2.1) fragment specifies the contents of this complex type.

```
<xsd:complexType name="CT_LineStyles" oxsd:cname="LineStyles" oxsd:cwrap="noTemplate">
  <xsd:sequence>
    <xsd:element name="fmtConnectorSchemeLineStyles"
      oxsd:cname="fmtConnectorSchemeLineStyles" type="CT_SchemeLineStyles" minOccurs="1"
      maxOccurs="1"/>
    <xsd:element name="fmtSchemeLineStyles" oxsd:cname="fmtSchemeLineStyles"
      type="CT_SchemeLineStyles" minOccurs="1" maxOccurs="1"/>
  </xsd:sequence>
</xsd:complexType>
```

2.3.4.2.20 CT_MultiFormat

Target namespace: http://visThemeSchemaUri

Referenced by: [CT_ThemeScheme](#)

Specifies [multiformat](#) information of a primary scheme [dynamic theme component](#) in a [dynamic theme](#).

Attributes:

val: A `xsd:unsignedByte` ([\[XMLSCHEMA2\]](#) section 3.3.24) attribute that specifies the multiformat value. It MUST be a value greater than or equal to zero, and less than or equal to one.

The following W3C XML Schema ([\[XMLSCHEMA1\]](#) section 2.1) fragment specifies the contents of this complex type.

```
<xsd:complexType name="CT_MultiFormat" xmlns:xsd="http://www.w3.org/2001/XMLSchema" base="xsd:string">
  <xsd:attribute name="val" type="xsd:unsignedByte" use="required"/>
</xsd:complexType>
```

2.3.4.2.21 CT_OfficeStyleSheet

Target namespace: <http://schemas.openxmlformats.org/drawingml/2006/main>

Referenced by: [Theme](#)

A complex type specified in [\[ISO/IEC-29500-1\]](#) section 20.1.6.9 that specifies a [dynamic theme](#).

The following descendant elements of a `CT_OfficeStyleSheet` element specified in [\[ISO/IEC-29500-1\]](#) section 20.1.6.9 are unused and MUST be ignored.

- **ObjectDefaults** element detailed by the **CT_ObjectStyleDefaults** type specified in [\[ISO/IEC-29500-1\]](#) section 20.1.6.7.
- **ExtraClrSchemeLst** element detailed by the **CT_ColorSchemeList** type specified in [\[ISO/IEC-29500-1\]](#) section 20.1.6.5.
- **Dk2** element detailed by the **CT_Color** type specified in [\[ISO/IEC-29500-1\]](#) section 20.1.4.1.10.
- **Lt2** element detailed by the **CT_Color** type specified in [\[ISO/IEC-29500-1\]](#) section 20.1.4.1.23.
- **Hlink** element detailed by the **CT_Color** type specified in [\[ISO/IEC-29500-1\]](#) section 20.1.4.1.19.
- **FolHlink** element detailed by the **CT_Color** type specified in [\[ISO/IEC-29500-1\]](#) section 20.1.4.1.15.
- **MajorFont** element detailed by the **CT_FontCollection** type specified in [\[ISO/IEC-29500-1\]](#) section 20.1.4.1.24.
- **BgFillStyleLst** element detailed by the **CT_BackgroundFillStyleList** type specified in [\[ISO/IEC-29500-1\]](#) section 20.1.4.1.7.
- **Camera** element detailed by the **CT_Camera** type specified in [\[ISO/IEC-29500-1\]](#) section 20.1.5.5.
- **HueMod** element detailed by the **CT_PositivePercentage** type specified in [\[ISO/IEC-29500-1\]](#) section 20.1.2.3.15.

- **CustClrLst** element detailed by the **CT_CustomColorList** type specified in [ISO/IEC-29500-1] section 20.1.6.3.
- **HeadEnd** element detailed by the **CT_LineEndProperties** type specified in [ISO/IEC-29500-1] section 20.1.8.38.
- **TailEnd** element detailed by the **CT_LineEndProperties** type specified in [ISO/IEC-29500-1] section 20.1.8.57.
- **Round** element detailed by the **CT_LineJoinRound** type specified in [ISO/IEC-29500-1] section 20.1.8.52.
- **PattFill** element detailed by the **CT_PatternFillProperties** type specified in [ISO/IEC-29500-1] section 20.1.8.47.
- **NoFill** element detailed by the **CT_NoFillProperties** type specified in [ISO/IEC-29500-1] section 20.1.8.44.
- **Miter** element detailed by the **CT_LineJoinMiterProperties** type specified in [ISO/IEC-29500-1] section 20.1.8.43.
- **CustDash** element detailed by the **CT_DashStopList** type specified in [ISO/IEC-29500-1] section 20.1.8.21.
- **BlipFill** element detailed by the **CT_BlipFillProperties** type specified in [ISO/IEC-29500-1] section 20.1.8.14.
- **GrpFill** element detailed by the **CT_GroupFillProperties** type specified in [ISO/IEC-29500-1] section 20.1.8.35.
- **TileRect** element detailed by the **CT_RelativeRect** type specified in [ISO/IEC-29500-1] section 20.1.8.59.
- **EffectDag** element detailed by the **CT_EffectContainer** type specified in [ISO/IEC-29500-1] section 20.1.8.25.
- **Blur** element detailed by the **CT_BlurEffect** type specified in [ISO/IEC-29500-1] section 20.1.8.15.
- **FillOverlay** element detailed by the **CT_FillOverlayEffect** type specified in [ISO/IEC-29500-1] section 20.1.8.29.
- **PrstShdw** element detailed by the **CT_PresetShadowEffect** type specified in [ISO/IEC-29500-1] section 20.1.8.49.

The attributes of the descendant elements of a **CT_OfficeStyleSheet** element specified in [ISO/IEC-29500-1] section 20.1.6.9 listed in the following table are unused and MUST be ignored.

Element	Attributes
Lin as specified by the CT_LinearShadeProperties type specified in [ISO/IEC-29500-1] section 20.1.8.41.	Scaled
Ln as specified by the CT_LineProperties type specified in [ISO/IEC-29500-1] section 20.1.2.2.24.	Align
LightRig as specified by the CT_LightRig type specified in [ISO/IEC-29500-1] section 20.1.5.9.	Dir

Element	Attributes
Rot as specified by the CT_SphereCoords type specified in [ISO/IEC-29500-1] section 20.1.5.11.	Lat and long
GradFill as specified by the CT_GradientFillProperties type specified in [ISO/IEC-29500-1] section 20.1.8.33.	Flip
OuterShdw as specified by the CT_OuterShadowEffect type specified in [ISO/IEC-29500-1] section 20.1.8.45.	Align , kx , ky , sx , and sy
Reflection as specified by the CT_ReflectionEffect type specified in [ISO/IEC-29500-1] section 20.1.8.50.	Align , dir , endA , fadeDir , kx , ky , rotWithShape , stPos , sx , and sy

Child Elements:

themeElements: A **CT_BaseStyles** (**[ISO/IEC-29500-1]** section §A.4.1) element that specifies the [dynamic theme components](#) of a dynamic theme.

Attributes:

name: A xsd:string ([\[XMLSCHEMA2\]](#) section 3.2.1) attribute that specifies the language-independent name of the dynamic theme.

The following W3C XML Schema ([\[XMLSCHEMA1\]](#) section 2.1) fragment specifies the contents of this complex type.

```
<xsd:complexType name="CT_OfficeStyleSheet">
  <xsd:sequence>
    <xsd:element name="themeElements" type="CT_BaseStyles" minOccurs="1" maxOccurs="1"/>
    <xsd:element name="objectDefaults" type="CT_ObjectStyleDefaults" minOccurs="0"
maxOccurs="1"/>
    <xsd:element name="extraClrSchemeLst" type="CT_ColorSchemeList" minOccurs="0"
maxOccurs="1"/>
    <xsd:element name="custClrLst" type="CT_CustomColorList" minOccurs="0" maxOccurs="1"/>
    <xsd:element name="extLst" type="CT_OfficeArtExtensionList" minOccurs="0" maxOccurs="1"/>
  </xsd:sequence>
  <xsd:attribute name="name" type="xsd:string" use="optional" default=""/>
</xsd:complexType>
```

2.3.4.2.22 CT_SchemeID

Target namespace: http://visThemeSchemaUri

Referenced by: [CT_ThemeScheme](#), [CT_FmtSchemeEx](#), and **ext** element detailed by the **CT_OfficeArtExtension** type specified in **[ISO/IEC-29500-1]** section 20.1.2.2.14.

Specifies the index of a color scheme, font scheme, effect scheme, connector scheme, or primary scheme [dynamic theme component](#) in a [dynamic theme](#), or the GUID of a [custom dynamic theme color scheme](#).

Attributes:

schemeEnum: A xsd:unsignedInt ([\[XMLSCHEMA2\]](#) section 3.3.22) attribute that specifies the one-based index of a color scheme, font scheme, effect scheme, connector scheme, or primary scheme dynamic theme component. If the value of the structure is equal to 65535, the GUID of a custom dynamic theme color scheme is specified by the **schemeGUID** attribute.

schemeGUID: An a:ST_Guid ([ISO/IEC-29500-1] section 22.9.2.4) attribute that specifies the GUID of a custom dynamic theme color scheme. If the value of the **schemeEnum** attribute is not equal to 65535, this attribute is unused and MUST be ignored.

The following W3C XML Schema ([XMLSCHEMA1] section 2.1) fragment specifies the contents of this complex type.

```
<xsd:complexType name="CT_SchemeID" oxsd:cname="SchemeID" oxsd:cwrap="noTemplate">
  <xsd:attribute name="schemeEnum" type="xsd:unsignedInt" use="optional" oxsd:cname="enum"/>
  <xsd:attribute name="schemeGUID" type="a:ST_Guid" use="optional" oxsd:cname="guid"/>
</xsd:complexType>
```

2.3.4.2.23 CT_SchemeLineStyles

Target namespace: http://visThemeSchemaUri

Referenced by: [CT_LineStyles](#)

Specifies a set of [line properties](#) and [sketch effect set](#) information of an effect scheme or connector scheme [dynamic theme component](#) in a [dynamic theme](#).

Child Elements:

lineStyle: A [CT_LineStyle](#) element that specifies line properties and sketch effect set information of an effect scheme or connector scheme dynamic theme component.

The following W3C XML Schema ([XMLSCHEMA1] section 2.1) fragment specifies the contents of this complex type.

```
<xsd:complexType name="CT_SchemeLineStyles" oxsd:cname="SchemeLineStyles"
  oxsd:cwrap="noTemplate">
  <xsd:sequence>
    <xsd:element name="lineStyle" oxsd:cname="lineStyle" type="CT_LineStyle" minOccurs="3"
      maxOccurs="unbounded"/>
  </xsd:sequence>
</xsd:complexType>
```

2.3.4.2.24 CT_Sketch

Target namespace: http://visThemeSchemaUri

Referenced by: [CT_LineStyle](#)

A complex type that specifies [sketch effect set](#) information of an effect scheme or connector scheme [dynamic theme component](#) in a [dynamic theme](#).

Attributes:

InAmp: An a:ST_PositiveFixedPercentage ([ISO/IEC-29500-1] section 22.9.2.10) attribute that specifies the amplitude of the path perturbations for a sketch effect set. The value of the structure MUST be expressed as a percentage, and MUST be greater than or equal to zero and less than or equal to one. The value is normalized such that a value of 1 corresponds to 100 percent. A value of zero specifies no perturbation to the path; a value of one specifies maximum perturbation.

fillAmp: An a:ST_PositiveFixedPercentage ([ISO/IEC-29500-1] section 22.9.2.10) attribute that specifies the amplitude of the fill perturbations for a sketch effect set. The value of the structure MUST be expressed as a percentage, and MUST be greater than or equal to zero and less than or equal to one. The value is normalized such that a value of 1 corresponds to 100 percent. A value of zero specifies no perturbation to the fill; a value of one specifies maximum perturbation.

lnWeight: An a:ST_PositiveCoordinate ([ISO/IEC-29500-1] section 22.1.10.42) attribute that specifies the amplitude of the path perturbations for a sketch effect set. The value of the structure MUST be expressed as a percentage, and MUST be greater than or equal to zero and less than or equal to one. The value is normalized such that a value of 1 corresponds to 100 percent. A value of zero specifies no perturbation to the path; a value of one specifies maximum perturbation.

numPts: A xsd:unsignedByte ([XMLSCHEMA2] section 3.3.24) attribute that specifies the number of points, distributed uniformly across each path segment of a [shape](#), where perturbations are performed for a sketch effect set. It MUST have a value greater than or equal to zero and less than or equal to 25, with a default value of five.

The following W3C XML Schema ([XMLSCHEMA1] section 2.1) fragment specifies the contents of this complex type.

```
<xsd:complexType name="CT_Sketch" oxsd:cname="Sketch" oxsd:cwrap="noTemplate"
  oxsd:cexport="true">
  <xsd:attribute name="lnAmp" type="a:ST_PositiveFixedPercentage" use="optional"
    oxsd:cname="lnAmp"/>
  <xsd:attribute name="fillAmp" type="a:ST_PositiveFixedPercentage" use="optional"
    oxsd:cname="fillAmp"/>
  <xsd:attribute name="lnWeight" type="a:ST_PositiveCoordinate" use="optional"
    oxsd:cname="lnWeight"/>
  <xsd:attribute name="numPts" type="xsd:unsignedByte" use="optional" oxsd:cname="numPts"/>
</xsd:complexType>
```

2.3.4.2.25 CT_ThemeScheme

Target namespace: <http://visThemeSchemaUri>

Referenced by: **Ext** element as detailed by the **CT_OfficeArtExtension** type specified in [ISO/IEC-29500-1] section 20.1.2.2.14.

Specifies the primary scheme [dynamic theme component](#) in a [dynamic theme](#).

Child Elements:

schemeID: A [CT_SchemeID](#) element that specifies the index of the primary scheme dynamic theme component.

embellishment: A [CT_Embellishment](#) element that specifies [embellishment](#) information.

multiformat: A [CT_MultiFormat](#) element that specifies multiformat information.

The following W3C XML Schema ([XMLSCHEMA1] section 2.1) fragment specifies the contents of this complex type.

```
<xsd:complexType name="CT_ThemeScheme" oxsd:cname="ThemeScheme" oxsd:cwrap="noTemplate">
  <xsd:sequence>
    <xsd:element name="schemeID" type="CT_SchemeID" minOccurs="1" maxOccurs="1"/>
    <xsd:element name="embellishment" type="CT_Embellishment" minOccurs="1" maxOccurs="1"/>
  </xsd:sequence>
</xsd:complexType>
```

```

        <xsd:element name="multiformat" type="CT_MultiFormat" minOccurs="1" maxOccurs="1"/>
    </xsd:sequence>
</xsd:complexType>

```

2.3.4.2.26 CustomMenusFile_Type

Target namespace: <http://schemas.microsoft.com/office/visio/2011/1/core>

Referenced by: [DocumentSettings_Type](#)

A complex type that is unused and MUST be ignored.

The following W3C XML Schema ([\[XMLSCHEMA1\]](#) section 2.1) fragment specifies the contents of this complex type.

```

<xsd:complexType name="CustomMenusFile_Type">
  <xsd:simpleContent>
    <xsd:extension base="xsd:string"/>
  </xsd:simpleContent>
</xsd:complexType>

```

2.3.4.2.27 CustomToolbarsFile_Type

Target namespace: <http://schemas.microsoft.com/office/visio/2011/1/core>

Referenced by: [DocumentSettings_Type](#)

A complex type that is unused and MUST be ignored.

The following W3C XML Schema ([\[XMLSCHEMA1\]](#) section 2.1) fragment specifies the contents of this complex type.

```

<xsd:complexType name="CustomToolbarsFile_Type">
  <xsd:simpleContent>
    <xsd:extension base="xsd:string"/>
  </xsd:simpleContent>
</xsd:complexType>

```

2.3.4.2.28 Data_Type

Target namespace: <http://schemas.microsoft.com/office/visio/2011/1/core>

Referenced by: [ShapeSheet_Type](#)

A complex type that is unused and MUST be ignored.

The following W3C XML Schema ([\[XMLSCHEMA1\]](#) section 2.1) fragment specifies the contents of this complex type.

```

<xsd:complexType name="Data_Type">
  <xsd:simpleContent>
    <xsd:extension base="xsd:string"/>
  </xsd:simpleContent>

```

</xsd:complexType>

2.3.4.2.29 DataColumn_Type

Target namespace: <http://schemas.microsoft.com/office/visio/2011/1/core>

Referenced by: [DataColumns_Type](#)

A complex type that specifies a field in a [recordset](#).

Attributes:

ColumnNameID: A xsd:string ([\[XMLSCHEMA2\]](#) section 3.2.1) attribute that specifies the identifier of the field. It MUST be unique amongst all the DataColumn_Type child elements of the containing DataColumns_Type.

Name: A xsd:string ([\[XMLSCHEMA2\]](#) section 3.2.1) attribute that specifies the name of the [shape data](#) items mapped to this field in each shape that is bound to a row in the recordset as described in [data binding](#). It MUST be unique amongst all the DataColumn_Type child elements of the containing DataColumns_Type.

Label: A xsd:string ([\[XMLSCHEMA2\]](#) section 3.2.1) attribute that is unused and MUST be ignored.

OrigLabel: A xsd:string ([\[XMLSCHEMA2\]](#) section 3.2.1) that is unused and MUST be ignored.

LangID: A xsd:unsignedInt ([\[XMLSCHEMA2\]](#) section 3.3.22) attribute that is unused and MUST be ignored.

Calendar: A xsd:unsignedShort ([\[XMLSCHEMA2\]](#) section 3.3.23) attribute that is unused and MUST be ignored.

DataType: A xsd:unsignedShort ([\[XMLSCHEMA2\]](#) section 3.3.23) attribute that specifies the type of the data of this field. This value MUST be specified by [vDataType](#).

UnitType: A xsd:string ([\[XMLSCHEMA2\]](#) section 3.2.1) attribute that is unused and MUST be ignored.

Currency: A xsd:unsignedShort ([\[XMLSCHEMA2\]](#) section 3.3.23) attribute that is unused and MUST be ignored.

Degree: A xsd:unsignedInt ([\[XMLSCHEMA2\]](#) section 3.3.22) attribute that is unused and MUST be ignored.

DisplayWidth: A xsd:unsignedInt ([\[XMLSCHEMA2\]](#) section 3.3.22) attribute that is unused and MUST be ignored.

DisplayOrder: A xsd:unsignedInt ([\[XMLSCHEMA2\]](#) section 3.3.22) attribute that is unused and MUST be ignored.

Mapped: A xsd:boolean ([\[XMLSCHEMA2\]](#) section 3.2.2) attribute that is unused and MUST be ignored.

Hyperlink: A xsd:boolean ([\[XMLSCHEMA2\]](#) section 3.2.2) attribute that is unused and MUST be ignored.

The following W3C XML Schema ([\[XMLSCHEMA1\]](#) section 2.1) fragment specifies the contents of this complex type.

```

<xsd:complexType name="DataColumn_Type">
  <xsd:attribute name="ColumnNameID" type="xsd:string" use="required"/>
  <xsd:attribute name="Name" type="xsd:string" use="required"/>
  <xsd:attribute name="Label" type="xsd:string" use="required"/>
  <xsd:attribute name="OrigLabel" type="xsd:string"/>
  <xsd:attribute name="LangID" type="xsd:unsignedInt"/>
  <xsd:attribute name="Calendar" type="xsd:unsignedShort"/>
  <xsd:attribute name="DataType" type="xsd:unsignedShort"/>
  <xsd:attribute name="UnitType" type="xsd:string"/>
  <xsd:attribute name="Currency" type="xsd:unsignedShort"/>
  <xsd:attribute name="Degree" type="xsd:unsignedInt"/>
  <xsd:attribute name="DisplayWidth" type="xsd:unsignedInt"/>
  <xsd:attribute name="DisplayOrder" type="xsd:unsignedInt"/>
  <xsd:attribute name="Mapped" type="xsd:boolean"/>
  <xsd:attribute name="Hyperlink" type="xsd:boolean"/>
</xsd:complexType>

```

2.3.4.2.30 DataColumnns_Type

Target namespace: <http://schemas.microsoft.com/office/visio/2011/1/core>

Referenced by: [DataRecordSet_Type](#)

A complex type that specifies a collection of fields in a [recordset](#).

Child Elements:

DataColumn: A [DataColumn_Type](#) element that specifies a field in a recordset.

Attributes:

SortColumn: A xsd:string ([\[XMLSCHEMA2\]](#) section 3.2.1) attribute that is unused and MUST be ignored.

SortAsc: A xsd:boolean ([\[XMLSCHEMA2\]](#) section 3.2.2) attribute that is unused and MUST be ignored.

The following W3C XML Schema ([\[XMLSCHEMA1\]](#) section 2.1) fragment specifies the contents of this complex type.

```

<xsd:complexType name="DataColumns_Type">
  <xsd:sequence>
    <xsd:element name="DataColumn" type="DataColumn_Type" minOccurs="1"
      maxOccurs="unbounded"/>
  </xsd:sequence>
  <xsd:attribute name="SortColumn" type="xsd:string"/>
  <xsd:attribute name="SortAsc" type="xsd:boolean"/>
</xsd:complexType>

```

2.3.4.2.31 DataConnection_Type

Target namespace: <http://schemas.microsoft.com/office/visio/2011/1/core>

Referenced by: [DataConnections_Type](#)

A complex type that specifies a [data connection](#).

Attributes:

ID: A xsd:unsignedInt ([XMLSCHEMA2] section 3.3.22) attribute that specifies the identifier of a data connection. It MUST be unique amongst all the DataConnection_Type child elements of the containing DataConnections_Type.

FileName: A xsd:string ([XMLSCHEMA2] section 3.2.1) attribute that specifies the full path of an **Office data connection (ODC) file** or data source (1) file. If the type of data source specified in the **ConnectionString** attribute corresponds to a **List** or Custom **add-in**, the value of this attribute MUST be an empty string.

ConnectionString: A xsd:string ([XMLSCHEMA2] section 3.2.1) attribute that specifies the **connection string** to a data source (1). It MUST be a valid connection string as specified in [MS-ODBCSTR]. If the type of the data source specified in the connection string is listed in the following table, the syntax of the connection string MUST match the syntax specified in the following table. Otherwise, the DataConnection_Type MUST be ignored.

Type of data source	Syntax
OLE DB	MUST be a valid connection string as specified in [MS-ODBCSTR]
ODBC	MUST be a valid connection string as specified in [MS-ODBCSTR]
List	<p>MUST be in the following format: "PROVIDER=WSS;DATABASE=<i>list URL</i>;LIST={<i>list GUID</i>};<i>viewparam</i>"</p> <ul style="list-style-type: none"><i>list URL</i> is the URL of a list<i>list GUID</i> is the GUID of the list<i>viewparam</i> MUST be in the format "VIEW={<i>view GUID</i>};", if the data source is a view of a list, where <i>view GUID</i> is the GUID of the view; otherwise, <i>viewparam</i> MUST be an empty string
Workbook	<p>MUST be a valid connection string as specified in [MS-ODBCSTR] and MUST contain the following key-value pairs: "DataModule=Microsoft.Office.Visio.Server.EcsDataHandler,Microsoft.Office.Visio.Server;Data Source=<i>workbook URL</i>;Extended Properties='HDR=<i>hdrvalue</i>';"</p> <ul style="list-style-type: none"><i>workbook URL</i> is the URL of a workbook.<i>hdrvalue</i> equals YES, if the first row of data is the header row (1); otherwise, it equals NO. <p>Other key-value pairs are unused and MUST be ignored.</p>
Custom add-in	<p>MUST be a valid connection string as specified in [MS-ODBCSTR] and MUST be in the following format: "DataModule=<i>class name</i>,<i>assembly name</i>;Add-in key=<i>value pairs</i>;"</p> <ul style="list-style-type: none"><i>class name</i> is a class name<i>assembly name</i> is an assembly name<i>value pairs</i> is a semicolon-separated set of key-value pairs specific to the add-in

Command: A xsd:string ([XMLSCHEMA2] section 3.2.1) attribute that specifies the query in a data connection.

FriendlyName: A xsd:string ([XMLSCHEMA2] section 3.2.1) attribute that is unused and MUST be ignored.

Timeout: A xsd:unsignedInt ([XMLSCHEMA2] section 3.3.22) attribute that is unused and MUST be ignored.

AlwaysUseConnectionFile: A xsd:boolean ([XMLSCHEMA2] section 3.2.2) attribute that specifies whether the Office data connection (ODC) file specified by the **FileName** attribute is opened when [refreshing](#) a data connection. It MUST be equal to zero or one. A value of one specifies that the file MUST be opened and a new connection string and query read from the file. A value of zero specifies that the file MUST NOT be opened.

The following W3C XML Schema ([XMLSCHEMA1] section 2.1) fragment specifies the contents of this complex type.

```
<xsd:complexType name="DataConnection_Type">
  <xsd:attribute name="ID" type="xsd:unsignedInt" use="required"/>
  <xsd:attribute name="FileName" type="xsd:string" use="required"/>
  <xsd:attribute name="ConnectionString" type="xsd:string"/>
  <xsd:attribute name="Command" type="xsd:string"/>
  <xsd:attribute name="FriendlyName" type="xsd:string"/>
  <xsd:attribute name="Timeout" type="xsd:unsignedInt"/>
  <xsd:attribute name="AlwaysUseConnectionFile" type="xsd:boolean"/>
</xsd:complexType>
```

2.3.4.2.32 DataConnections_Type

Target namespace: <http://schemas.microsoft.com/office/visio/2011/1/core>

Referenced by: [DataConnections](#)

A complex type that specifies a collection of [data connections](#) in a [web drawing](#).

Child Elements:

DataConnection: A [DataConnection_Type](#) element that specifies a data connection.

Attributes:

NextID: A xsd:unsignedInt ([XMLSCHEMA2] section 3.3.22) attribute that specifies the next sequential identifier of a DataConnection_Type. It MUST be a value that is one greater than the largest value found amongst the **ID** attributes of all DataConnection_Type elements in this collection.

The following W3C XML Schema ([XMLSCHEMA1] section 2.1) fragment specifies the contents of this complex type.

```
<xsd:complexType name="DataConnections_Type">
  <xsd:sequence>
    <xsd:element name="DataConnection" type="DataConnection_Type" minOccurs="1"
      maxOccurs="unbounded"/>
  </xsd:sequence>
  <xsd:attribute name="NextID" type="xsd:unsignedInt" use="required"/>
</xsd:complexType>
```

</xsd:complexType>

2.3.4.2.33 DataRecordSet_Type

Target namespace: <http://schemas.microsoft.com/office/visio/2011/1/core>

Referenced by: [DataRecordSets_Type](#)

A complex type that specifies a [recordset](#) and the [data binding](#) between that recordset and [shapes](#) in [drawing pages](#).

Child Elements:

Rel: A [Rel_Type](#) element that is unused and MUST be ignored.

DataColumns: A [DataColumns_Type](#) element that specifies the fields of the recordset.

PrimaryKey: A [PrimaryKey_Type](#) element that specifies a component of the primary key of the recordset. If the **RowOrder** attribute does not exist or equals zero, there MUST be at least one occurrence of this element. If the **RowOrder** attribute exists and is equal to one, this element MUST NOT exist.

RowMap: A [RowMap_Type](#) element that specifies the data binding between a row in the recordset and a shape.

RefreshConflict: A [RefreshConflict_Type](#) element that is unused and MUST be ignored.

AutoLinkComparison: An [AutoLinkComparison_Type](#) element that is unused and MUST be ignored.

Attributes:

ID: A xsd:unsignedInt ([\[XMLSCHEMA2\]](#) section 3.3.22) attribute that specifies the identifier of the recordset. It MUST be unique amongst all the DataRecordSet_Type child elements of the containing DataRecordSets_Type.

ConnectionID: A xsd:unsignedInt ([\[XMLSCHEMA2\]](#) section 3.3.22) attribute that specifies the identifier of the [data connection](#) that corresponds to the recordset. It MUST be the value of the **ID** attribute of the [DataConnection_Type](#) element associated with the data connection.

Command: A xsd:string ([\[XMLSCHEMA2\]](#) section 3.2.1) attribute that specifies the query for the data connection that corresponds to the recordset.

Options: A xsd:unsignedInt ([\[XMLSCHEMA2\]](#) section 3.3.22) attribute that specifies additional information about the recordset. The value MUST be zero or a bitwise OR combination of one or more values in the following table.

Value	Description
1	Specifies that the recordset does not participate in refresh operations.
2	Unused, and MUST be ignored.
4	Unused, and MUST be ignored.
8	Unused, and MUST be ignored.

Value	Description
16	Unused, and MUST be ignored.

TimeRefreshed: A `xsd:dateTime` ([\[XMLSCHEMA2\]](#) section 3.2.7) attribute that is unused and MUST be ignored.

NextRowID: A `xsd:unsignedInt` ([\[XMLSCHEMA2\]](#) section 3.3.22) attribute that is unused and MUST be ignored.

Name: A `xsd:string` ([\[XMLSCHEMA2\]](#) section 3.2.1) attribute that specifies the display name of the recordset.

RowOrder: A `xsd:boolean` ([\[XMLSCHEMA2\]](#) section 3.2.2) attribute that specifies whether the recordset uses the row number as the primary key to bind rows of data in the recordset to shapes. It MUST be zero or one. A value of one specifies that the row number is used. If one or more `PrimaryKey_Type` child elements exists, this attribute MUST NOT exist or MUST be zero. If no `PrimaryKey_Type` child elements exist, this attribute MUST exist and MUST be one.

RefreshOverwriteAll: A `xsd:boolean` ([\[XMLSCHEMA2\]](#) section 3.2.2) attribute that specifies the conditions where a refresh operation on the recordset will update [shape data](#) values in shapes bound to the rows of the recordset. It MUST be equal to zero or one. A value of one specifies that data in shapes bound to the rows of the recordset will be updated with new data from the refreshed rows. A value of zero specifies that only the shape data values where there is a corresponding [Cell Type](#) element with an **N** attribute equal to "DataLinked" and a **V** attribute equal to "1" will be updated with new data from the refreshed row.

RefreshNoReconciliationUI: A `xsd:boolean` ([\[XMLSCHEMA2\]](#) section 3.2.2) attribute that is unused and MUST be ignored.

RefreshInterval: A `xsd:unsignedInt` ([\[XMLSCHEMA2\]](#) section 3.3.22) attribute that is unused and MUST be ignored.

ReplaceLinks: A `xsd:unsignedInt` ([\[XMLSCHEMA2\]](#) section 3.3.22) attribute that is unused and MUST be ignored.

Checksum: A `xsd:unsignedInt` ([\[XMLSCHEMA2\]](#) section 3.3.22) attribute that is unused and MUST be ignored.

The following W3C XML Schema ([\[XMLSCHEMA1\]](#) section 2.1) fragment specifies the contents of this complex type.

```
<xsd:complexType name="DataRecordSet_Type">
  <xsd:sequence>
    <xsd:element name="Rel" type="Rel_Type" minOccurs="1" maxOccurs="1"/>
    <xsd:element name="DataColumns" type="DataColumns_Type" minOccurs="1" maxOccurs="1"/>
    <xsd:element name="PrimaryKey" type="PrimaryKey_Type" minOccurs="0"
maxOccurs="unbounded"/>
    <xsd:element name="RowMap" type="RowMap_Type" minOccurs="0" maxOccurs="unbounded"/>
    <xsd:element name="RefreshConflict" type="RefreshConflict_Type" minOccurs="0"
maxOccurs="unbounded"/>
    <xsd:element name="AutoLinkComparison" type="AutoLinkComparison_Type" minOccurs="0"
maxOccurs="unbounded"/>
  </xsd:sequence>
  <xsd:attribute name="ID" type="xsd:unsignedInt" use="required"/>
  <xsd:attribute name="ConnectionID" type="xsd:unsignedInt"/>
  <xsd:attribute name="Command" type="xsd:string"/>
</complexType>
```



```

<xsd:attribute name="Options" type="xsd:unsignedInt"/>
<xsd:attribute name="TimeRefreshed" type="xsd:dateTime"/>
<xsd:attribute name="NextRowID" type="xsd:unsignedInt"/>
<xsd:attribute name="Name" type="xsd:string"/>
<xsd:attribute name="RowOrder" type="xsd:boolean"/>
<xsd:attribute name="RefreshOverwriteAll" type="xsd:boolean"/>
<xsd:attribute name="RefreshNoReconciliationUI" type="xsd:boolean"/>
<xsd:attribute name="RefreshInterval" type="xsd:unsignedInt"/>
<xsd:attribute name="ReplaceLinks" type="xsd:unsignedInt"/>
<xsd:attribute name="Checksum" type="xsd:unsignedInt"/>
</xsd:complexType>

```

2.3.4.2.34 DataRecordSets_Type

Target namespace: <http://schemas.microsoft.com/office/visio/2011/1/core>

Referenced by: [DataRecordSets](#)

A complex type that specifies a collection of [recordsets](#) and the [data binding](#) between those recordsets and [shapes](#) in [drawing pages](#).

Child Elements:

DataRecordSet: A [DataRecordSet Type](#) element that specifies a recordset and the data binding between that recordset and shapes in drawing pages.

Attributes:

NextID: A xsd:unsignedInt ([\[XMLSCHEMA2\]](#) section 3.3.22) attribute that is unused and MUST be ignored.

ActiveRecordsetID: A xsd:unsignedInt ([\[XMLSCHEMA2\]](#) section 3.3.22) attribute that is unused and MUST be ignored.

DataWindowOrder: A xsd:string ([\[XMLSCHEMA2\]](#) section 3.2.1) attribute that is unused and MUST be ignored.

The following W3C XML Schema ([\[XMLSCHEMA1\]](#) section 2.1) fragment specifies the contents of this complex type.

```

<xsd:complexType name="DataRecordSets_Type">
  <xsd:sequence>
    <xsd:element name="DataRecordSet" type="DataRecordSet_Type" minOccurs="0"
maxOccurs="unbounded"/>
  </xsd:sequence>
  <xsd:attribute name="NextID" type="xsd:unsignedInt" use="required"/>
  <xsd:attribute name="ActiveRecordsetID" type="xsd:unsignedInt"/>
  <xsd:attribute name="DataWindowOrder" type="xsd:string"/>
</xsd:complexType>

```

2.3.4.2.35 DocumentSettings_Type

Target namespace: <http://schemas.microsoft.com/office/visio/2011/1/core>

Referenced by: [VisioDocument Type](#)

A complex type that is unused and MUST be ignored.

Child Elements:

GlueSettings: A [GlueSettings_Type](#) element that is unused and MUST be ignored.

SnapSettings: A [SnapSettings_Type](#) element that is unused and MUST be ignored.

SnapExtensions: A [SnapExtensions_Type](#) element that is unused and MUST be ignored.

SnapAngles: A [SnapAngles_Type](#) element that is unused and MUST be ignored.

DynamicGridEnabled: A [DynamicGridEnabled_Type](#) element that is unused and MUST be ignored.

ProtectStyles: A [ProtectStyles_Type](#) element that is unused and MUST be ignored.

ProtectShapes: A [ProtectShapes_Type](#) element specifies whether a [shape](#) is [selectable](#).

ProtectMasters: A [ProtectMasters_Type](#) element that is unused and MUST be ignored.

ProtectBkgnds: A [ProtectBkgnds_Type](#) element that is unused and MUST be ignored.

CustomMenusFile: A [CustomMenusFile_Type](#) element that is unused and MUST be ignored.

CustomToolbarsFile: A [CustomToolbarsFile_Type](#) element that is unused and MUST be ignored.

AttachedToolbars: An [AttachedToolbars_Type](#) element that is unused and MUST be ignored.

Attributes:

TopPage: A xsd:unsignedInt ([\[XMLSCHEMA2\]](#) section 3.3.22) attribute that is unused and MUST be ignored.

DefaultTextStyle: A xsd:unsignedInt ([\[XMLSCHEMA2\]](#) section 3.3.22) attribute that is unused and MUST be ignored.

DefaultLineStyle: A xsd:unsignedInt ([\[XMLSCHEMA2\]](#) section 3.3.22) attribute that is unused and MUST be ignored.

DefaultFillStyle: A xsd:unsignedInt ([\[XMLSCHEMA2\]](#) section 3.3.22) attribute that is unused and MUST be ignored.

DefaultGuideStyle: A xsd:unsignedInt ([\[XMLSCHEMA2\]](#) section 3.3.22) attribute that is unused and MUST be ignored.

The following W3C XML Schema ([\[XMLSCHEMA1\]](#) section 2.1) fragment specifies the contents of this complex type.

```
<xsd:complexType name="DocumentSettings_Type">
  <xsd:all>
    <xsd:element name="GlueSettings" type="GlueSettings_Type" minOccurs="0" maxOccurs="1"/>
    <xsd:element name="SnapSettings" type="SnapSettings_Type" minOccurs="0" maxOccurs="1"/>
    <xsd:element name="SnapExtensions" type="SnapExtensions_Type" minOccurs="0"
maxOccurs="1"/>
    <xsd:element name="SnapAngles" type="SnapAngles_Type" minOccurs="0" maxOccurs="1"/>
    <xsd:element name="DynamicGridEnabled" type="DynamicGridEnabled_Type" minOccurs="0"
maxOccurs="1"/>
    <xsd:element name="ProtectStyles" type="ProtectStyles_Type" minOccurs="0" maxOccurs="1"/>
    <xsd:element name="ProtectShapes" type="ProtectShapes_Type" minOccurs="0" maxOccurs="1"/>
  </xsd:all>
</xsd:complexType>
```

```

    <xsd:element name="ProtectMasters" type="ProtectMasters_Type" minOccurs="0"
maxOccurs="1"/>
    <xsd:element name="ProtectBkgnds" type="ProtectBkgnds_Type" minOccurs="0" maxOccurs="1"/>
    <xsd:element name="CustomMenusFile" type="CustomMenusFile_Type" minOccurs="0"
maxOccurs="1"/>
    <xsd:element name="CustomToolbarsFile" type="CustomToolbarsFile_Type" minOccurs="0"
maxOccurs="1"/>
    <xsd:element name="AttachedToolbars" type="AttachedToolbars_Type" minOccurs="0"
maxOccurs="1"/>
  </xsd:all>
  <xsd:attribute name="TopPage" type="xsd:unsignedInt"/>
  <xsd:attribute name="DefaultTextStyle" type="xsd:unsignedInt"/>
  <xsd:attribute name="DefaultLineStyle" type="xsd:unsignedInt"/>
  <xsd:attribute name="DefaultFillStyle" type="xsd:unsignedInt"/>
  <xsd:attribute name="DefaultGuideStyle" type="xsd:unsignedInt"/>
</xsd:complexType>

```

2.3.4.2.36 DocumentSheet_Type

Target namespace: <http://schemas.microsoft.com/office/visio/2011/1/core>

Referenced by: [VisioDocument_Type](#)

A complex type that specifies properties of a [web drawing](#).

Child Elements:

Cell: A [Cell_Type](#) element that specifies a single property.

Section: A [Section_Type](#) element that specifies a collection of related properties.

Attributes:

Name: A xsd:string ([\[XMLSCHEMA2\]](#) section 3.2.1) attribute that specifies the language-dependent name of the DocumentSheet_Type.

NameU: A xsd:string ([\[XMLSCHEMA2\]](#) section 3.2.1) attribute that specifies the language-independent name of the DocumentSheet_Type.

IsCustomName: A xsd:boolean ([\[XMLSCHEMA2\]](#) section 3.2.2) attribute that is unused and MUST be ignored.

IsCustomNameU: A xsd:boolean ([\[XMLSCHEMA2\]](#) section 3.2.2) attribute that is unused and MUST be ignored.

UniqueID: A xsd:string ([\[XMLSCHEMA2\]](#) section 3.2.1) attribute that is unused and MUST be ignored.

LineStyle: A xsd:unsignedInt ([\[XMLSCHEMA2\]](#) section 3.3.22) attribute that specifies the identifier of the [style sheet](#) from which to [inherit](#) line formatting. It MUST be the value of the **ID** attribute associated with a [StyleSheet_Type](#) in the web drawing.

FillStyle: A xsd:unsignedInt ([\[XMLSCHEMA2\]](#) section 3.3.22) attribute that specifies the identifier of the style sheet from which to inherit fill formatting. It MUST be the value of the **ID** attribute associated with a [StyleSheet_Type](#) in the web drawing.

TextStyle: A `xsd:unsignedInt` ([\[XMLSCHEMA2\]](#) section 3.3.22) attribute that specifies the identifier of the style sheet from which to inherit text formatting. It MUST be the value of the **ID** attribute associated with a `StyleSheet_Type` in the web drawing.

The following W3C XML Schema ([\[XMLSCHEMA1\]](#) section 2.1) fragment specifies the contents of this complex type.

```
<xsd:complexType name="DocumentSheet_Type">
  <xsd:complexContent>
    <xsd:extension base="Sheet_Type">
      <xsd:attribute name="Name" type="xsd:string"/>
      <xsd:attribute name="NameU" type="xsd:string"/>
      <xsd:attribute name="IsCustomName" type="xsd:boolean"/>
      <xsd:attribute name="IsCustomNameU" type="xsd:boolean"/>
      <xsd:attribute name="UniqueID" type="xsd:string"/>
    </xsd:extension>
  </xsd:complexContent>
</xsd:complexType>
```

2.3.4.2.37 DynamicGridEnabled_Type

Target namespace: <http://schemas.microsoft.com/office/visio/2011/1/core>

Referenced by: [DocumentSettings_Type](#)

A complex type that is unused and MUST be ignored.

The following W3C XML Schema ([\[XMLSCHEMA1\]](#) section 2.1) fragment specifies the contents of this complex type.

```
<xsd:complexType name="DynamicGridEnabled_Type">
  <xsd:simpleContent>
    <xsd:extension base="xsd:boolean"/>
  </xsd:simpleContent>
</xsd:complexType>
```

2.3.4.2.38 Extensions_Type

Target namespace: <http://schemas.microsoft.com/office/visio/2011/1/core>

Referenced by: [Extensions](#)

A complex type that specifies [sections](#), [rows](#), and [cells](#) that are not specified in this specification.

Child Elements:

CellDef: A [CellDef_Type](#) element that specifies the definition of a cell that is not specified in this specification.

FunctionDef: A [FunctionDef_Type](#) element that specifies the definition of a [function token](#) that is not specified in this specification.

SectionDef: A [SectionDef_Type](#) element that specifies the definition of a section that is not specified in this specification.

The following W3C XML Schema ([\[XMLSCHEMA1\]](#) section 2.1) fragment specifies the contents of this complex type.

```
<xsd:complexType name="Extensions_Type">
  <xsd:sequence>
    <xsd:element name="CellDef" type="CellDef_Type" minOccurs="0" maxOccurs="unbounded"/>
    <xsd:element name="FunctionDef" type="FunctionDef_Type" minOccurs="0"
maxOccurs="unbounded"/>
    <xsd:element name="SectionDef" type="SectionDef_Type" minOccurs="0"
maxOccurs="unbounded"/>
  </xsd:sequence>
</xsd:complexType>
```

2.3.4.2.39 FaceName_Type

Target namespace: <http://schemas.microsoft.com/office/visio/2011/1/core>

Referenced by: [FaceNames_Type](#)

A complex type that specifies a **font** from the [font table](#) of the [web drawing](#).

Attributes:

NameU: A xsd:string ([\[XMLSCHEMA2\]](#) section 3.2.1) attribute that specifies the language-independent name of the font as a **UTF-16 Unicode** string.

UnicodeRanges: A xsd:string ([\[XMLSCHEMA2\]](#) section 3.2.1) attribute that specifies the Unicode range of the font.

CharSets: A xsd:string ([\[XMLSCHEMA2\]](#) section 3.2.1) attribute that specifies the set of supported **character sets** for the font.

Panos: A xsd:string ([\[XMLSCHEMA2\]](#) section 3.2.1) attribute that specifies the PANOSE signature for the font. The structure of the string is specified in [vPanose](#) structure.

Flags: A xsd:unsignedInt ([\[XMLSCHEMA2\]](#) section 3.3.22) attribute that is unused and MUST be ignored.

The following W3C XML Schema ([\[XMLSCHEMA1\]](#) section 2.1) fragment specifies the contents of this complex type.

```
<xsd:complexType name="FaceName_Type">
  <xsd:attribute name="NameU" type="xsd:string" use="required"/>
  <xsd:attribute name="UnicodeRanges" type="xsd:string"/>
  <xsd:attribute name="CharSets" type="xsd:string"/>
  <xsd:attribute name="Panos" type="xsd:string"/>
  <xsd:attribute name="Flags" type="xsd:unsignedInt"/>
</xsd:complexType>
```

2.3.4.2.40 FaceNames_Type

Target namespace: <http://schemas.microsoft.com/office/visio/2011/1/core>

Referenced by: [VisioDocument_Type](#)

A complex type that specifies the [font table](#) of the [web drawing](#).

Child Elements:

FaceName: A [FaceName_Type](#) element that specifies a font from the font table of the web drawing.

The following W3C XML Schema ([\[XMLSCHEMA1\]](#) section 2.1) fragment specifies the contents of this complex type.

```
<xsd:complexType name="FaceNames_Type">
  <xsd:sequence>
    <xsd:element name="FaceName" type="FaceName_Type" minOccurs="1" maxOccurs="unbounded"/>
  </xsd:sequence>
</xsd:complexType>
```

2.3.4.2.41 fld_Type

Target namespace: <http://schemas.microsoft.com/office/visio/2011/1/core>

Referenced by: [Text_Type](#)

A complex type that specifies a [text field](#) in a text run.

Attributes:

IX: A [xsd:unsignedInt](#) ([\[XMLSCHEMA2\]](#) section 3.3.22) attribute that specifies the text field to use. It MUST be the **IX** attribute of a [Row_Type](#) that has a [Field Section_Type](#) parent element.

The following W3C XML Schema ([\[XMLSCHEMA1\]](#) section 2.1) fragment specifies the contents of this complex type.

```
<xsd:complexType name="fld_Type">
  <xsd:simpleContent>
    <xsd:extension base="xsd:string">
      <xsd:attribute name="IX" type="xsd:unsignedInt" use="required"/>
    </xsd:extension>
  </xsd:simpleContent>
</xsd:complexType>
```

2.3.4.2.42 FooterCenter_Type

Target namespace: <http://schemas.microsoft.com/office/visio/2011/1/core>

Referenced by: [HeaderFooter_Type](#)

A complex type that is unused and MUST be ignored.

The following W3C XML Schema ([\[XMLSCHEMA1\]](#) section 2.1) fragment specifies the contents of this complex type.

```
<xsd:complexType name="FooterCenter_Type">
  <xsd:simpleContent>
    <xsd:extension base="xsd:string"/>
  </xsd:simpleContent>
</xsd:complexType>
```

2.3.4.2.43 FooterLeft_Type

Target namespace: <http://schemas.microsoft.com/office/visio/2011/1/core>

Referenced by: [HeaderFooter_Type](#)

A complex type that is unused and MUST be ignored.

The following W3C XML Schema ([\[XMLSCHEMA1\]](#) section 2.1) fragment specifies the contents of this complex type.

```
<xsd:complexType name="FooterLeft_Type">
  <xsd:simpleContent>
    <xsd:extension base="xsd:string"/>
  </xsd:simpleContent>
</xsd:complexType>
```

2.3.4.2.44 FooterMargin_Type

Target namespace: <http://schemas.microsoft.com/office/visio/2011/1/core>

Referenced by: [HeaderFooter_Type](#)

A complex type that is unused and MUST be ignored.

Attributes:

Unit: A [xsd:string](#) ([\[XMLSCHEMA2\]](#) section 3.2.1) attribute that is unused and MUST be ignored.

The following W3C XML Schema ([\[XMLSCHEMA1\]](#) section 2.1) fragment specifies the contents of this complex type.

```
<xsd:complexType name="FooterMargin_Type">
  <xsd:simpleContent>
    <xsd:extension base="xsd:double">
      <xsd:attribute name="Unit" type="xsd:string"/>
    </xsd:extension>
  </xsd:simpleContent>
</xsd:complexType>
```

2.3.4.2.45 FooterRight_Type

Target namespace: <http://schemas.microsoft.com/office/visio/2011/1/core>

Referenced by: [HeaderFooter_Type](#)

A complex type that is unused and MUST be ignored.

The following W3C XML Schema ([\[XMLSCHEMA1\]](#) section 2.1) fragment specifies the contents of this complex type.

```
<xsd:complexType name="FooterRight_Type">
  <xsd:simpleContent>
    <xsd:extension base="xsd:string"/>
  </xsd:simpleContent>
</xsd:complexType>
```

</xsd:complexType>

2.3.4.2.46 ForeignData_Type

Target namespace: <http://schemas.microsoft.com/office/visio/2011/1/core>

Referenced by: [ShapeSheet_Type](#)

A complex type that specifies the [image](#) of a [shape](#).

Child Elements:

Rel: A [Rel_Type](#) element that specifies a [relationship](#) to a [part](#) containing the image data.

Attributes:

ForeignType: A xsd:token ([\[XMLSCHEMA2\]](#) section 3.3.2) attribute that specifies the type of the image. It MUST be equal to a value from the following table.

Value	Meaning
Bitmap	The format of the image specified by the Rel child element is bitmap (BMP), Graphics Interchange Format (GIF), Joint Photographic Experts Group (JPEG), Portable Network Graphics (PNG) or TIFF.
EnhMetaFile	The format of the image specified by the Rel child element is enhanced metafile format (EMF).
Ink	The image specified by the Rel child element is unused and the containing shape is invisible.
Object	The format of the image specified by the Rel child element is unsupported. If the unsupported part itself has a relationship to a fallback image part and the format of the fallback image is bitmap (BMP), enhanced metafile format (EMF), Graphics Interchange Format (GIF), Joint Photographic Experts Group (JPEG), Portable Network Graphics (PNG) or TIFF, that fallback image will be used as the image of the shape; otherwise, the unsupported part MUST be ignored and the containing shape is invisible.

ObjectType: A xsd:unsignedInt ([\[XMLSCHEMA2\]](#) section 3.3.22) attribute that is unused and MUST be ignored.

ShowAsIcon: A xsd:boolean ([\[XMLSCHEMA2\]](#) section 3.2.2) attribute that is unused and MUST be ignored.

ObjectWidth: A xsd:double ([\[XMLSCHEMA2\]](#) section 3.2.5) attribute that is unused and MUST be ignored.

ObjectHeight: A xsd:double ([\[XMLSCHEMA2\]](#) section 3.2.5) attribute that is unused and MUST be ignored.

MappingMode: A xsd:unsignedShort ([\[XMLSCHEMA2\]](#) section 3.3.23) attribute that is unused and MUST be ignored.

ExtentX: A xsd:double ([\[XMLSCHEMA2\]](#) section 3.2.5) attribute that is unused and MUST be ignored.

ExtentY: A xsd:double ([\[XMLSCHEMA2\]](#) section 3.2.5) attribute that is unused and MUST be ignored.

CompressionType: A xsd:token ([\[XMLSCHEMA2\]](#) section 3.3.2) attribute that is unused and MUST be ignored.

CompressionLevel: A xsd:double ([\[XMLSCHEMA2\]](#) section 3.2.5) attribute that is unused and MUST be ignored.

The following W3C XML Schema ([\[XMLSCHEMA1\]](#) section 2.1) fragment specifies the contents of this complex type.

```
<xsd:complexType name="ForeignData_Type" mixed="true">
  <xsd:sequence>
    <xsd:element name="Rel" type="Rel_Type" minOccurs="1" maxOccurs="1"/>
  </xsd:sequence>
  <xsd:attribute name="ForeignType" type="xsd:token" use="required"/>
  <xsd:attribute name="ObjectType" type="xsd:unsignedInt"/>
  <xsd:attribute name="ShowAsIcon" type="xsd:boolean"/>
  <xsd:attribute name="ObjectWidth" type="xsd:double"/>
  <xsd:attribute name="ObjectHeight" type="xsd:double"/>
  <xsd:attribute name="MappingMode" type="xsd:unsignedShort"/>
  <xsd:attribute name="ExtentX" type="xsd:double"/>
  <xsd:attribute name="ExtentY" type="xsd:double"/>
  <xsd:attribute name="CompressionType" type="xsd:token"/>
  <xsd:attribute name="CompressionLevel" type="xsd:double"/>
</xsd:complexType>
```

2.3.4.2.47 FunctionDef_Type

Target namespace: <http://schemas.microsoft.com/office/visio/2011/1/core>

Referenced by: [Extensions_Type](#)

A complex type that specifies a [function](#) that is not specified in this specification.

Attributes:

N: A xsd:string ([\[XMLSCHEMA2\]](#) section 3.2.1) attribute that specifies the name of the function. It MUST be unique amongst all the FunctionDef_Type, [CellDef_Type](#), and [SectionDef_Type](#) elements in the [Web drawing](#). It MUST NOT be equal to the name of a function token listed in the [Function Token Definitions](#) section of this specification. It MUST NOT be equal to the name of a [section](#) listed in the [Sections](#) section of this specification. It MUST NOT be equal to the name of a [cell](#) listed in the [Cells](#) section of this specification.

The following W3C XML Schema ([\[XMLSCHEMA1\]](#) section 2.1) fragment specifies the contents of this complex type.

```
<xsd:complexType name="FunctionDef_Type">
  <xsd:attribute name="N" type="xsd:string" use="required"/>
</xsd:complexType>
```

2.3.4.2.48 GlueSettings_Type

Target namespace: <http://schemas.microsoft.com/office/visio/2011/1/core>

Referenced by: [DocumentSettings_Type](#)

A complex type that is unused and MUST be ignored.

The following W3C XML Schema ([\[XMLSCHEMA1\]](#) section 2.1) fragment specifies the contents of this complex type.

```
<xsd:complexType name="GlueSettings_Type">
  <xsd:simpleContent>
    <xsd:extension base="xsd:int"/>
  </xsd:simpleContent>
</xsd:complexType>
```

2.3.4.2.49 HeaderCenter_Type

Target namespace: <http://schemas.microsoft.com/office/visio/2011/1/core>

Referenced by: [HeaderFooter_Type](#)

A complex type that is unused and MUST be ignored.

The following W3C XML Schema ([\[XMLSCHEMA1\]](#) section 2.1) fragment specifies the contents of this complex type.

```
<xsd:complexType name="HeaderCenter_Type">
  <xsd:simpleContent>
    <xsd:extension base="xsd:string"/>
  </xsd:simpleContent>
</xsd:complexType>
```

2.3.4.2.50 HeaderFooter_Type

Target namespace: <http://schemas.microsoft.com/office/visio/2011/1/core>

Referenced by: [VisioDocument_Type](#)

A complex type that is unused and MUST be ignored.

Child Elements:

HeaderMargin: A [HeaderMargin_Type](#) element that is unused and MUST be ignored.

FooterMargin: A [FooterMargin_Type](#) element that is unused and MUST be ignored.

HeaderLeft: A [HeaderLeft_Type](#) element that is unused and MUST be ignored.

HeaderCenter: A [HeaderCenter_Type](#) element that is unused and MUST be ignored.

HeaderRight: A [HeaderRight_Type](#) element that is unused and MUST be ignored.

FooterLeft: A [FooterLeft_Type](#) element that is unused and MUST be ignored.

FooterCenter: A [FooterCenter_Type](#) element that is unused and MUST be ignored.

FooterRight: A [FooterRight_Type](#) element that is unused and MUST be ignored.

HeaderFooterFont: A [HeaderFooterFont_Type](#) element that is unused and MUST be ignored.

Attributes:

HeaderFooterColor: A xsd:string ([\[XMLSCHEMA2\]](#) section 3.2.1) attribute that is unused and MUST be ignored.

The following W3C XML Schema ([\[XMLSCHEMA1\]](#) section 2.1) fragment specifies the contents of this complex type.

```
<xsd:complexType name="HeaderFooter_Type">
  <xsd:all>
    <xsd:element name="HeaderMargin" type="HeaderMargin_Type" minOccurs="0" maxOccurs="1"/>
    <xsd:element name="FooterMargin" type="FooterMargin_Type" minOccurs="0" maxOccurs="1"/>
    <xsd:element name="HeaderLeft" type="HeaderLeft_Type" minOccurs="0" maxOccurs="1"/>
    <xsd:element name="HeaderCenter" type="HeaderCenter_Type" minOccurs="0" maxOccurs="1"/>
    <xsd:element name="HeaderRight" type="HeaderRight_Type" minOccurs="0" maxOccurs="1"/>
    <xsd:element name="FooterLeft" type="FooterLeft_Type" minOccurs="0" maxOccurs="1"/>
    <xsd:element name="FooterCenter" type="FooterCenter_Type" minOccurs="0" maxOccurs="1"/>
    <xsd:element name="FooterRight" type="FooterRight_Type" minOccurs="0" maxOccurs="1"/>
    <xsd:element name="HeaderFooterFont" type="HeaderFooterFont_Type" minOccurs="0"
maxOccurs="1"/>
  </xsd:all>
  <xsd:attribute name="HeaderFooterColor" type="xsd:string"/>
</xsd:complexType>
```

2.3.4.2.51 HeaderFooterFont_Type

Target namespace: http://schemas.microsoft.com/office/visio/2011/1/core

Referenced by: [HeaderFooter_Type](#)

A complex type that is unused and MUST be ignored.

Attributes:

Height: A xsd:int ([\[XMLSCHEMA2\]](#) section 3.3.17) attribute that is unused and MUST be ignored.

Width: A xsd:int ([\[XMLSCHEMA2\]](#) section 3.3.17) attribute that is unused and MUST be ignored.

Escapement: A xsd:int ([\[XMLSCHEMA2\]](#) section 3.3.17) attribute that is unused and MUST be ignored.

Orientation: A xsd:int ([\[XMLSCHEMA2\]](#) section 3.3.17) attribute that is unused and MUST be ignored.

Weight: A xsd:int ([\[XMLSCHEMA2\]](#) section 3.3.17) attribute that is unused and MUST be ignored.

Italic: A xsd:unsignedByte ([\[XMLSCHEMA2\]](#) section 3.3.24) attribute that is unused and MUST be ignored.

Underline: A xsd:unsignedByte ([\[XMLSCHEMA2\]](#) section 3.3.24) attribute that is unused and MUST be ignored.

StrikeOut: A xsd:unsignedByte ([\[XMLSCHEMA2\]](#) section 3.3.24) attribute that is unused and MUST be ignored.

CharSet: A xsd:unsignedByte ([\[XMLSCHEMA2\]](#) section 3.3.24) attribute that is unused and MUST be ignored.

OutPrecision: A xsd:unsignedByte ([\[XMLSCHEMA2\]](#) section 3.3.24) attribute that is unused and MUST be ignored.

ClipPrecision: A xsd:unsignedByte ([\[XMLSCHEMA2\]](#) section 3.3.24) attribute that is unused and MUST be ignored.

Quality: A xsd:unsignedByte ([\[XMLSCHEMA2\]](#) section 3.3.24) attribute that is unused and MUST be ignored.

PitchAndFamily: A xsd:unsignedByte ([\[XMLSCHEMA2\]](#) section 3.3.24) attribute that is unused and MUST be ignored.

FaceName: A xsd:string ([\[XMLSCHEMA2\]](#) section 3.2.1) attribute that is unused and MUST be ignored.

The following W3C XML Schema ([\[XMLSCHEMA1\]](#) section 2.1) fragment specifies the contents of this complex type.

```
<xsd:complexType name="HeaderFooterFont_Type">
  <xsd:attribute name="Height" type="xsd:int"/>
  <xsd:attribute name="Width" type="xsd:int"/>
  <xsd:attribute name="Escapement" type="xsd:int"/>
  <xsd:attribute name="Orientation" type="xsd:int"/>
  <xsd:attribute name="Weight" type="xsd:int"/>
  <xsd:attribute name="Italic" type="xsd:unsignedByte"/>
  <xsd:attribute name="Underline" type="xsd:unsignedByte"/>
  <xsd:attribute name="StrikeOut" type="xsd:unsignedByte"/>
  <xsd:attribute name="CharSet" type="xsd:unsignedByte"/>
  <xsd:attribute name="OutPrecision" type="xsd:unsignedByte"/>
  <xsd:attribute name="ClipPrecision" type="xsd:unsignedByte"/>
  <xsd:attribute name="Quality" type="xsd:unsignedByte"/>
  <xsd:attribute name="PitchAndFamily" type="xsd:unsignedByte"/>
  <xsd:attribute name="FaceName" type="xsd:string"/>
</xsd:complexType>
```

2.3.4.2.52 HeaderLeft_Type

Target namespace: <http://schemas.microsoft.com/office/visio/2011/1/core>

Referenced by: [HeaderFooter_Type](#)

A complex type that is unused and MUST be ignored.

The following W3C XML Schema ([\[XMLSCHEMA1\]](#) section 2.1) fragment specifies the contents of this complex type.

```
<xsd:complexType name="HeaderLeft_Type">
  <xsd:simpleContent>
    <xsd:extension base="xsd:string"/>
  </xsd:simpleContent>
</xsd:complexType>
```

2.3.4.2.53 HeaderMargin_Type

Target namespace: <http://schemas.microsoft.com/office/visio/2011/1/core>

Referenced by: [HeaderFooter_Type](#)

A complex type that is unused and MUST be ignored.

Attributes:

Unit: A xsd:string ([XMLSCHEMA2] section 3.2.1) attribute that is unused and MUST be ignored.

The following W3C XML Schema ([XMLSCHEMA1] section 2.1) fragment specifies the contents of this complex type.

```
<xsd:complexType name="HeaderMargin_Type">
  <xsd:simpleContent>
    <xsd:extension base="xsd:double">
      <xsd:attribute name="Unit" type="xsd:string"/>
    </xsd:extension>
  </xsd:simpleContent>
</xsd:complexType>
```

2.3.4.2.54 HeaderRight_Type

Target namespace: <http://schemas.microsoft.com/office/visio/2011/1/core>

Referenced by: [HeaderFooter_Type](#)

A complex type that is unused and MUST be ignored.

The following W3C XML Schema ([XMLSCHEMA1] section 2.1) fragment specifies the contents of this complex type.

```
<xsd:complexType name="HeaderRight_Type">
  <xsd:simpleContent>
    <xsd:extension base="xsd:string"/>
  </xsd:simpleContent>
</xsd:complexType>
```

2.3.4.2.55 Icon_Type

Target namespace: <http://schemas.microsoft.com/office/visio/2011/1/core>

Referenced by: [Master_Type](#), [MasterShortcut_Type](#)

A complex type that is unused and MUST be ignored.

The following W3C XML Schema ([XMLSCHEMA1] section 2.1) fragment specifies the contents of this complex type.

```
<xsd:complexType name="Icon_Type">
  <xsd:simpleContent>
    <xsd:extension base="xsd:base64Binary"/>
  </xsd:simpleContent>
</xsd:complexType>
```

</xsd:complexType>

2.3.4.2.56 Master_Type

Target namespace: <http://schemas.microsoft.com/office/visio/2011/1/core>

Referenced by: [Masters_Type](#)

A complex type that specifies a [master](#) in a [web drawing](#).

Child Elements:

PageSheet: A [PageSheet_Type](#) element that specifies the properties of the [drawing page](#) associated with the master.

Rel: A [Rel_Type](#) element that specifies a [relationship](#) to the corresponding [Master XML Part](#).

Icon: An [Icon_Type](#) element that is unused and MUST be ignored.

Attributes:

ID: A xsd:unsignedInt ([\[XMLSCHEMA2\]](#) section 3.3.22) attribute that specifies the unique one-based index of the master. It MUST be equal to or greater than one. It MUST be unique amongst all the Master_Type and [MasterShortcut_Type](#) child elements of the containing Masters_Type.

BaseID: A xsd:string ([\[XMLSCHEMA2\]](#) section 3.2.1) attribute that specifies a GUID which identifies the master across web drawings.

UniqueID: A xsd:string ([\[XMLSCHEMA2\]](#) section 3.2.1) attribute that specifies a GUID which identifies the master within a web drawing. It MUST be different than any other **UniqueID** attribute of a Master_Type in the same web drawing.

MatchByName: A xsd:boolean ([\[XMLSCHEMA2\]](#) section 3.2.2) attribute that is unused and MUST be ignored.

Name: A xsd:string ([\[XMLSCHEMA2\]](#) section 3.2.1) attribute that specifies the language-dependent name of the master.

NameU: A xsd:string ([\[XMLSCHEMA2\]](#) section 3.2.1) attribute that specifies the language-independent name of a master.

IsCustomName: A xsd:boolean ([\[XMLSCHEMA2\]](#) section 3.2.2) attribute that is unused and MUST be ignored.

IsCustomNameU: A xsd:boolean ([\[XMLSCHEMA2\]](#) section 3.2.2) attribute that is unused and MUST be ignored.

IconSize: A xsd:unsignedShort ([\[XMLSCHEMA2\]](#) section 3.3.23) attribute that is unused and MUST be ignored.

PatternFlags: A xsd:unsignedShort ([\[XMLSCHEMA2\]](#) section 3.3.23) attribute that specifies whether and how a master behaves as a [custom pattern](#). If present, it MUST be equal to a value from the following table.

Value	Description
1	Specifies a line pattern where multiple copies of the pattern are bent to follow the line.
2	Specifies a line end pattern where the line end is positioned in the direction of the line.
65	Specifies a line pattern where multiple copies of the pattern are bent to follow the line and the pattern is scaled based on the scale of the drawing page.
1026	Specifies a line end pattern where the line end is in the direction of the line and the pattern is scaled based on the scale of the drawing page.
4100	Specifies a fill pattern where a single copy of the pattern is placed at the center of the shape .
20484	Specifies a fill pattern where a single copy of the pattern is placed at the center of the shape and the pattern is scaled based on the scale of the drawing page.
Any other value	Specifies that the master does not behave as a custom pattern.

Prompt: A xsd:string ([\[XMLSCHEMA2\]](#) section 3.2.1) attribute that is unused and MUST be ignored.

Hidden: A xsd:boolean ([\[XMLSCHEMA2\]](#) section 3.2.2) attribute that is unused and MUST be ignored.

IconUpdate: A xsd:boolean ([\[XMLSCHEMA2\]](#) section 3.2.2) attribute is unused and that MUST be ignored.

AlignName: A xsd:unsignedShort ([\[XMLSCHEMA2\]](#) section 3.3.23) attribute that is unused and MUST be ignored.

MasterType: A xsd:unsignedShort ([\[XMLSCHEMA2\]](#) section 3.3.23) attribute that is unused and MUST be ignored.

The following W3C XML Schema ([\[XMLSCHEMA1\]](#) section 2.1) fragment specifies the contents of this complex type.

```
<xsd:complexType name="Master_Type">
  <xsd:all>
    <xsd:element name="PageSheet" type="PageSheet_Type" minOccurs="0" maxOccurs="1"/>
    <xsd:element name="Rel" type="Rel_Type" minOccurs="1" maxOccurs="1"/>
    <xsd:element name="Icon" type="Icon_Type" minOccurs="0" maxOccurs="1"/>
  </xsd:all>
  <xsd:attribute name="ID" type="xsd:unsignedInt" use="required"/>
  <xsd:attribute name="BaseID" type="xsd:string"/>
  <xsd:attribute name="UniqueID" type="xsd:string"/>
  <xsd:attribute name="MatchByName" type="xsd:boolean"/>
  <xsd:attribute name="Name" type="xsd:string"/>
  <xsd:attribute name="NameU" type="xsd:string"/>
  <xsd:attribute name="IsCustomName" type="xsd:boolean"/>
  <xsd:attribute name="IsCustomNameU" type="xsd:boolean"/>
  <xsd:attribute name="IconSize" type="xsd:unsignedShort"/>
  <xsd:attribute name="PatternFlags" type="xsd:unsignedShort"/>
  <xsd:attribute name="Prompt" type="xsd:string"/>
  <xsd:attribute name="Hidden" type="xsd:boolean"/>
  <xsd:attribute name="IconUpdate" type="xsd:boolean"/>
  <xsd:attribute name="AlignName" type="xsd:unsignedShort"/>
</xsd:complexType>
```

```
<xsd:attribute name="MasterType" type="xsd:unsignedShort"/>
</xsd:complexType>
```

2.3.4.2.57 Masters_Type

Target namespace: <http://schemas.microsoft.com/office/visio/2011/1/core>

Referenced by: [Masters](#)

A complex type that specifies a collection of [master](#)s in a [web drawing](#).

Child Elements:

Master: A [Master_Type](#) element that specifies a master.

MasterShortcut: A [MasterShortcut_Type](#) element that specifies an unused master format.

The following W3C XML Schema ([\[XMLSCHEMA1\]](#) section 2.1) fragment specifies the contents of this complex type.

```
<xsd:complexType name="Masters_Type">
  <xsd:sequence>
    <xsd:element name="Master" type="Master_Type" minOccurs="0" maxOccurs="unbounded"/>
    <xsd:element name="MasterShortcut" type="MasterShortcut_Type" minOccurs="0"
maxOccurs="unbounded"/>
  </xsd:sequence>
</xsd:complexType>
```

2.3.4.2.58 MasterShortcut_Type

Target namespace: <http://schemas.microsoft.com/office/visio/2011/1/core>

Referenced by: [Masters_Type](#)

A complex type that specifies an unused [master](#) format.

Child Elements:

Icon: An [Icon_Type](#) element that is unused and MUST be ignored.

Attributes:

ID: A `xsd:unsignedInt` ([\[XMLSCHEMA2\]](#) section 3.3.22) attribute that specifies the unique one-based index of the master. It MUST be equal to or greater than one. It MUST be unique amongst all the `Master_Type` and `MasterShortcut_Type` child elements of the containing `Masters_Type`.

Name: A `xsd:string` ([\[XMLSCHEMA2\]](#) section 3.2.1) attribute that is unused and MUST be ignored.

NameU: A `xsd:string` ([\[XMLSCHEMA2\]](#) section 3.2.1) attribute that is unused and MUST be ignored.

IsCustomName: A `xsd:boolean` ([\[XMLSCHEMA2\]](#) section 3.2.2) attribute that is unused and MUST be ignored.

IsCustomNameU: A `xsd:boolean` ([\[XMLSCHEMA2\]](#) section 3.2.2) attribute that is unused and MUST be ignored.

IconSize: A xsd:unsignedShort ([\[XMLSCHEMA2\]](#) section 3.3.23) attribute that is unused and MUST be ignored.

PatternFlags: A xsd:unsignedShort ([\[XMLSCHEMA2\]](#) section 3.3.23) attribute that is unused and MUST be ignored.

Prompt: A xsd:string ([\[XMLSCHEMA2\]](#) section 3.2.1) attribute that is unused and MUST be ignored.

ShortcutURL: A xsd:string ([\[XMLSCHEMA2\]](#) section 3.2.1) attribute that is unused and MUST be ignored.

ShortcutHelp: A xsd:string ([\[XMLSCHEMA2\]](#) section 3.2.1) attribute that is unused and MUST be ignored.

AlignName: A xsd:unsignedShort ([\[XMLSCHEMA2\]](#) section 3.3.23) attribute that is unused and MUST be ignored.

MasterType: A xsd:unsignedShort ([\[XMLSCHEMA2\]](#) section 3.3.23) attribute that specifies that is unused and MUST be ignored.

The following W3C XML Schema ([\[XMLSCHEMA1\]](#) section 2.1) fragment specifies the contents of this complex type.

```
<xsd:complexType name="MasterShortcut_Type">
  <xsd:all>
    <xsd:element name="Icon" type="Icon_Type" minOccurs="0" maxOccurs="1"/>
  </xsd:all>
  <xsd:attribute name="ID" type="xsd:unsignedInt" use="required"/>
  <xsd:attribute name="Name" type="xsd:string"/>
  <xsd:attribute name="NameU" type="xsd:string"/>
  <xsd:attribute name="IsCustomName" type="xsd:boolean"/>
  <xsd:attribute name="IsCustomNameU" type="xsd:boolean"/>
  <xsd:attribute name="IconSize" type="xsd:unsignedShort"/>
  <xsd:attribute name="PatternFlags" type="xsd:unsignedShort"/>
  <xsd:attribute name="Prompt" type="xsd:string"/>
  <xsd:attribute name="ShortcutURL" type="xsd:string"/>
  <xsd:attribute name="ShortcutHelp" type="xsd:string"/>
  <xsd:attribute name="AlignName" type="xsd:unsignedShort"/>
  <xsd:attribute name="MasterType" type="xsd:unsignedShort"/>
</xsd:complexType>
```

2.3.4.2.59 Page_Type

Target namespace: <http://schemas.microsoft.com/office/visio/2011/1/core>

Referenced by: [Pages_Type](#)

A complex type that specifies a [drawing page](#).

Child Elements:

PageSheet: A [PageSheet_Type](#) element that specifies the properties of the drawing page associated with the drawing page. There MUST be exactly one occurrence of this child element.

Rel: A [Rel_Type](#) element that specifies a [relationship](#) to the corresponding [Page XML part](#).

Attributes:

ID: A xsd:unsignedInt ([XMLSCHEMA2] section 3.3.22) attribute that specifies the unique one-based index of the drawing page. It MUST be unique amongst all the Page Type child elements of the containing [Pages Type](#).

Name: A xsd:string ([XMLSCHEMA2] section 3.2.1) attribute that specifies the language-dependent name of a drawing page.

NameU: A xsd:string ([XMLSCHEMA2] section 3.2.1) attribute that specifies the language-independent name of a drawing page.

IsCustomName: A xsd:boolean ([XMLSCHEMA2] section 3.2.2) attribute that is unused and MUST be ignored.

IsCustomNameU: A xsd:boolean ([XMLSCHEMA2] section 3.2.2) attribute that is unused and MUST be ignored.

Background: A xsd:boolean ([XMLSCHEMA2] section 3.2.2) attribute that specifies whether the current page can be used as a background. It MUST be equal to zero or one.

BackPage: A xsd:unsignedInt ([XMLSCHEMA2] section 3.3.22) attribute that specifies the background page of the current drawing page. It MUST be equal to the **ID** attribute of a Page_Type element with a **Background** attribute with a value of **TRUE**.

ViewScale: A xsd:double ([XMLSCHEMA2] section 3.2.5) attribute that is unused and MUST be ignored.

ViewCenterX: A xsd:double ([XMLSCHEMA2] section 3.2.5) attribute that is unused and MUST be ignored.

ViewCenterY: A xsd:double ([XMLSCHEMA2] section 3.2.5) attribute that is unused and MUST be ignored.

ReviewerID: A xsd:unsignedInt ([XMLSCHEMA2] section 3.3.22) attribute that is unused and MUST be ignored.

AssociatedPage: A xsd:unsignedInt ([XMLSCHEMA2] section 3.3.22) attribute that is unused and MUST be ignored.

The following W3C XML Schema ([XMLSCHEMA1] section 2.1) fragment specifies the contents of this complex type.

```
<xsd:complexType name="Page_Type">
  <xsd:all>
    <xsd:element name="PageSheet" type="PageSheet_Type" minOccurs="0" maxOccurs="1"/>
    <xsd:element name="Rel" type="Rel_Type" minOccurs="1" maxOccurs="1"/>
  </xsd:all>
  <xsd:attribute name="ID" type="xsd:unsignedInt" use="required"/>
  <xsd:attribute name="Name" type="xsd:string"/>
  <xsd:attribute name="NameU" type="xsd:string"/>
  <xsd:attribute name="IsCustomName" type="xsd:boolean"/>
  <xsd:attribute name="IsCustomNameU" type="xsd:boolean"/>
  <xsd:attribute name="Background" type="xsd:boolean"/>
  <xsd:attribute name="BackPage" type="xsd:unsignedInt"/>
  <xsd:attribute name="ViewScale" type="xsd:double"/>
  <xsd:attribute name="ViewCenterX" type="xsd:double"/>
  <xsd:attribute name="ViewCenterY" type="xsd:double"/>
  <xsd:attribute name="ReviewerID" type="xsd:unsignedInt"/>
  <xsd:attribute name="AssociatedPage" type="xsd:unsignedInt"/>
</xsd:complexType>
```

</xsd:complexType>

2.3.4.2.60 PageContents_Type

Target namespace: <http://schemas.microsoft.com/office/visio/2011/1/core>

Referenced by: [MasterContents](#), [PageContents](#)

A complex type that specifies the information about the shapes in a [master](#) or [drawing page](#) of a [web drawing](#).

Child Elements:

Shapes: A [Shapes_Type](#) element that specifies a collection of [shapes](#) contained in a master or drawing page.

Connects: A [Connects_Type](#) element that is unused and MUST be ignored.

The following W3C XML Schema ([\[XMLSCHEMA1\]](#) section 2.1) fragment specifies the contents of this complex type.

```
<xsd:complexType name="PageContents_Type">
  <xsd:sequence>
    <xsd:element name="Shapes" type="Shapes_Type" minOccurs="0" maxOccurs="1"/>
    <xsd:element name="Connects" type="Connects_Type" minOccurs="0" maxOccurs="1"/>
  </xsd:sequence>
</xsd:complexType>
```

2.3.4.2.61 Pages_Type

Target namespace: <http://schemas.microsoft.com/office/visio/2011/1/core>

Referenced by: [Pages](#)

A complex type that specifies a collection of [drawing pages](#).

Child Elements:

Page: A [Page_Type](#) element that specifies a drawing page in a [web drawing](#).

The following W3C XML Schema ([\[XMLSCHEMA1\]](#) section 2.1) fragment specifies the contents of this complex type.

```
<xsd:complexType name="Pages_Type">
  <xsd:sequence>
    <xsd:element name="Page" type="Page_Type" minOccurs="0" maxOccurs="unbounded"/>
  </xsd:sequence>
</xsd:complexType>
```

2.3.4.2.62 PageSheet_Type

Target namespace: <http://schemas.microsoft.com/office/visio/2011/1/core>

Referenced by: [Master_Type](#), [Page_Type](#)

A complex type that specifies the properties of a [page](#) in a [web drawing](#).

Child Elements:

Cell: A [Cell Type](#) element that specifies a single property.

Section: A [Section Type](#) element that specifies a collection of related properties.

Attributes:

UniqueID: A xsd:string ([\[XMLSCHEMA2\]](#) section 3.2.1) attribute that is unused and MUST be ignored.

LineStyle: A xsd:unsignedInt ([\[XMLSCHEMA2\]](#) section 3.3.22) attribute that specifies the identifier of the [style sheet](#) from which to [inherit](#) line formatting. It MUST be the value of the **ID** attribute associated with a [StyleSheet Type](#) in the web drawing.

FillStyle: A xsd:unsignedInt ([\[XMLSCHEMA2\]](#) section 3.3.22) attribute that specifies the identifier of the style sheet from which to inherit fill formatting. It MUST be the value of the **ID** attribute associated with a [StyleSheet Type](#) in the web drawing.

TextStyle: A xsd:unsignedInt ([\[XMLSCHEMA2\]](#) section 3.3.22) attribute that specifies the identifier of the style sheet from which to inherit text formatting. It MUST be the value of the **ID** attribute associated with a [StyleSheet Type](#) in the web drawing.

The following W3C XML Schema ([\[XMLSCHEMA1\]](#) section 2.1) fragment specifies the contents of this complex type.

```
<xsd:complexType name="PageSheet_Type">
  <xsd:complexContent>
    <xsd:extension base="Sheet_Type">
      <xsd:attribute name="UniqueID" type="xsd:string"/>
    </xsd:extension>
  </xsd:complexContent>
</xsd:complexType>
```

2.3.4.2.63 pp_Type

Target namespace: <http://schemas.microsoft.com/office/visio/2011/1/core>

Referenced by: [Text Type](#)

A complex type that specifies the beginning of a text run and an index designating the set of [paragraph properties](#) to use.

Attributes:

IX: A xsd:unsignedInt ([\[XMLSCHEMA2\]](#) section 3.3.22) attribute that specifies the paragraph properties used in the text run. It MUST be the **IX** attribute of a [Row Type](#) that has a [Paragraph Section Type](#) parent element.

The following W3C XML Schema ([\[XMLSCHEMA1\]](#) section 2.1) fragment specifies the contents of this complex type.

```
<xsd:complexType name="pp_Type">
  <xsd:attribute name="IX" type="xsd:unsignedInt" use="required"/>
```

</xsd:complexType>

2.3.4.2.64 PrimaryKey_Type

Target namespace: <http://schemas.microsoft.com/office/visio/2011/1/core>

Referenced by: [DataRecordSet_Type](#)

A complex type that specifies a component of the primary key of a [recordset](#).

Child Elements:

RowKeyValue: A [RowKeyValue_Type](#) element that specifies the value of this component of the primary key for an individual row of a recordset. There MUST be at least one occurrence of this child element.

Attributes:

ColumnNameID: A xsd:string ([\[XMLSCHEMA2\]](#) section 3.2.1) attribute that specifies the name of a field that is a component of the primary key. It MUST be the value of the **ColumnNameID** attribute of a [DataColumn_Type](#) descendant element of the DataRecordSet_Type whose primary key is being specified.

The following W3C XML Schema ([\[XMLSCHEMA1\]](#) section 2.1) fragment specifies the contents of this complex type.

```
<xsd:complexType name="PrimaryKey_Type">
  <xsd:sequence>
    <xsd:element name="RowKeyValue" type="RowKeyValue_Type" minOccurs="0"
maxOccurs="unbounded"/>
  </xsd:sequence>
  <xsd:attribute name="ColumnNameID" type="xsd:string" use="required"/>
</xsd:complexType>
```

2.3.4.2.65 ProtectBkgnds_Type

Target namespace: <http://schemas.microsoft.com/office/visio/2011/1/core>

Referenced by: [DocumentSettings_Type](#)

A complex type that is unused and MUST be ignored.

The following W3C XML Schema ([\[XMLSCHEMA1\]](#) section 2.1) fragment specifies the contents of this complex type.

```
<xsd:complexType name="ProtectBkgnds_Type">
  <xsd:simpleContent>
    <xsd:extension base="xsd:boolean"/>
  </xsd:simpleContent>
</xsd:complexType>
```

2.3.4.2.66 ProtectMasters_Type

Target namespace: <http://schemas.microsoft.com/office/visio/2011/1/core>

Referenced by: [DocumentSettings_Type](#)

A complex type that is unused and MUST be ignored.

The following W3C XML Schema ([\[XMLSCHEMA1\]](#) section 2.1) fragment specifies the contents of this complex type.

```
<xsd:complexType name="ProtectMasters_Type">
  <xsd:simpleContent>
    <xsd:extension base="xsd:boolean"/>
  </xsd:simpleContent>
</xsd:complexType>
```

2.3.4.2.67 ProtectShapes_Type

Target namespace: <http://schemas.microsoft.com/office/visio/2011/1/core>

Referenced by: [DocumentSettings_Type](#)

A complex type that specifies whether a [shape](#) can be [selectable](#). If this value is one and the value of the [LockSelect Cell_Type](#) element of the shape is one, the shape is not selectable; otherwise the shape can be selectable.

The following W3C XML Schema ([\[XMLSCHEMA1\]](#) section 2.1) fragment specifies the contents of this complex type.

```
<xsd:complexType name="ProtectShapes_Type">
  <xsd:simpleContent>
    <xsd:extension base="xsd:boolean"/>
  </xsd:simpleContent>
</xsd:complexType>
```

2.3.4.2.68 ProtectStyles_Type

Target namespace: <http://schemas.microsoft.com/office/visio/2011/1/core>

Referenced by: [DocumentSettings_Type](#)

A complex type that is unused and MUST be ignored.

The following W3C XML Schema ([\[XMLSCHEMA1\]](#) section 2.1) fragment specifies the contents of this complex type.

```
<xsd:complexType name="ProtectStyles_Type">
  <xsd:simpleContent>
    <xsd:extension base="xsd:boolean"/>
  </xsd:simpleContent>
</xsd:complexType>
```

2.3.4.2.69 PublishedPage_Type

Target namespace: <http://schemas.microsoft.com/office/visio/2011/1/core>

Referenced by: [PublishSettings_Type](#)

A complex type that specifies that a [drawing page](#) is viewable in a [web drawing](#).

Attributes:

ID: A `xsd:unsignedInt` ([XMLSCHEMA2] section 3.3.22) attribute that specifies the identifier of a drawing page. It MUST be the value of the **ID** attribute of the [Page_Type](#) element that corresponds to a drawing page in the web drawing.

The following W3C XML Schema ([XMLSCHEMA1] section 2.1) fragment specifies the contents of this complex type.

```
<xsd:complexType name="PublishedPage_Type">
  <xsd:attribute name="ID" type="xsd:unsignedInt" use="required"/>
</xsd:complexType>
```

2.3.4.2.70 PublishSettings_Type

Target namespace: <http://schemas.microsoft.com/office/visio/2011/1/core>

Referenced by: [VisioDocument_Type](#)

A complex type that specifies the set of [drawing pages](#) that are viewable and set of [recordsets](#) that can be [refreshed](#) in a [web drawing](#).

Child Elements:

PublishedPage: A [PublishedPage_Type](#) element that specifies that a drawing page is viewable in the web drawing.

RefreshableData: A [RefreshableData_Type](#) element that specifies that a recordset can be refreshed in the web drawing.

The following W3C XML Schema ([XMLSCHEMA1] section 2.1) fragment specifies the contents of this complex type.

```
<xsd:complexType name="PublishSettings_Type">
  <xsd:sequence>
    <xsd:element name="PublishedPage" type="PublishedPage_Type" minOccurs="0"
      maxOccurs="unbounded"/>
    <xsd:element name="RefreshableData" type="RefreshableData_Type" minOccurs="0"
      maxOccurs="unbounded"/>
  </xsd:sequence>
</xsd:complexType>
```

2.3.4.2.71 RefBy_Type

Target namespace: <http://schemas.microsoft.com/office/visio/2011/1/core>

Referenced by: [Cell_Type](#)

A complex type that is unused and MUST be ignored.

Attributes:

T: A `xsd:string` ([XMLSCHEMA2] section 3.2.1) attribute that is unused and MUST be ignored.

ID: A `xsd:unsignedInt` ([XMLSCHEMA2] section 3.3.22) attribute that is unused and MUST be ignored.

The following W3C XML Schema ([XMLSCHEMA1] section 2.1) fragment specifies the contents of this complex type.

```
<xsd:complexType name="RefBy_Type">
  <xsd:attribute name="T" type="xsd:string" use="required"/>
  <xsd:attribute name="ID" type="xsd:unsignedInt" use="required"/>
</xsd:complexType>
```

2.3.4.2.72 RefreshableData_Type

Target namespace: `http://schemas.microsoft.com/office/visio/2011/1/core`

Referenced by: [PublishSettings_Type](#)

A complex type that specifies that a [recordset](#) is [refreshable](#) in a [web drawing](#).

Attributes:

ID: A `xsd:unsignedInt` ([XMLSCHEMA2] section 3.3.22) attribute that specifies the identifier of a recordset. It MUST be the value of the **ID** attribute of the [DataRecordSet_Type](#) element that corresponds to a recordset in the web drawing.

The following W3C XML Schema ([XMLSCHEMA1] section 2.1) fragment specifies the contents of this complex type.

```
<xsd:complexType name="RefreshableData_Type">
  <xsd:attribute name="ID" type="xsd:unsignedInt" use="required"/>
</xsd:complexType>
```

2.3.4.2.73 RefreshConflict_Type

Target namespace: `http://schemas.microsoft.com/office/visio/2011/1/core`

Referenced by: [DataRecordSet_Type](#)

A complex type that is unused and MUST be ignored.

Attributes:

RowID: A `xsd:unsignedInt` ([XMLSCHEMA2] section 3.3.22) attribute that is unused and MUST be ignored.

ShapeID: A `xsd:unsignedInt` ([XMLSCHEMA2] section 3.3.22) attribute that is unused and MUST be ignored.

PageID: A `xsd:unsignedInt` ([XMLSCHEMA2] section 3.3.22) attribute that that is unused and MUST be ignored.

The following W3C XML Schema ([XMLSCHEMA1] section 2.1) fragment specifies the contents of this complex type.

```
<xsd:complexType name="RefreshConflict_Type">
```



```

<xsd:attribute name="RowID" type="xsd:unsignedInt" use="required"/>
<xsd:attribute name="ShapeID" type="xsd:unsignedInt" use="required"/>
<xsd:attribute name="PageID" type="xsd:unsignedInt" use="required"/>
</xsd:complexType>

```

2.3.4.2.74 Rel_Type

Target namespace: <http://schemas.microsoft.com/office/visio/2011/1/core>

Referenced by: [ForeignData_Type](#), [Master_Type](#), [Page_Type](#), [DataRecordSet_Type](#)

A complex type that specifies a [relationship](#) to a [part](#) as specified in [\[ISO/IEC-29500-1\]](#) section 8.3.

If the parent element is a DataRecordSet_Type element, this element is unused and MUST be ignored.

Attributes:

r:id: A xsd:string ([\[XMLSCHEMA2\]](#) section 3.2.1) attribute that specifies a relationship to a part. The namespace of the attribute is <http://schemas.openxmlformats.org/officeDocument/2006/relationships>.

The following W3C XML Schema ([\[XMLSCHEMA1\]](#) section 2.1) fragment specifies the contents of this complex type.

```

<xsd:complexType name="Rel_Type">
  <xsd:attribute ref="r:id" use="required"/>
</xsd:complexType>

```

2.3.4.2.75 Row_Type

Target namespace: <http://schemas.microsoft.com/office/visio/2011/1/core>

Referenced by: [Section_Type](#)

A complex type that specifies a collection of related properties.

Child Elements:

Cell: A [Cell_Type](#) element that specifies a single property.

Attributes:

N: A xsd:string ([\[XMLSCHEMA2\]](#) section 3.2.1) attribute that specifies the language-independent name of a collection of properties. It MUST be unique amongst all of the Row_Type elements of the containing Section_Type element.

LocalName: A xsd:string ([\[XMLSCHEMA2\]](#) section 3.2.1) attribute that specifies the language-dependent name of a collection of properties. It MUST be unique amongst all of the Row_Type elements of the containing Section_Type element.

IX: A xsd:unsignedInt ([\[XMLSCHEMA2\]](#) section 3.3.22) attribute that specifies the one-based identifier of a collection of properties. It MUST be unique amongst all of the Row_Type elements of the containing Section_Type element. It MUST be greater than the **IX** attribute of any preceding Row_Type element of the containing Section_Type.

T: A `xsd:string` ([XMLSCHEMA2] section 3.2.1) attribute that specifies the type of the geometric path represented by a collection of properties and used in [geometry visualization](#). It MUST be equal to a value as specified in [GeometryRowTypes](#). It is unused and MUST be ignored unless the `Row_Type` element has a [Geometry](#) `Section_Type` parent element.

Del: A `xsd:boolean` ([XMLSCHEMA2] section 3.2.2) attribute that specifies whether a collection that would otherwise be [inherited](#) has been deleted. It MUST be equal to zero or one. A value of one specifies that a collection has been deleted and that the values of the properties in the collection are not inherited. A value of zero specifies that a collection of properties is valid for the shape. If the **Del** attribute is not present, the value is zero.

The following W3C XML Schema ([XMLSCHEMA1] section 2.1) fragment specifies the contents of this complex type.

```
<xsd:complexType name="Row_Type">
  <xsd:sequence>
    <xsd:element name="Cell" type="Cell_Type" minOccurs="0" maxOccurs="unbounded"/>
  </xsd:sequence>
  <xsd:attribute name="N" type="xsd:string"/>
  <xsd:attribute name="LocalName" type="xsd:string"/>
  <xsd:attribute name="IX" type="xsd:unsignedInt"/>
  <xsd:attribute name="T" type="xsd:string"/>
  <xsd:attribute name="Del" type="xsd:boolean"/>
</xsd:complexType>
```

2.3.4.2.76 RowDef_Type

Target namespace: <http://schemas.microsoft.com/office/visio/2011/1/core>

Referenced by: [SectionDef_Type](#)

A complex type that specifies the definition of a [row](#) that is not specified in this specification.

Child Elements:

CellDef: A [CellDef_Type](#) element that specifies the definition of a [cell](#) that is not specified in this specification.

The following W3C XML Schema ([XMLSCHEMA1] section 2.1) fragment specifies the contents of this complex type.

```
<xsd:complexType name="RowDef_Type">
  <xsd:sequence>
    <xsd:element name="CellDef" type="CellDef_Type" minOccurs="0" maxOccurs="unbounded"/>
  </xsd:sequence>
</xsd:complexType>
```

2.3.4.2.77 RowKeyValue_Type

Target namespace: <http://schemas.microsoft.com/office/visio/2011/1/core>

Referenced by: [PrimaryKey_Type](#)

A complex type that specifies the value of a component of the primary key for an individual row of a [recordset](#).

Attributes:

RowID: A xsd:unsignedInt ([XMLSCHEMA2] section 3.3.22) attribute that specifies the identifier of a row of a recordset. It MUST be equal to the **RowID** attribute of a [RowMap_Type](#) child element of the [DataRecordSet_Type](#) element that contains this RowKeyValue_Type element. It MUST be unique amongst all the RowKeyValue_Type child elements of the containing PrimaryKey_Type.

Value: A xsd:string ([XMLSCHEMA2] section 3.2.1) attribute that specifies the value of the field specified by the containing PrimaryKey_Type for the row specified by the **RowID** attribute.

The following W3C XML Schema ([XMLSCHEMA1] section 2.1) fragment specifies the contents of this complex type.

```
<xsd:complexType name="RowKeyValue_Type">
  <xsd:attribute name="RowID" type="xsd:unsignedInt" use="required"/>
  <xsd:attribute name="Value" type="xsd:string" use="required"/>
</xsd:complexType>
```

2.3.4.2.78 RowMap_Type

Target namespace: http://schemas.microsoft.com/office/visio/2011/1/core

Referenced by: [DataRecordSet_Type](#)

A complex type that specifies the [data binding](#) between a row of a [recordset](#) and a [shape](#).

Attributes:

RowID: A xsd:unsignedInt ([XMLSCHEMA2] section 3.3.22) attribute that specifies the identifier of a row of the recordset. It MUST be unique amongst all the RowMap_Type child elements of the containing DataRecordSet_Type.

PageID: A xsd:unsignedInt ([XMLSCHEMA2] section 3.3.22) attribute that specifies the identifier of the [drawing page](#) that contains the shape. It MUST be equal to the **ID** attribute of the [Page_Type](#) element associated with the drawing page.

ShapeID: A xsd:unsignedInt ([XMLSCHEMA2] section 3.3.22) attribute that specifies the identifier of the shape. It MUST be equal to the **ID** attribute of the [ShapeSheet_Type](#) element associated with the shape.

The following W3C XML Schema ([XMLSCHEMA1] section 2.1) fragment specifies the contents of this complex type.

```
<xsd:complexType name="RowMap_Type">
  <xsd:attribute name="RowID" type="xsd:unsignedInt" use="required"/>
  <xsd:attribute name="PageID" type="xsd:unsignedInt" use="required"/>
  <xsd:attribute name="ShapeID" type="xsd:unsignedInt" use="required"/>
</xsd:complexType>
```

2.3.4.2.79 Section_Type

Target namespace: http://schemas.microsoft.com/office/visio/2011/1/core

Referenced by: [StyleSheet_Type](#), [Sheet_Type](#), [DocumentSheet_Type](#), [PageSheet_Type](#), [ShapeSheet_Type](#)

A complex type that specifies a collection of related properties.

Child Elements:

Cell: A [Cell_Type](#) element that specifies a single property.

Row: A [Row_Type](#) element that specifies a collection of Cell_Type elements.

Attributes:

N: A xsd:string ([\[XMLSCHEMA2\]](#) section 3.2.1) attribute that specifies the language-independent name of a collection of properties. It MUST be unique amongst all of the Section_Type elements of the containing Sheet_Type element, unless it is equal to "Geometry". It MUST be equal to a value as specified in [Sections](#).

Del: A xsd:boolean ([\[XMLSCHEMA2\]](#) section 3.2.2) attribute that specifies whether a collection that would otherwise be [inherited](#) has been deleted. It MUST be equal to zero or one. A value of one specifies that a collection has been deleted and that the values of the properties in the collection are not inherited. A value of zero specifies that a collection of properties is valid for the shape. If the **Del** attribute is not present, the value is zero.

IX: A xsd:unsignedInt ([\[XMLSCHEMA2\]](#) section 3.3.22) attribute that specifies the zero-based index of the element. It MUST be unique amongst all of the Section_Type elements with the same **N** attribute of the containing Sheet_Type. It MUST be greater than the **IX** attribute of any preceding Section_Type element with the same **N** attribute of the containing Sheet_Type.

When the **IX** attribute is not present, the index of the element is calculated implicitly by counting the number of preceding Section_Type elements with the same **N** attribute in the containing Sheet_Type.

The following W3C XML Schema ([\[XMLSCHEMA1\]](#) section 2.1) fragment specifies the contents of this complex type.

```
<xsd:complexType name="Section_Type">
  <xsd:sequence>
    <xsd:element name="Cell" type="Cell_Type" minOccurs="0" maxOccurs="unbounded"/>
    <xsd:element name="Row" type="Row_Type" minOccurs="0" maxOccurs="unbounded"/>
  </xsd:sequence>
  <xsd:attribute name="N" type="xsd:string" use="required"/>
  <xsd:attribute name="Del" type="xsd:boolean"/>
  <xsd:attribute name="IX" type="xsd:unsignedInt"/>
</xsd:complexType>
```

2.3.4.2.80 SectionDef_Type

Target namespace: http://schemas.microsoft.com/office/visio/2011/1/core

Referenced by: [Extensions_Type](#)

A complex type that specifies the definition of a [section](#) that is not specified in this specification.

Child Elements:

CellDef: A [CellDef_Type](#) element that specifies the definition of a [cell](#) that is not specified in this specification.

RowDef: A [RowDef_Type](#) element that specifies the definition of a [row](#) that is not specified in this specification.

Attributes:

N: A xsd:string ([\[XMLSCHEMA2\]](#) section 3.2.1) attribute that specifies the language-independent name of a collection of properties. It MUST be unique amongst all the [FunctionDef_Type](#), [CellDef_Type](#), and [SectionDef_Type](#) elements in the [Web drawing](#). It MUST NOT be equal to the name of a [function token](#) listed in the [Function Token Definitions](#) section of this specification. It MUST NOT be equal to the name of a section listed in the [Sections](#) section of this specification. It MUST NOT be equal to the name of a cell listed in the [Cells](#) section of this specification.

T: A xsd:string ([\[XMLSCHEMA2\]](#) section 3.2.1) attribute that specifies the type of rows contained by the [SectionDef_Type](#) element. It MUST be equal to a value from following table.

Value	Description
Indexed	Specifies the Row_Type elements in the SectionDef_Type element MUST have an IX attribute and no N attribute.
Named	Specifies the Row_Type elements in the SectionDef_Type element MUST have an N attribute and no IX attribute.

The following W3C XML Schema ([\[XMLSCHEMA1\]](#) section 2.1) fragment specifies the contents of this complex type.

```
<xsd:complexType name="SectionDef_Type">
  <xsd:sequence>
    <xsd:element name="CellDef" type="CellDef_Type" minOccurs="0" maxOccurs="unbounded"/>
    <xsd:element name="RowDef" type="RowDef_Type" minOccurs="0" maxOccurs="1"/>
  </xsd:sequence>
  <xsd:attribute name="N" type="xsd:string" use="required"/>
  <xsd:attribute name="T" type="xsd:string"/>
</xsd:complexType>
```

2.3.4.2.81 Shapes_Type

Target namespace: <http://schemas.microsoft.com/office/visio/2011/1/core>

Referenced by: [ShapeSheet_Type](#), [PageContents_Type](#)

A complex type that specifies a collection of [shapes](#).

Child Elements:

Shape: A [ShapeSheet_Type](#) element that specifies a shape in a [web drawing](#).

The following W3C XML Schema ([\[XMLSCHEMA1\]](#) section 2.1) fragment specifies the contents of this complex type.

```
<xsd:complexType name="Shapes_Type">
  <xsd:sequence>
    <xsd:element name="Shape" type="ShapeSheet_Type" minOccurs="0" maxOccurs="unbounded"/>
  </xsd:sequence>
</xsd:complexType>
```

2.3.4.2.82 ShapeSheet_Type

Target namespace: <http://schemas.microsoft.com/office/visio/2011/1/core>

Referenced by: [Shapes_Type](#)

A complex type that specifies a collection of properties associated with a [shape](#).

Child Elements:

Cell: A [Cell_Type](#) element that specifies a single property.

Section: A [Section_Type](#) element that specifies a collection of related properties.

Shapes: A [Shapes_Type](#) element that specifies a collection of [subshapes](#) of the shape.

Text: A [Text_Type](#) element that specifies the text of a shape. It is unused and MUST be ignored when contained in a [StyleSheet_Type](#), [DocumentSheet_Type](#), or [PageSheet_Type](#).

Data1: A [Data_Type](#) element that is unused and MUST be ignored.

Data2: A [Data_Type](#) element that is unused and MUST be ignored.

Data3: A [Data_Type](#) element that is unused and MUST be ignored.

ForeignData: A [ForeignData_Type](#) element that specifies picture data, such as a **metafile**, bitmap (BMP), or [fallback image](#). It is unused and MUST be ignored when the **Type** attribute does not equal "Foreign".

Attributes:

ID: A xsd:unsignedInt ([\[XMLSCHEMA2\]](#) section 3.3.22) attribute that specifies the unique one-based index of the shape. It MUST be greater than or equal to 4. It MUST be unique amongst all the ShapeSheet_Type child elements of the containing Shapes_Type.

Del: A xsd:boolean ([\[XMLSCHEMA2\]](#) section 3.2.2) attribute that specifies whether a shape which is an instance of a [master](#) is deleted locally. It MUST be equal to zero or one.

MasterShape: A xsd:unsignedInt ([\[XMLSCHEMA2\]](#) section 3.3.22) attribute that specifies a relationship between a subshape on a [drawing page](#) and a subshape of a [master shape](#). It MUST be equal to the **ID** attribute of the a ShapeSheet_Type element of a master shape. If the **Master** attribute is present, **MasterShape** is unused and MUST be ignored.

UniqueID: A xsd:string ([\[XMLSCHEMA2\]](#) section 3.2.1) attribute that is unused and MUST be ignored.

Name: A xsd:string ([\[XMLSCHEMA2\]](#) section 3.2.1) attribute that specifies the language-dependent name of a shape.

NameU: A xsd:string ([\[XMLSCHEMA2\]](#) section 3.2.1) attribute that specifies the language-independent name of a shape.

IsCustomName: A xsd:boolean ([\[XMLSCHEMA2\]](#) section 3.2.2) attribute that is unused and MUST be ignored.

IsCustomNameU: A xsd:boolean ([\[XMLSCHEMA2\]](#) section 3.2.2) attribute that is unused and MUST be ignored.

Master: A `xsd:unsignedInt` ([XMLSCHEMA2] section 3.3.22) attribute that specifies the master of the shape. It MUST be equal to the **ID** attribute of a [Master_Type](#) element.

Type: A `xsd:token` ([XMLSCHEMA2] section 3.3.2) attribute that specifies the type of the shape. It MUST be equal to a value from the following table.

Value	Description
Group	This MUST be the value of the attribute if the shape specified by this element has subshapes.
Guide	Specifies that the shape is not shown.
Foreign	Specifies that the data specified in this element's ForeignData element is shown.
Shape	Specifies that the shape does not meet any of the previous conditions.

LineStyle: A `xsd:unsignedInt` ([XMLSCHEMA2] section 3.3.22) attribute that specifies the identifier of the [style sheet](#) from which to [inherit](#) line formatting. It MUST be the value of the **ID** attribute associated with a `StyleSheet_Type` in the [web drawing](#).

FillStyle: A `xsd:unsignedInt` ([XMLSCHEMA2] section 3.3.22) attribute that specifies the identifier of the style sheet from which to inherit fill formatting. It MUST be the value of the **ID** attribute associated with a `StyleSheet_Type` in the web drawing.

TextStyle: A `xsd:unsignedInt` ([XMLSCHEMA2] section 3.3.22) attribute that specifies the identifier of the style sheet from which to inherit text formatting. It MUST be the value of the **ID** attribute associated with a `StyleSheet_Type` in the web drawing.

The following W3C XML Schema ([XMLSCHEMA1] section 2.1) fragment specifies the contents of this complex type.

```
<xsd:complexType name="ShapeSheet_Type">
  <xsd:complexContent>
    <xsd:extension base="Sheet_Type">
      <xsd:sequence>
        <xsd:element name="Shapes" type="Shapes_Type" minOccurs="0" maxOccurs="1"/>
        <xsd:element name="Text" type="Text_Type" minOccurs="0" maxOccurs="1"/>
        <xsd:element name="Data1" type="Data_Type" minOccurs="0" maxOccurs="1"/>
        <xsd:element name="Data2" type="Data_Type" minOccurs="0" maxOccurs="1"/>
        <xsd:element name="Data3" type="Data_Type" minOccurs="0" maxOccurs="1"/>
        <xsd:element name="ForeignData" type="ForeignData_Type" minOccurs="0" maxOccurs="1"/>
      </xsd:sequence>
      <xsd:attribute name="ID" type="xsd:unsignedInt" use="required"/>
      <xsd:attribute name="Del" type="xsd:boolean"/>
      <xsd:attribute name="MasterShape" type="xsd:unsignedInt"/>
      <xsd:attribute name="UniqueID" type="xsd:string"/>
      <xsd:attribute name="Name" type="xsd:string"/>
      <xsd:attribute name="NameU" type="xsd:string"/>
      <xsd:attribute name="IsCustomName" type="xsd:boolean"/>
      <xsd:attribute name="IsCustomNameU" type="xsd:boolean"/>
      <xsd:attribute name="Master" type="xsd:unsignedInt"/>
      <xsd:attribute name="Type" type="xsd:token"/>
    </xsd:extension>
  </xsd:complexContent>
</xsd:complexType>
```


2.3.4.2.83 Sheet_Type

Target namespace: <http://schemas.microsoft.com/office/visio/2011/1/core>

Referenced by: [StyleSheet_Type](#), [DocumentSheet_Type](#), [PageSheet_Type](#), [ShapeSheet_Type](#)

A complex type that specifies a collection of properties associated with a style, [web drawing](#), [drawing page](#), or [shape](#).

Child Elements:

Cell: A [Cell_Type](#) element that specifies a single property.

Section: A [Section_Type](#) element that specifies a collection of related properties.

Attributes:

LineStyle: A xsd:unsignedInt ([\[XMLSCHEMA2\]](#) section 3.3.22) attribute that specifies the identifier of the [style sheet](#) from which to [inherit](#) line formatting. It MUST be the value of the **ID** attribute associated with a [StyleSheet_Type](#) in the web drawing.

FillStyle: A xsd:unsignedInt ([\[XMLSCHEMA2\]](#) section 3.3.22) attribute that specifies the identifier of the style sheet from which to inherit fill formatting. It MUST be the value of the **ID** attribute associated with a [StyleSheet_Type](#) in the web drawing.

TextStyle: A xsd:unsignedInt ([\[XMLSCHEMA2\]](#) section 3.3.22) attribute that specifies the identifier of the style sheet from which to inherit text formatting. It MUST be the value of the **ID** attribute associated with a [StyleSheet_Type](#) in the web drawing.

The following W3C XML Schema ([\[XMLSCHEMA1\]](#) section 2.1) fragment specifies the contents of this complex type.

```
<xsd:complexType name="Sheet_Type" abstract="true">
  <xsd:sequence minOccurs="0" maxOccurs="unbounded">
    <xsd:element name="Cell" type="Cell_Type" minOccurs="0" maxOccurs="unbounded"/>
    <xsd:element name="Section" type="Section_Type" minOccurs="0" maxOccurs="unbounded"/>
    <xsd:any minOccurs="0" maxOccurs="unbounded" namespace="##other" processContents="lax"/>
  </xsd:sequence>
  <xsd:attribute name="LineStyle" type="xsd:unsignedInt"/>
  <xsd:attribute name="FillStyle" type="xsd:unsignedInt"/>
  <xsd:attribute name="TextStyle" type="xsd:unsignedInt"/>
  <xsd:anyAttribute namespace="##other" processContents="lax"/>
</xsd:complexType>
```

2.3.4.2.84 SnapAngle_Type

Target namespace: <http://schemas.microsoft.com/office/visio/2011/1/core>

Referenced by: [SnapAngles_Type](#)

A complex type that is unused and MUST be ignored.

The following W3C XML Schema ([\[XMLSCHEMA1\]](#) section 2.1) fragment specifies the contents of this complex type.

```
<xsd:complexType name="SnapAngle_Type">
  <xsd:simpleContent>
```



```

        <xsd:extension base="xsd:double"/>
    </xsd:simpleContent>
</xsd:complexType>

```

2.3.4.2.85 SnapAngles_Type

Target namespace: <http://schemas.microsoft.com/office/visio/2011/1/core>

Referenced by: [DocumentSettings_Type](#)

A complex type that is unused and MUST be ignored.

Child Elements:

SnapAngle: A [SnapAngle_Type](#) element that is unused and MUST be ignored.

The following W3C XML Schema ([\[XMLSCHEMA1\]](#) section 2.1) fragment specifies the contents of this complex type.

```

<xsd:complexType name="SnapAngles_Type">
  <xsd:sequence>
    <xsd:element name="SnapAngle" type="SnapAngle_Type" minOccurs="0" maxOccurs="unbounded"/>
  </xsd:sequence>
</xsd:complexType>

```

2.3.4.2.86 SnapExtensions_Type

Target namespace: <http://schemas.microsoft.com/office/visio/2011/1/core>

Referenced by: [DocumentSettings_Type](#)

A complex type that is unused and MUST be ignored.

The following W3C XML Schema ([\[XMLSCHEMA1\]](#) section 2.1) fragment specifies the contents of this complex type.

```

<xsd:complexType name="SnapExtensions_Type">
  <xsd:simpleContent>
    <xsd:extension base="xsd:int"/>
  </xsd:simpleContent>
</xsd:complexType>

```

2.3.4.2.87 SnapSettings_Type

Target namespace: <http://schemas.microsoft.com/office/visio/2011/1/core>

Referenced by: [DocumentSettings_Type](#)

A complex type that is unused and MUST be ignored.

The following W3C XML Schema ([\[XMLSCHEMA1\]](#) section 2.1) fragment specifies the contents of this complex type.

```

<xsd:complexType name="SnapSettings_Type">

```

```

<xsd:simpleContent>
  <xsd:extension base="xsd:int"/>
</xsd:simpleContent>
</xsd:complexType>

```

2.3.4.2.88 StyleSheet_Type

Target namespace: <http://schemas.microsoft.com/office/visio/2011/1/core>

Referenced by: [StyleSheets_Type](#)

A complex type that specifies a [style sheet](#).

Child Elements:

Cell: A [Cell_Type](#) element that specifies a single property.

Section: A [Section_Type](#) element that specifies a collection of related properties.

Attributes:

ID: A xsd:unsignedInt ([\[XMLSCHEMA2\]](#) section 3.3.22) attribute that specifies the index of the style sheet. It MUST be unique amongst all the StyleSheet_Type child elements of the containing StyleSheets_Type.

Name: A xsd:string ([\[XMLSCHEMA2\]](#) section 3.2.1) attribute that specifies the language-dependent name of a style sheet.

NameU: A xsd:string ([\[XMLSCHEMA2\]](#) section 3.2.1) attribute that specifies the language-independent name of a style sheet.

IsCustomName: A xsd:boolean ([\[XMLSCHEMA2\]](#) section 3.2.2) attribute that is unused and MUST be ignored.

IsCustomNameU: A xsd:boolean ([\[XMLSCHEMA2\]](#) section 3.2.2) attribute that is unused and MUST be ignored.

LineStyle: A xsd:unsignedInt ([\[XMLSCHEMA2\]](#) section 3.3.22) attribute that specifies the identifier of the style sheet from which to [inherit](#) line formatting. It MUST be the value of the **ID** attribute associated with a StyleSheet_Type in the [web drawing](#).

FillStyle: A xsd:unsignedInt ([\[XMLSCHEMA2\]](#) section 3.3.22) attribute that specifies the identifier of the style sheet from which to inherit fill formatting. It MUST be the value of the **ID** attribute associated with a StyleSheet_Type in the web drawing.

TextStyle: A xsd:unsignedInt ([\[XMLSCHEMA2\]](#) section 3.3.22) attribute that specifies the identifier of the style sheet from which to inherit text formatting. It MUST be the value of the **ID** attribute associated with a StyleSheet_Type in the web drawing.

The following W3C XML Schema ([\[XMLSCHEMA1\]](#) section 2.1) fragment specifies the contents of this complex type.

```

<xsd:complexType name="StyleSheet_Type">
  <xsd:complexContent>
    <xsd:extension base="Sheet_Type">
      <xsd:attribute name="ID" type="xsd:unsignedInt" use="required"/>
    </xsd:extension>
  </xsd:complexContent>
</xsd:complexType>

```

```

<xsd:attribute name="Name" type="xsd:string"/>
<xsd:attribute name="NameU" type="xsd:string"/>
<xsd:attribute name="IsCustomName" type="xsd:boolean"/>
<xsd:attribute name="IsCustomNameU" type="xsd:boolean"/>
</xsd:extension>
</xsd:complexContent>
</xsd:complexType>

```

2.3.4.2.89 StyleSheets_Type

Target namespace: <http://schemas.microsoft.com/office/visio/2011/1/core>

Referenced by: [VisioDocument_Type](#)

A complex type that specifies a collection of [style sheets](#) in the [web drawing](#).

Child Elements:

StyleSheet: A [StyleSheet_Type](#) element that specifies a style sheet.

The following W3C XML Schema ([\[XMLSCHEMA1\]](#) section 2.1) fragment specifies the contents of this complex type.

```

<xsd:complexType name="StyleSheets_Type">
  <xsd:sequence>
    <xsd:element name="StyleSheet" type="StyleSheet_Type" minOccurs="0"
maxOccurs="unbounded"/>
  </xsd:sequence>
</xsd:complexType>

```

2.3.4.2.90 Text_Type

Target namespace: <http://schemas.microsoft.com/office/visio/2011/1/core>

Referenced by: [ShapeSheet_Type](#)

A complex type that specifies the [text](#) and text properties of a [shape](#). The text is specified by the contents of this element and is separated into text runs by its child elements.

Child Elements:

cp: A [cp_Type](#) element that specifies the beginning of a text run and the set of [character properties](#) to use.

pp: A [pp_Type](#) element that specifies the beginning of a text run and the set of [paragraph properties](#) to use.

tp: A [tp_Type](#) element that specifies the beginning of a text run and the set of [tabs properties](#) to use.

fld: A [fld_Type](#) element that specifies a [text field](#) in a text run.

The following W3C XML Schema ([\[XMLSCHEMA1\]](#) section 2.1) fragment specifies the contents of this complex type.

```

<xsd:complexType name="Text_Type" mixed="true">
  <xsd:choice minOccurs="0" maxOccurs="unbounded">
    <xsd:element name="cp" type="cp_Type" minOccurs="0" maxOccurs="unbounded"/>
    <xsd:element name="pp" type="pp_Type" minOccurs="0" maxOccurs="unbounded"/>
    <xsd:element name="tp" type="tp_Type" minOccurs="0" maxOccurs="unbounded"/>
    <xsd:element name="fld" type="fld_Type" minOccurs="0" maxOccurs="unbounded"/>
  </xsd:choice>
</xsd:complexType>

```

2.3.4.2.91 tp_Type

Target namespace: <http://schemas.microsoft.com/office/visio/2011/1/core>

Referenced by: [Text_Type](#)

A complex type that specifies the beginning of a text run and specifies an index designating the set of [tabs properties](#) to use.

Attributes:

IX: A `xsd:unsignedInt` ([\[XMLSCHEMA2\]](#) section 3.3.22) attribute that specifies the tabs properties used in the text run. It MUST be the **IX** attribute of a [Row_Type](#) that has a [Tabs Section_Type](#) parent element.

The following W3C XML Schema ([\[XMLSCHEMA1\]](#) section 2.1) fragment specifies the contents of this complex type.

```

<xsd:complexType name="tp_Type">
  <xsd:attribute name="IX" type="xsd:unsignedInt" use="required"/>
</xsd:complexType>

```

2.3.4.2.92 VisioDocument_Type

Target namespace: <http://schemas.microsoft.com/office/visio/2011/1/core>

Referenced by: [VisioDocument](#)

A complex type that specifies properties of a [web drawing](#).

Child Elements:

DocumentSettings: A [DocumentSettings_Type](#) element that is unused and MUST be ignored.

Colors: A [Colors_Type](#) element that specifies the [color table](#) for the web drawing.

FaceNames: A [FaceNames_Type](#) element that specifies the [font table](#) for the web drawing.

StyleSheets: A [StyleSheets_Type](#) element that specifies a collection of [style sheets](#) in the web drawing.

DocumentSheet: A [DocumentSheet_Type](#) element that specifies properties of the web drawing.

EventList: An [EventList_Type](#) element that is unused and MUST be ignored.

HeaderFooter: A [HeaderFooter_Type](#) element that is unused and MUST be ignored.

PublishSettings: A [PublishSettings_Type](#) element that specifies the set of [drawing pages](#) that are viewable and set of [recordsets](#) that can be [refreshed](#) in the web drawing. If this element is missing, all drawing pages are viewable and all recordsets can be refreshed in the web drawing.

The following W3C XML Schema ([\[XMLSCHEMA1\]](#) section 2.1) fragment specifies the contents of this complex type.

```
<xsd:complexType name="VisioDocument_Type">
  <xsd:sequence>
    <xsd:element name="DocumentSettings" type="DocumentSettings_Type" minOccurs="0"
maxOccurs="1"/>
    <xsd:element name="Colors" type="Colors_Type" minOccurs="0" maxOccurs="1"/>
    <xsd:element name="FaceNames" type="FaceNames_Type" minOccurs="0" maxOccurs="1"/>
    <xsd:element name="StyleSheets" type="StyleSheets_Type" minOccurs="0" maxOccurs="1"/>
    <xsd:element name="DocumentSheet" type="DocumentSheet_Type" minOccurs="0" maxOccurs="1"/>
    <xsd:element name="EventList" type="EventList_Type" minOccurs="0" maxOccurs="1"/>
    <xsd:element name="HeaderFooter" type="HeaderFooter_Type" minOccurs="0" maxOccurs="1"/>
    <xsd:element name="PublishSettings" type="PublishSettings_Type" minOccurs="0"
maxOccurs="1"/>
    <xsd:any minOccurs="0" maxOccurs="unbounded" namespace="##other" processContents="lax"/>
  </xsd:sequence>
  <xsd:anyAttribute namespace="##other" processContents="lax"/>
</xsd:complexType>
```

2.3.4.2.93 EventList_Type

Target namespace: <http://schemas.microsoft.com/office/visio/2011/1/core>

Referenced by: [VisioDocument_Type](#)

A complex type that is unused and MUST be ignored.

Child Elements:

EventItem: An [EventItem_Type](#) element that is unused and MUST be ignored.

The following W3C XML Schema ([\[XMLSCHEMA1\]](#) section 2.1) fragment specifies the contents of this complex type.

```
<xsd:complexType name="EventList_Type">
  <xsd:sequence>
    <xsd:element name="EventItem" type="EventItem_Type" minOccurs="0" maxOccurs="unbounded"/>
  </xsd:sequence>
</xsd:complexType>
```

2.3.4.2.94 EventItem_Type

Target namespace: <http://schemas.microsoft.com/office/visio/2011/1/core>

Referenced by: [EventList_Type](#)

A complex type that is unused and MUST be ignored.

Attributes:

ID: A xsd:unsignedInt ([\[XMLSCHEMA2\]](#) section 3.3.22) attribute that is unused and MUST be ignored.

Action: A xsd:unsignedShort ([\[XMLSCHEMA2\]](#) section 3.3.23) attribute that is unused and MUST be ignored.

EventCode: A xsd:unsignedShort ([\[XMLSCHEMA2\]](#) section 3.3.23) attribute that is unused and MUST be ignored.

Enabled: A xsd:boolean ([\[XMLSCHEMA2\]](#) section 3.2.2) attribute that is unused and MUST be ignored.

Target: A xsd:string ([\[XMLSCHEMA2\]](#) section 3.2.1) attribute that is unused and MUST be ignored.

TargetArgs: A xsd:string ([\[XMLSCHEMA2\]](#) section 3.2.1) attribute that is unused and MUST be ignored.

The following W3C XML Schema ([\[XMLSCHEMA1\]](#) section 2.1) fragment specifies the contents of this complex type.

```
<xsd:complexType name="EventItem_Type">
  <xsd:attribute name="ID" type="xsd:unsignedInt" use="required"/>
  <xsd:attribute name="Action" type="xsd:unsignedShort" use="required"/>
  <xsd:attribute name="EventCode" type="xsd:unsignedShort" use="required"/>
  <xsd:attribute name="Enabled" type="xsd:boolean"/>
  <xsd:attribute name="Target" type="xsd:string" use="required"/>
  <xsd:attribute name="TargetArgs" type="xsd:string" use="required"/>
</xsd:complexType>
```

2.3.4.3 Elements

This section specifies the XML root elements contained in the [parts](#) of a [web drawing](#).

2.3.4.3.1 VisioDocument

Target namespace: <http://schemas.microsoft.com/office/visio/2011/1/core>

A [VisioDocument Type](#) element that specifies properties of a [web drawing](#).

The following W3C XML Schema ([\[XMLSCHEMA1\]](#) section 2.1) fragment specifies the contents of this element.

```
<xsd:element name="VisioDocument" type="VisioDocument_Type"/>
```

2.3.4.3.2 Masters

Target namespace: <http://schemas.microsoft.com/office/visio/2011/1/core>

A [Masters Type](#) element that specifies the [masters](#) in a [web drawing](#).

The following W3C XML Schema ([\[XMLSCHEMA1\]](#) section 2.1) fragment specifies the contents of this element.

```
<xsd:element name="Masters" type="Masters_Type"/>
```

2.3.4.3.3 MasterContents

Target namespace: <http://schemas.microsoft.com/office/visio/2011/1/core>

A [PageContents_Type](#) element that specifies information about the [shapes](#) in a [master](#) in a [web drawing](#).

The following W3C XML Schema ([\[XMLSCHEMA1\]](#) section 2.1) fragment specifies the contents of this element.

```
<xsd:element name="MasterContents" type="PageContents_Type"/>
```

2.3.4.3.4 Pages

Target namespace: <http://schemas.microsoft.com/office/visio/2011/1/core>

A [Pages_Type](#) element that specifies the [drawing pages](#) in a [web drawing](#).

The following W3C XML Schema ([\[XMLSCHEMA1\]](#) section 2.1) fragment specifies the contents of this element.

```
<xsd:element name="Pages" type="Pages_Type"/>
```

2.3.4.3.5 PageContents

Target namespace: <http://schemas.microsoft.com/office/visio/2011/1/core>

A [PageContents_Type](#) element that specifies information about the contents of a [drawing page](#) in a [web drawing](#).

The following W3C XML Schema ([\[XMLSCHEMA1\]](#) section 2.1) fragment specifies the contents of this element.

```
<xsd:element name="PageContents" type="PageContents_Type"/>
```

2.3.4.3.6 DataConnections

Target namespace: <http://schemas.microsoft.com/office/visio/2011/1/core>

A [DataConnections_Type](#) element that specifies the [data connection](#) information needed to query data sources and [refresh](#) the [recordsets](#) referenced by a [web drawing](#).

The following W3C XML Schema ([\[XMLSCHEMA1\]](#) section 2.1) fragment specifies the contents of this element.

```
<xsd:element name="DataConnections" type="DataConnections_Type"/>
```

2.3.4.3.7 DataRecordSets

Target namespace: <http://schemas.microsoft.com/office/visio/2011/1/core>

A [DataRecordSets_Type](#) element that specifies the [recordsets](#) and [data bindings](#) in a [web drawing](#).

The following W3C XML Schema ([\[XMLSCHEMA1\]](#) section 2.1) fragment specifies the contents of this element.

```
<xsd:element name="DataRecordSets" type="DataRecordSets_Type"/>
```

2.3.4.3.8 Comments

Target namespace: <http://schemas.microsoft.com/office/visio/2011/1/core>

A [Comments_Type](#) element that specifies the properties of [comments](#) in a [web drawing](#).

The following W3C XML Schema ([\[XMLSCHEMA1\]](#) section 2.1) fragment specifies the contents of this element.

```
<xsd:element name="Comments" type="Comments_Type"/>
```

2.3.4.3.9 Theme

Target namespace: <http://visThemeSchemaUri>

A [CT_OfficeStyleSheet](#) element specified in **[ISO/IEC-29500-1]** section 20.1.6.9 that specifies the properties of a [dynamic theme](#) in a [web drawing](#).

The following W3C XML Schema ([\[XMLSCHEMA1\]](#) section 2.1) fragment specifies the contents of this element.

```
<xsd:element name="theme" type="CT_OfficeStyleSheet"/>
```

2.3.4.3.10 Extensions

Target namespace: <http://schemas.microsoft.com/office/visio/2011/1/core>

An [Extensions_Type](#) element that specifies the definitions of [sections](#), [rows](#), and [cells](#) not specified in the specification.

The following W3C XML Schema ([\[XMLSCHEMA1\]](#) section 2.1) fragment specifies the contents of this element.

```
<xsd:element name="Extensions" type="Extensions_Type"/>
```

2.3.4.4 Attributes

This specification does not define any attributes.

2.3.5 Markup Compatibility Schema

Target namespace: <http://schemas.openxmlformats.org/markupcompatibility/2006>

The Markup Compatibility Schema section specifies the [markup compatibility](#) attributes and elements, specified in [\[ISO/IEC-29500-3\]](#) section 10, supported in a [web drawing](#).

2.3.5.1 Compatibility-Rule Attributes

Compatibility-rule attributes, specified in [\[ISO/IEC-29500-3\]](#) section 10.1, are XML attributes which express rules governing markup consumers' behavior when encountering XML elements and attributes from non-understood namespaces.

The following compatibility-rule attributes are supported.

Attribute Name	Specified in
Ignorable	[ISO/IEC-29500-3] section 10.1.1
MustUnderstand	[ISO/IEC-29500-3] section 10.1.4

2.3.5.2 Alternate-Content Elements

Alternate-content elements, specified in [\[ISO/IEC-29500-3\]](#) section 10.2, are a set of alternatives of XML markup and character data, of which no more than one can be processed by a markup consumer. A markup consumer chooses from among the alternatives based upon its set of understood namespaces.

The following alternate-content elements are supported.

Element Name	Specified in
AlternateContent	[ISO/IEC-29500-3] section 10.2.1
Choice	[ISO/IEC-29500-3] section 10.2.2
Fallback	[ISO/IEC-29500-3] section 10.2.3

2.4 ShapeSheet Properties

The ShapeSheet properties sections that follow specify the different types of [Section_Type](#), [Row_Type](#), and [Cell_Type](#) elements in a [sheet](#).

2.4.1 Sections

The following sections specify the pre-defined [sections](#) that can exist for a [sheet](#). Each section is specified by a [Section_Type](#) child element of a [ShapeSheet_Type](#), [PageSheet_Type](#), [StyleSheet_Type](#), or [DocumentSheet_Type](#) element. Other sections can be defined through [sheet extensibility](#).

The **N** attribute of a [Section_Type](#) element MUST be equal to one of the values defined in the following sections, unless it is defined through sheet extensibility. The meaning of the attribute is specified in the corresponding section.

2.4.1.1 Actions

Actions is a collection of properties that are used for [formula evaluation](#). The collection MUST have a [ShapeSheet_Type](#) or [PageSheet_Type](#) parent element.

2.4.1.2 ActionTag

ActionTag is a collection of properties that are used for [formula evaluation](#) only. The collection MUST have a [ShapeSheet Type](#) or [PageSheet Type](#) parent element.

2.4.1.3 Annotation

Annotation is a collection of properties that are unused and MUST be ignored. The collection MUST have a [PageSheet Type](#) parent element.

2.4.1.4 Character

Character is a collection of related properties that specify the [character properties](#) of the [text](#) of a [shape](#). The collection MUST have a [ShapeSheet Type](#) or [StyleSheet Type](#) parent element.

2.4.1.5 Connection

Connection is a collection of properties that are used for [formula evaluation](#) only. The collection MUST have a [ShapeSheet Type](#) parent element.

2.4.1.6 Control

Control is a collection of properties that are used for [formula evaluation](#) only. The collection MUST have a [ShapeSheet Type](#) parent element.

2.4.1.7 Field

Field is a collection of related properties that specify the [text fields](#) of a [shape](#). The collection MUST have a [ShapeSheet Type](#) parent element.

2.4.1.8 FillGradient

FillGradient is a collection of properties that specify the fill color gradient of a [shape](#). The collection MUST have a [ShapeSheet Type](#) or [StyleSheet Type](#) parent element.

2.4.1.9 Geometry

Geometry is a collection of related properties that specify the [geometry visualization](#). The collection MUST have a [ShapeSheet Type](#) parent element.

The first [Row Type](#) child element of this element MUST be of the type [MoveTo](#), [RelMoveTo](#), [Ellipse](#), or [InfiniteLine](#).

2.4.1.10 Hyperlink

Hyperlink is a collection of related properties that specify the [shape hyperlinks](#). The collection MUST have a [ShapeSheet Type](#) parent element.

2.4.1.11 Layer

Layer is a collection of properties that specify all layers defined on a [drawing page](#). The collection MUST be the child of a [PageSheet Type](#) element.

2.4.1.12 LineGradient

LineGradient is a collection of related properties that specify the line color gradient of a [shape](#). The collection MUST have a [ShapeSheet_Type](#) or [StyleSheet_Type](#) parent element.

2.4.1.13 Paragraph

Paragraph is a collection of related properties that specify the [paragraph properties](#) of the [text](#) of a [shape](#). The collection MUST have a [ShapeSheet_Type](#) or [StyleSheet_Type](#) parent element.

2.4.1.14 Property

Property is a collection of related properties that specify the [shape data](#). The collection MUST have a [ShapeSheet_Type](#) parent element.

2.4.1.15 Reviewer

Reviewer is a collection of properties that are used for [formula evaluation](#). The collection MUST have a [DocumentSheet_Type](#) parent element.

2.4.1.16 Scratch

Scratch is a collection of properties that are used for [formula evaluation](#). The collection MUST have a [DocumentSheet_Type](#), [PageSheet_Type](#), or [ShapeSheet_Type](#) parent element.

2.4.1.17 Tabs

Tabs is a collection of related properties that specify the [tabs properties](#) of the [text](#) of a [shape](#). The collection MUST have a [ShapeSheet_Type](#) or [StyleSheet_Type](#) parent element.

2.4.1.18 User

User is a collection of properties that are used for [formula evaluation](#). The collection MUST have a [DocumentSheet_Type](#), [PageSheet_Type](#), or [ShapeSheet_Type](#) parent element.

If the **N** attribute of a [Row_Type](#) child element is in a [UserRowNames](#), that element specifies additional properties.

2.4.2 GeometryRowTypes

The following **GeometryRowTypes** sections specify the [Row_Type](#) elements that make up [geometric paths](#). They specify the allowable XML structures that can exist under a [Geometry Section_Type](#) element. The heading of each section specifies the T attribute required for that structure.

The **T** attribute of a [Row_Type](#) child element of a [Geometry Section_Type](#) element MUST be equal to one of the structures defined in the following sections. The meaning of the attribute is specified in the corresponding section.

2.4.2.1 ArcTo

The **ArcTo** structure is a [Row_Type](#) child element that specifies a circular arc in a [geometric path](#).

The [Cell_Type](#) child elements of this structure MUST be a value from the following table.

Cell_Type element	Meaning
X	Specifies the x-coordinate of the ending vertex of the arc.
Y	Specifies the y-coordinate of the ending vertex of the arc.
A	Specifies the distance from the arc's midpoint to the midpoint of its chord.

2.4.2.2 Ellipse

The **Ellipse** structure is a [Row_Type](#) child element that specifies the [geometric path](#) of an ellipse. An ellipse is specified by its center point and two points on the ellipse.

A [Geometry Section_Type](#) element that contains this Row_Type MUST NOT contain any other Row_Types.

The [Cell_Type](#) child elements of this structure MUST be a value from the following table.

Cell_Type element	Meaning
X	Specifies the x-coordinate of the center point.
Y	Specifies the y-coordinate of the center point.
A	Specifies the x-coordinate of the first point on the ellipse.
B	Specifies the y-coordinate of the first point on the ellipse.
C	Specifies the x-coordinate of the second point on the ellipse.
D	Specifies the y-coordinate of the second point on the ellipse.

2.4.2.3 EllipticalArcTo

The **EllipticalArcTo** structure is a [Row_Type](#) child element that specifies an elliptical arc in a [geometric path](#).

The [Cell_Type](#) child elements of this structure MUST be a value from the following table.

Cell_Type element	Meaning
X	Specifies the x-coordinate of the endpoint.
Y	Specifies the y-coordinate of the endpoint.
A	Specifies the x-coordinate of a point on the arc.
B	Specifies the y-coordinate of a point on the arc.
C	Specifies the angle of an arc's major axis relative to the x-axis of its parent shape .
D	Specifies the ratio of an arc's major axis to its minor axis.

2.4.2.4 InfiniteLine

The **InfiniteLine** structure is a [Row_Type](#) child element that specifies the [geometric path](#) of an infinite line. The infinite line is specified by two points.

A [Geometry Section Type](#) element that contains this Row_Type element MUST NOT contain any other Row_Type elements.

The [Cell_Type](#) child elements of this structure MUST be a value from the following table.

Cell_Type element	Meaning
X	Specifies the x-coordinate of the first point.
Y	Specifies the y-coordinate of the first point.
A	Specifies the x-coordinate of the second point.
B	Specifies the y-coordinate of the second point.

2.4.2.5 LineTo

The **LineTo** structure is a [Row_Type](#) child element that specifies a line segment in a [geometric path](#).

The [Cell_Type](#) child elements of this structure MUST be a value from the following table.

Cell_Type element	Meaning
X	Specifies the x-coordinate of the ending vertex of the line segment.
Y	Specifies the y-coordinate of the ending vertex of the line segment.

2.4.2.6 MoveTo

The **MoveTo** structure is a [Row_Type](#) child element that specifies either the starting vertex of a [geometric path](#) or the first vertex after a break in a path.

The [Cell_Type](#) child elements of this structure MUST be a value from the following table.

Cell_Type element	Meaning
X	Specifies the x-coordinate of the vertex.
Y	Specifies the y-coordinate of the vertex.

2.4.2.7 NURBSto

The **NURBSto** structure is a [Row_Type](#) child element that specifies a Non-Uniform Rational B-Spline (NURBS) in a [geometric path](#).

The [Cell_Type](#) child elements of this structure MUST be a value from the following table.

Cell_Type element	Meaning
X	Specifies the x-coordinate of the endpoint of a NURBS .
Y	Specifies the y-coordinate of the endpoint of a NURBS.
A	Specifies the second to the last knot of the NURBS.
B	Specifies the last weight of the NURBS.

Cell_Type element	Meaning
C	Specifies the first knot of the NURBS.
D	Specifies the first weight of the NURBS.
E	Specifies a formula that MUST contain a NURBS function.

2.4.2.8 PolylineTo

The **PolylineTo** structure is a [Row_Type](#) child element that specifies a polyline segment in a [geometric path](#).

The [Cell_Type](#) child elements of this structure MUST be a value from the following table.

Cell_Type element	Meaning
X	Specifies the x-coordinate of the ending vertex of the last line segment.
Y	Specifies the y-coordinate of the ending vertex of the last line segment.
A	Specifies a formula that MUST contain a polyline function.

2.4.2.9 RelCubBezTo

The **RelCubBezTo** structure is a [Row_Type](#) child element that specifies a cubic Bezier in a [geometric path](#). Coordinates are specified as [relative coordinates](#). A cubic Bezier is specified by its endpoint and two control points, one at the beginning of the curve and the other at the end of the curve.

The [Cell_Type](#) child elements of this structure MUST be a value from the following table.

Cell_Type element	Meaning
X	Specifies the x-coordinate of the endpoint in relative coordinates.
Y	Specifies the y-coordinate of the endpoint in relative coordinates.
A	Specifies the x-coordinate of the control point at the beginning of the curve in relative coordinates.
B	Specifies the y-coordinate of the control point at the beginning of the curve in relative coordinates.
C	Specifies the x-coordinate of the control point at the end of the curve in relative coordinates.
D	Specifies the y-coordinate of the control point at the end of the curve in relative coordinates.

2.4.2.10 RelEllipticalArcTo

The **RelEllipticalArcTo** structure is a [Row_Type](#) child element that specifies an elliptical arc in a [geometric path](#). Coordinates are specified as [relative coordinates](#).

The [Cell_Type](#) child elements of this structure MUST be a value from the following table.

Cell_Type element	Meaning
X	Specifies the x-coordinate of the endpoint in relative coordinates.
Y	Specifies the y-coordinate of the endpoint in relative coordinates.
A	Specifies the x-coordinate of the arc's control point in relative coordinates.
B	Specifies the y-coordinate of an arc's control point in relative coordinates.
C	Specifies the angle of an arc's major axis relative to the x-axis of its parent.
D	Specifies the ratio of an arc's major axis to its minor axis.

2.4.2.11 RelLineTo

The **RelLineTo** structure is a [Row_Type](#) child element that specifies a line segment in a [geometric path](#). Coordinates are specified as [relative coordinates](#).

The [Cell_Type](#) child elements of this structure MUST be a value from the following table.

Cell_Type element	Meaning
X	Specifies the x-coordinate of the ending vertex of a line segment in relative coordinates.
Y	Specifies the y-coordinate of the ending vertex of a line segment in relative coordinates.

2.4.2.12 RelMoveTo

The **RelMoveTo** structure is a [Row_Type](#) child element that specifies either the starting vertex of a [geometric path](#) or the first vertex after a break in a path. Coordinates are specified as [relative coordinates](#).

The [Cell_Type](#) child elements of this structure MUST be a value from the following table.

Cell_Type element	Meaning
X	Specifies the x-coordinate of the vertex in relative coordinates.
Y	Specifies the y-coordinate of the vertex in relative coordinates.

2.4.2.13 RelQuadBezTo

The **RelQuadBezTo** structure is a [Row_Type](#) child element that specifies a quadratic Bezier in a [geometric path](#). Coordinates are specified as [relative coordinates](#). A quadratic Bezier is specified by its endpoint and one control point.

The [Cell_Type](#) child elements of this structure MUST be a value from the following table.

Cell_Type element	Meaning
X	Specifies the x-coordinate of the endpoint in relative coordinates.
Y	Specifies the y-coordinate of the endpoint in relative coordinates.
A	Specifies the x-coordinate of the control point in relative coordinates.
B	Specifies the y-coordinate of the control point in relative coordinates.

2.4.2.14 SplineKnot

The **SplineKnot** structure is a [Row_Type](#) child element that specifies a knot of a spline. A spline knot is specified by an endpoint and one control point.

The [Cell_Type](#) child elements of this structure MUST be a value from the following table.

Cell_Type element	Meaning
X	Specifies the x-coordinate of a control point.
Y	Specifies the y-coordinate of a control point.
A	Specifies a knot of the spline.

2.4.2.15 SplineStart

The **SplineStart** is a [Row_Type](#) child element that specifies properties of a spline.

The [Cell_Type](#) child elements of this structure MUST be a value from the following table.

Cell_Type element	Meaning
X	Specifies the x-coordinate of a spline's second control point.
Y	Specifies the y-coordinate of a spline's second control point.
A	Specifies the second knot of the spline.
B	Specifies the first knot of a spline.
C	Specifies the last knot of a spline.
D	Specifies the degree of a spline, The value of the structure MUST be greater than or equal to zero, and less than or equal to 25.

2.4.3 UserRowNames

The following sections specify the pre-defined [rows](#) that can exist within a [User section](#) for a [sheet](#). Each row is specified by a [Row_Type](#) child element of a User [Section_Type](#) element. Other rows can be defined through [sheet extensibility](#).

If the **N** attribute of a Row_Type child element of a User Section_Type element is equal to one of the values defined in the following sections. The meaning of the Row_Type element is specified in the corresponding section.

2.4.3.1 msvShapeCategories

The value of the **msvShapeCategories** user row is a [PtqString](#) structure representing a category list. The category list is a semicolon-delimited collection of category name strings as per the following:

ABNF:

category-list = [category *(";" category)]

category = *(%x20-3A/%3C-7E); same as string-value minus the ";"

2.4.3.2 msvThemeAccentColor

The **msvThemeAccentColor** element is a [Row Type](#) child element that specifies a [fixed theme](#) or [dynamic theme](#) property. It MUST have a [Value](#) child element of the type [Cell Type](#).

The Value child element is a [vColor](#) that specifies the **AccentColor** property of a [custom fixed color scheme](#) as specified in [vThemeString](#) or the **AccentColor** property of a [custom dynamic theme color scheme](#) as specified in [vDynamicThemeString](#).

2.4.3.3 msvThemeDarkColor

The **msvThemeDarkColor** element is a [Row Type](#) child element that specifies a [dynamic theme](#) property. It MUST have a [Value](#) child element of the type [Cell Type](#).

The Value child element is a [vColor](#) that specifies the **DarkColor** property of a [custom dynamic theme color scheme](#) as specified in [vDynamicThemeString](#).

2.4.3.4 msvThemeLightColor

The **msvThemeLightColor** element is a [Row Type](#) child element that specifies a [dynamic theme](#) property. It MUST have a [Value](#) child element of the type [Cell Type](#).

The Value child element is a [vColor](#) that specifies the **LightColor** property of a [custom dynamic theme color scheme](#) as specified in [vDynamicThemeString](#).

2.4.3.5 msvThemeAccentColor6

The **msvThemeAccentColor6** element is a [Row Type](#) child element that specifies a [dynamic theme](#) property. It MUST have a [Value](#) child element of the type [Cell Type](#).

The Value child element is a [vColor](#) that specifies the **AccentColor6** property of a [custom dynamic theme color scheme](#) as specified in [vDynamicThemeString](#).

2.4.3.6 msvThemeAccentColor2

The **msvThemeAccentColor2** element is a [Row Type](#) child element that specifies a [fixed theme](#) or [dynamic theme](#) property. It MUST have a [Value](#) child element of the type [Cell Type](#).

The Value child element is a [vColor](#) that specifies the **AccentColor2** property of a [custom fixed color scheme](#) as specified in [vThemeString](#) or the **AccentColor2** property of a [custom dynamic theme color scheme](#) as specified in [vDynamicThemeString](#).

2.4.3.7 msvThemeAccentColor3

The **msvThemeAccentColor3** element is a [Row_Type](#) child element that specifies a [fixed theme](#) or [dynamic theme](#) property. It MUST have a [Value](#) child element of the type [Cell_Type](#).

The Value child element is a [vColor](#) that specifies the **AccentColor3** property of a [custom fixed color scheme](#) as specified in [vThemeString](#) or the **AccentColor3** property of a [custom dynamic theme color scheme](#) as specified in [vDynamicThemeString](#).

2.4.3.8 msvThemeAccentColor4

The **msvThemeAccentColor4** element is a [Row_Type](#) child element that specifies a [fixed theme](#) or [dynamic theme](#) property. It MUST have a [Value](#) child element of the type [Cell_Type](#).

The Value child element is a [vColor](#) that specifies the **AccentColor4** property of a [custom fixed color scheme](#) as specified in [vThemeString](#) or the **AccentColor4** property of a [custom dynamic theme color scheme](#) as specified in [vDynamicThemeString](#).

2.4.3.9 msvThemeAccentColor5

The **msvThemeAccentColor5** element is a [Row_Type](#) child element that specifies a [fixed theme](#) or [dynamic theme](#) property. It MUST have a [Value](#) child element of the type [Cell_Type](#).

The Value child element is a [vColor](#) that specifies the **AccentColor5** property of a [custom fixed color scheme](#) as specified in [vThemeString](#) or the **AccentColor5** property of a [custom dynamic theme color scheme](#) as specified in [vDynamicThemeString](#).

2.4.3.10 msvThemeAsianFont

The **msvThemeAsianFont** element is a [Row_Type](#) child element that specifies a [fixed theme](#) property. It MUST have a [Value](#) child element of the type [Cell_Type](#).

The Value child element is a [vFont](#) that specifies the **AsianFont** property of a [custom fixed effect scheme](#) as specified in [vTheme](#).

2.4.3.11 msvThemeBackgroundColor

The **msvThemeBackgroundColor** element is a [Row_Type](#) child element that specifies a [fixed theme](#) or [dynamic theme](#) property. It MUST have a [Value](#) child element of the type [Cell_Type](#).

The Value child element is a [vColor](#) that specifies the **BackgroundColor** property of a [custom fixed color scheme](#) specified in [vThemeString](#) or the **AccentColor5** property of a [custom dynamic theme color scheme](#) as specified in [vDynamicThemeString](#).

2.4.3.12 msvThemeColors

The **msvThemeColors** element is a [Row_Type](#) child element that specifies a [fixed theme](#) property. It MUST have a [Value](#) child element of the type [Cell_Type](#).

This Value child element is a [vScalar](#) that specifies the index of a fixed color scheme as specified in [vThemeString](#). If the value of the structure of the Value Cell_Type child element is equal to 254, this Value specifies a [custom fixed color scheme](#).

2.4.3.13 msvThemeComplexFont

The **msvThemeComplexFont** element is a [Row Type](#) child element that specifies a [fixed theme](#) property. It MUST have a [Value](#) child element of the type [Cell Type](#).

The Value child element is a [vFont](#) that specifies the **ComplexFont** property of a [custom fixed effect scheme](#) as specified in [vThemeString](#).

2.4.3.14 msvThemeConnectorBegin

The **msvThemeConnectorBegin** element is a [Row Type](#) child element that specifies a [fixed theme](#) property. It MUST have a [Value](#) child element of the type [Cell Type](#).

The Value child element is a [vScalar](#) that specifies the **ConnectorBegin** property of a [custom fixed effect scheme](#) as specified in [vThemeString](#).

2.4.3.15 msvThemeConnectorBeginSize

The **msvThemeConnectorBeginSize** element is a [Row Type](#) child element that specifies a [fixed theme](#) property. It MUST have a [Value](#) child element of the type [Cell Type](#).

The Value child element is a [vScalar](#) that specifies the **ConnectorBeginSize** property of a [custom fixed effect scheme](#) as specified in [vThemeString](#).

2.4.3.16 msvThemeConnectorColor

The **msvThemeConnectorColor** element is a [Row Type](#) child element that specifies a [fixed theme](#) property. It MUST have a [Value](#) child element of the type [Cell Type](#).

The Value child element is a [vColor](#) that specifies the **ConnectorColor** property of a [custom fixed color scheme](#) as specified in [vThemeString](#).

2.4.3.17 msvThemeConnectorEnd

The **msvThemeConnectorEnd** element is a [Row Type](#) child element that specifies a [fixed theme](#) property. It MUST have a [Value](#) child element of the type [Cell Type](#).

The Value child element is a [vScalar](#) that specifies the **ConnectorEnd** property of a [custom fixed effect scheme](#) as specified in [vThemeString](#).

2.4.3.18 msvThemeConnectorEnd2

The **msvThemeConnectorEnd2** element is a [Row Type](#) child element that specifies a [fixed theme](#) property. It MUST have a [Value](#) child element of the type [Cell Type](#).

The Value child element is a [vScalar](#) that specifies the **ConnectorEnd2** property of a [custom fixed effect scheme](#) as specified in [vThemeString](#).

2.4.3.19 msvThemeConnectorEndSize

The **msvThemeConnectorEndSize** element is a [Row Type](#) child element that specifies a [fixed theme](#) property. It MUST have a [Value](#) child element of the type [Cell Type](#).

The Value child element is a [vScalar](#) that specifies the **ConnectorEndSize** property of a [custom fixed effect scheme](#) as specified in [vThemeString](#).

2.4.3.20 msvThemeConnectorPattern

The **msvThemeConnectorPattern** element is a [Row_Type](#) child element that specifies a [fixed theme](#) property. It MUST have a [Value](#) child element of the type [Cell_Type](#).

The Value child element is a [vScalar](#) that specifies the **ConnectorPattern** property of a [custom fixed effect scheme](#) as specified in [vThemeString](#).

2.4.3.21 msvThemeConnectorRounding

The **msvThemeConnectorRounding** element is a [Row_Type](#) child element that specifies a [fixed theme](#) property. It MUST have a [Value](#) child element of the type [Cell_Type](#).

The Value child element is a [vLength](#) that specifies the **ConnectorRounding** property of a [custom fixed effect scheme](#) as specified in [vThemeString](#).

2.4.3.22 msvThemeConnectorTransparency

The **msvThemeConnectorTransparency** element is a [Row_Type](#) child element that specifies a [fixed theme](#) property. It MUST have a [Value](#) child element of the type [Cell_Type](#).

The Value child element is a [PtgNumPct](#) structure that specifies the **ConnectorTransparency** property of a [custom fixed effect scheme](#) as specified in [vThemeString](#).

2.4.3.23 msvThemeConnectorWeight

The **msvThemeConnectorWeight** element is a [Row_Type](#) child element that specifies a [fixed theme](#) property. It MUST have a [Value](#) child element of the type [Cell_Type](#).

The Value child element is a [vLength](#) that specifies the **ConnectorWeight** property of a [custom fixed effect scheme](#) as specified in [vThemeString](#).

2.4.3.24 msvThemeEffects

The **msvThemeEffects** element is a [Row_Type](#) child element that specifies a [fixed theme](#) property. It MUST have a [Value](#) child element of the type [Cell_Type](#).

The Value child element is a [vScalar](#) that specifies the index of a fixed effect scheme as specified in [vThemeString](#). If the value of the structure of the Value Cell_Type child element is equal to 254, this Value specifies a [custom fixed effect scheme](#).

2.4.3.25 msvThemeFillColor

The **msvThemeFillColor** element is a [Row_Type](#) child element that specifies a [fixed theme](#) property. It MUST have a [Value](#) child element of the type [Cell_Type](#).

The Value child element is a [vColor](#) that specifies the **FillColor** property of a [custom fixed color scheme](#) as specified in [vThemeString](#).

2.4.3.26 msvThemeFillColor2

The **msvThemeFillColor2** element is a [Row_Type](#) child element that specifies a [fixed theme](#) property. It MUST have a [Value](#) child element of the type [Cell_Type](#).

The Value child element is a [vColor](#) that specifies the **FillColor2** property of a [custom fixed color scheme](#) as specified in [vThemeString](#).

2.4.3.27 msvThemeFillPattern

The **msvThemeFillPattern** element is a [Row Type](#) child element that specifies a [fixed theme](#) property. It MUST have a [Value](#) child element of the type [Cell Type](#).

The Value child element is a [vScalar](#) that specifies the **FillPattern** property of a [custom fixed effect scheme](#) as specified in [vThemeString](#).

2.4.3.28 msvThemeFillTransparency

The **msvThemeFillTransparency** element is a [Row Type](#) child element that specifies a [fixed theme](#) property. It MUST have a [Value](#) child element of the type [Cell Type](#).

The Value child element is a [PtgNumPct](#) structure that specifies the **FillTransparency** property of a [custom fixed effect scheme](#) as specified in [vThemeString](#).

2.4.3.29 msvThemeLatinFont

The **msvThemeLatinFont** element is a [Row Type](#) child element that specifies a [fixed theme](#) property. It MUST have a [Value](#) child element of the type [Cell Type](#).

The Value child element is a [vFont](#) that specifies the **LatinFont** property of a [custom fixed effect scheme](#) as specified in [vThemeString](#).

2.4.3.30 msvThemeLineColor

The **msvThemeLineColor** element is a [Row Type](#) child element that specifies a [fixed theme](#) property. It MUST have a [Value](#) child element of the type [Cell Type](#).

The Value child element is a [vColor](#) that specifies the **LineColor** property of a [custom fixed color scheme](#) as specified in [vThemeString](#).

2.4.3.31 msvThemeLinePattern

The **msvThemeLinePattern** element is a [Row Type](#) child element that specifies a [fixed theme](#) property. It MUST have a [Value](#) child element of the type [Cell Type](#).

The Value child element is a [vScalar](#) that specifies the **LinePattern** property of a [custom fixed effect scheme](#) as specified in [vThemeString](#).

2.4.3.32 msvThemeLineRounding

The **msvThemeLineRounding** element is a [Row Type](#) child element that specifies a [fixed theme](#) property. It MUST have a [Value](#) child element of the type [Cell Type](#).

The Value child element is a [vLength](#) that specifies the **LineRounding** property of a [custom fixed effect scheme](#) as specified in [vThemeString](#).

2.4.3.33 msvThemeLineTransparency

The **msvThemeLineTransparency** element is a [Row Type](#) child element that specifies a [fixed theme](#) property. It MUST have a [Value](#) child element of the type [Cell Type](#).

The Value child element is a [PtgNumPct](#) structure that specifies the **LineTransparency** property of a [custom fixed effect scheme](#) as specified in [vThemeString](#).

2.4.3.34 msvThemeLineWeight

The **msvThemeLineWeight** element is a [Row Type](#) child element that specifies a [fixed theme](#) property. It MUST have a [Value](#) child element of the type [Cell Type](#).

The Value child element is a [vLength](#) that specifies the **LineWeight** property of a [custom fixed effect scheme](#) as specified in [vThemeString](#).

2.4.3.35 msvThemeShadowColor

The **msvThemeShadowColor** element is a [Row Type](#) child element that specifies a [fixed theme](#) property. It MUST have a [Value](#) child element of the type [Cell Type](#).

The Value child element is a [vColor](#) that specifies the **ShadowColor** property of a [custom fixed color scheme](#) as specified in [vThemeString](#).

2.4.3.36 msvThemeShadowDirection

The **msvThemeShadowDirection** element is a [Row Type](#) child element that specifies a [fixed theme](#) property. It MUST have a [Value](#) child element of the type [Cell Type](#).

The Value child element is a [vAngle](#) custom token grouping that specifies the **ShadowDirection** property of a [custom fixed effect scheme](#) as specified in [vThemeString](#).

2.4.3.37 msvThemeShadowMagnification

The **msvThemeShadowMagnification** element is a [Row Type](#) child element that specifies a [fixed theme](#) property. It MUST have a [Value](#) child element of the type [Cell Type](#).

The Value child element is a [PtgNumPct](#) structure that specifies the **ShadowMagnification** property of a [custom fixed effect scheme](#) as specified in [vThemeString](#).

2.4.3.38 msvThemeShadowPattern

The **msvThemeShadowPattern** element is a [Row Type](#) child element that specifies a [fixed theme](#) property. It MUST have a [Value](#) child element of the type [Cell Type](#).

The Value child element is a [vScalar](#) that specifies the **ShadowPattern** property of a [custom fixed effect scheme](#) as specified in [vThemeString](#).

2.4.3.39 msvThemeShadowStyle

The **msvThemeShadowStyle** element is a [Row Type](#) child element that specifies a [fixed theme](#) property. It MUST have a [Value](#) child element of the type [Cell Type](#).

The Value child element is a [vScalar](#) that specifies the **ShadowPattern** property of a [custom fixed effect scheme](#) as specified in [vThemeString](#).

2.4.3.40 msvThemeShadowTransparency

The **msvThemeShadowTransparency** element is a [Row Type](#) child element that specifies a [fixed theme](#) property. It MUST have a [Value](#) child element of the type [Cell Type](#).

The Value child element is a [PtgNumPct](#) structure that specifies the **ShadowTransparency** property of a [custom fixed effect scheme](#) as specified in [vThemeString](#).

2.4.3.41 msvThemeShadowXOffset

The **msvThemeShadowXOffset** element is a [Row Type](#) child element that specifies a [fixed theme](#) property. It MUST have a [Value](#) child element of the type [Cell Type](#).

The Value child element is a [vLength](#) that specifies the **ShadowXOffset** property of a [custom fixed effect scheme](#) as specified in [vThemeString](#).

2.4.3.42 msvThemeShadowYOffset

The **msvThemeShadowYOffset** element is a [Row Type](#) child element that specifies a [fixed theme](#) property. It MUST have a [Value](#) child element of the type [Cell Type](#).

The Value child element is a [vLength](#) that specifies the **ShadowYOffset** property of a [custom fixed effect scheme](#) as specified in [vThemeString](#).

2.4.3.43 msvThemeTextColor

The **msvThemeTextColor** element is a [Row Type](#) child element that specifies a [fixed theme](#) property. It MUST have a [Value](#) child element of the type [Cell Type](#).

The Value child element is a [vColor](#) that specifies the **TextColor** property of a [custom fixed color scheme](#) as specified in [vThemeString](#).

2.4.3.44 visUSEType

The **visUSEType** element is a [Row Type](#) child element that specifies a [master](#) property. It MUST have a [Value](#) child element of the type [Cell Type](#).

The Value child element is a [PtgByte](#) structure that specifies the type of a master when the master is not used in [shape inheritance](#). If the master is used in shape inheritance this user row MUST NOT exist.

The value of the structure MUST equal a value from the following table.

Value	Meaning
0	This is used during formula evaluation only.
1	This is used during formula evaluation only.
2	Specifies that this is a custom fixed effect scheme master.
3	Specifies that this is a custom fixed color scheme master.

2.4.4 Cells

The following sections specify the pre-defined [cells](#) that can exist for a [sheet](#). Each cell is specified by a [Cell Type](#) child element of a [Section Type](#), [Row Type](#), [ShapeSheet Type](#), [PageSheet Type](#), [StyleSheet Type](#), or [DocumentSheet Type](#) element. Other cells can be defined through [sheet extensibility](#).

The **N** attribute of a [Cell Type](#) element MUST be equal to one of the values defined in the following sections, unless it is defined through sheet extensibility. The meaning of the attribute is specified in the corresponding section.

2.4.4.1 A

The **A** cell is a [formula expression](#) or a [vScalar](#), [vAny](#) or [vLength](#) custom token grouping that specifies a property of a [shape](#) according to the [Row_Type](#) of its parent element. It MUST have a [Row_Type](#) parent element that has a [Geometry](#) or [Scratch Section_Type](#) parent element.

If **A** has an [ArcTo](#), [Ellipse](#), [EllipticalArcTo](#), or [InfiniteLine](#) [Row_Type](#) parent element, it is a [vLength](#) that specifies [geometry path](#) information according to the [Row_Type](#).

If **A** has a [NURBSto](#), [RelCubBezTo](#), [RelEllipticalArcTo](#), [RelQuadBezTo](#), [SplineStart](#), or [SplineKnot](#) [Row_Type](#) parent element, it is a [vScalar](#) that specifies geometry path information according to the [Row_Type](#).

If **A** has a [PolylineTo](#) parent element, it is a formula expression that MUST contain a [polyline](#) function.

If **A** is a descendant element of a [Scratch Section_Type](#) element, it is a [vAny](#) that is used during [formula evaluation](#) only.

2.4.4.2 Action

The **Action** cell is a [vScalar](#) custom token grouping that is used during [formula evaluation](#) only. It MUST have a [Row_Type](#) parent element that has a [Actions Section_Type](#) parent element.

2.4.4.3 Active

The **Active** cell is a [PtgBool](#) parse token that is used during [formula evaluation](#) only. It MUST have a [Row_Type](#) parent element that has a [Layer Section_Type](#) parent element.

2.4.4.4 AddMarkup

The **AddMarkup** cell is a [PtgBool](#) parse token that is used during [formula evaluation](#) only. It MUST have a [DocumentSheet_Type](#) parent element.

2.4.4.5 Address

The **Address** cell is a [PtgString](#) parse token that specifies a **Uniform Resource Identifier (URI)** hyperlink of a [shape](#). It MUST have a [Row_Type](#) parent element that has a [Hyperlink Section_Type](#) parent element.

2.4.4.6 AlignBottom

The **AlignBottom** cell is a [vScalar](#) custom token grouping that is used during [formula evaluation](#) only. It MUST have a [ShapeSheet_Type](#) parent element or a [StyleSheet_Type](#) parent element with an **ID** attribute equal to zero.

2.4.4.7 AlignCenter

The **AlignCenter** cell is a [vScalar](#) custom token grouping that is used during [formula evaluation](#) only. It MUST have a [ShapeSheet_Type](#) parent element or a [StyleSheet_Type](#) parent element with an **ID** attribute equal to zero.

2.4.4.8 AlignLeft

The **AlignLeft** cell is a [vScalar](#) custom token grouping that is used during [formula evaluation](#) only. It MUST have a [ShapeSheet Type](#) parent element or a [StyleSheet Type](#) parent element with an **ID** attribute equal to zero.

2.4.4.9 Alignment

The **Alignment** cell is a [vScalar](#) custom token grouping that specifies the tab alignment for a [tabs property](#). It MUST have a [Row Type](#) parent element that has a [Tabs Section Type](#) parent element. It MUST have an **N** attribute with the following format.

"Alignment" #

is an unsigned long integer, and MUST be less than or equal to 59

The value of the structure is specified by the following table.

Value	Meaning
0	Specifies a tab stop with left alignment. The text extends to the right from the tab stop position.
1	Specifies a tab stop with center alignment. The text is centered at the tab stop position.
2	Specifies a tab stop with right alignment. The text extends to the left from the tab stop position.
3	Specifies a decimal tab stop, where aligns a decimal point at the tab stop position. Text without a decimal point extends to the left of the tab stop position.
4, or greater	Specifies a decimal tab stop.

2.4.4.10 AlignMiddle

The **AlignMiddle** cell is a [vScalar](#) custom token grouping that is used during [formula evaluation](#) only. It MUST have a [ShapeSheet Type](#) parent element or a [StyleSheet Type](#) parent element with an **ID** attribute equal to zero.

2.4.4.11 AlignRight

The **AlignRight** cell is a [vScalar](#) custom token grouping that is used during [formula evaluation](#) only. It MUST have a [ShapeSheet Type](#) parent element or a [StyleSheet Type](#) parent element with an **ID** attribute equal to zero.

2.4.4.12 AlignTop

The **AlignTop** cell is a [vScalar](#) custom token grouping that is used during [formula evaluation](#) only. It MUST have a [ShapeSheet Type](#) parent element or a [StyleSheet Type](#) parent element with an **ID** attribute equal to zero.

2.4.4.13 Angle

The **Angle** cell is a [vAngle](#) or [vScalar](#) custom token grouping that specifies the angle of rotation of a [shape](#). The value is defined in relation to the [coordinate system](#) of the shape's [parent](#). It MUST have

a [ShapeSheet_Type](#) parent element or a [StyleSheet_Type](#) parent element with an **ID** attribute equal to zero.

If the structure is a [vScalar](#), the value MUST be expressed as an [angleInternalUnitNumber](#) custom internal unit number. Increasing numbers indicate counterclockwise rotation.

2.4.4.14 AsianFont

The **AsianFont** cell is a [vFont](#) structure that specifies the font used for Asian characters in a text run. It MUST have a [Row_Type](#) parent element that has a [Character Section_Type](#) parent element.

If the value of the structure is equal to zero or if the font specified does not include Asian characters, the font specified by the sibling [Font Cell_Type](#) element is used in its place.

2.4.4.15 AutoGen

The **AutoGen** cell is a [PtgBool](#) parse token that is used during [formula evaluation](#) only. It MUST have a [Row_Type](#) parent element that has a [Connection Section_Type](#) parent element.

2.4.4.16 AvenueSizeX

The **AvenueSizeX** cell is a [vScalar](#) custom token grouping that is used during [formula evaluation](#) only. It MUST have a [PageSheet_Type](#) parent element.

2.4.4.17 AvenueSizeY

The **AvenueSizeY** cell is a [vScalar](#) custom token grouping that is used during [formula evaluation](#) only. It MUST have a [PageSheet_Type](#) parent element.

2.4.4.18 AvoidPageBreaks

The **AvoidPageBreaks** cell is a [PtgBool](#) parse token that is used during [formula evaluation](#) only. It MUST have a [PageSheet_Type](#) parent element.

2.4.4.19 B

The **B** cell is a [vScalar](#), [vAny](#) or [vLength](#) custom token grouping that specifies a property of a [shape](#) according to the [Row_Type](#) of its parent element. It MUST have a [Row_Type](#) parent element that has a [Geometry Section_Type](#) or [Scratch Section_Type](#) parent element.

If the structure has an [Ellipse](#), [EllipticalArcTo](#), or [InfiniteLine](#) [Row_Type](#) parent element, it is a [vLength](#) that specifies the [geometry path](#) information according to the [Row_Type](#).



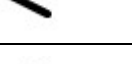
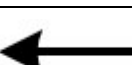








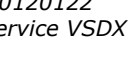
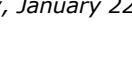

If the structure has a [NURBSto](#), [RelCubBezTo](#), [RelEllipticalArcTo](#), [RelQuadBezTo](#), or [SplineStart](#) [Row_Type](#) parent element, it is a [vScalar](#) that specifies the [geometry path](#) information according to the [Row_Type](#).


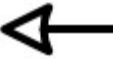
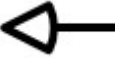





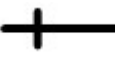
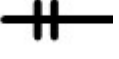
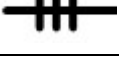




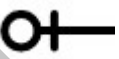

If the structure is a descendant element of a [Scratch Section_Type](#) element, it is a [vAny](#) and used during [formula evaluation](#) only.














2.4.4.20 BeginArrow

The **BeginArrow** cell is a [PtgByte](#) parse token that specifies an arrowhead at the first vertex of a one-dimensional [shape](#). It MUST have a [ShapeSheet_Type](#) or a [StyleSheet_Type](#) parent element.

The value of the structure MUST be from the following table.

Value	Meaning
0	No arrowhead.
1	
2	
3	
4	
5	
6	
7	
8	
9	
10	
11	
12	
13	
14	
15	

Value	Meaning
16	
17	
18	
19	
20	
21	
22	
23	
24	
25	
26	
27	
28	
29	
30	
31	
32	

Value	Meaning
33	
34	
35	
36	
37	
38	
39	
40	
41	
42	
43	
44	
45	
254	Use the master that is specified by the formula associated with this cell for the Arrowhead.

2.4.4.21 BeginArrowSize

The **BeginArrowSize** cell is a [PtqByte](#) parse token that specifies the size of the arrowhead at the first vertex of a [shape](#). It MUST have a [ShapeSheet_Type](#) or a [StyleSheet_Type](#) parent element.

The value of the structure MUST be from the following table.

Value	Meaning
0	Very small
1	Small
2	Medium
3	Large
4	Extra Large
5	Jumbo
6	Colossal

2.4.4.22 BeginGroup

The **BeginGroup** cell is a [PtgBool](#) parse token that is used during [formula evaluation](#) only. It MUST have a [Row Type](#) parent element that has a [Actions Section Type](#) parent element.

2.4.4.23 BeginX

The **BeginX** cell is a [vLength](#) custom token grouping that specifies the x-coordinate of the beginning endpoint of a [one-dimensional shape](#). The value is defined in relation to the [coordinate system](#) of the [shape's parent](#). It MUST have a [ShapeSheet Type](#) parent element or a [StyleSheet Type](#) parent element with an **ID** attribute equal to zero.

If the one-dimensional shape has at least one [subshape](#), the structure is used during [formula evaluation](#) only.

2.4.4.24 BeginY

The **BeginY** cell is a [vLength](#) custom token grouping that specifies the y-coordinate of the beginning endpoint of a [one-dimensional shape](#). The value is defined in relation to the [coordinate system](#) of the [shape's parent](#). It MUST have a [ShapeSheet Type](#) parent element or a [StyleSheet Type](#) parent element with an **ID** attribute equal to zero.

If the one-dimensional shape has at least one [subshape](#), the structure is used during [formula evaluation](#) only.

2.4.4.25 BegTrigger

The **BegTrigger** cell is a [PtgByte](#) parse token that is used during [formula evaluation](#) only. It MUST have a [ShapeSheet Type](#) parent element or a [StyleSheet Type](#) parent element with an **ID** attribute equal to zero.

2.4.4.26 BevelBottomHeight

The **BevelBottomHeight** cell is a [vLength](#) custom token grouping that specifies the height of the bottom [bevel](#) on a 3D [shape](#). It MUST have a [ShapeSheet Type](#) or [StyleSheet Type](#) parent element.

If the value of the sibling [BevelBottomType](#) Cell_Type element is zero, this value MUST be ignored.

The value of the structure MUST be greater than or equal to zero, and less than or equal to 1584 points.

2.4.4.27 BevelBottomType

The **BevelBottomType** cell is a [PtgByte](#) parse token that specifies the preset [bevel](#) type for the bottom bevel on a 3D [shape](#). It MUST have a [ShapeSheet_Type](#) or [StyleSheet_Type](#) parent element.

The value of the structure MUST be from the table specified in [BevelTopType](#) cell.

2.4.4.28 BevelBottomWidth

The **BevelBottomWidth** cell is a [vLength](#) custom token grouping that specifies the width of the bottom [bevel](#) on a 3D [shape](#). It MUST have a [ShapeSheet_Type](#) or [StyleSheet_Type](#) parent element.

If the value of the sibling [BevelBottomType](#) Cell_Type element is zero, this value MUST be ignored.

The value of the structure MUST be greater than or equal to zero, and less than or equal to 1584 points.

2.4.4.29 BevelContourColor

The **BevelContourColor** cell is a [PtgColorRGB](#) parse token that specifies the color of the outline on a 3D [shape](#). It MUST have a [ShapeSheet_Type](#) or [StyleSheet_Type](#) parent element.

If both values of the sibling [BevelTopType](#) Cell_Type element and [BevelBottomType](#) Cell_Type element are zero, this value MUST be ignored.

2.4.4.30 BevelContourSize

The **BevelContourSize** cell is a [vLength](#) custom token grouping that specifies the thickness of the outline on a 3D [shape](#). It MUST have a [ShapeSheet_Type](#) or [StyleSheet_Type](#) parent element.

If both values of the sibling [BevelTopType](#) Cell_Type element and [BevelBottomType](#) Cell_Type element are zero, this value MUST be ignored.

The value of the structure MUST be greater than or equal to zero, and less than or equal to 1584 points.

2.4.4.31 BevelDepthColor

The **BevelDepthColor** cell is a [PtgColorRGB](#) parse token that specifies the extrusion color on a 3D [shape](#). It MUST have a [ShapeSheet_Type](#) or [StyleSheet_Type](#) parent element.

If both values of the sibling [BevelTopType](#) Cell_Type element and [BevelBottomType](#) Cell_Type element are zero, this value MUST be ignored.

2.4.4.32 BevelDepthSize

The **BevelDepthSize** cell is a [vLength](#) custom token grouping that specifies the extrusion depth on a 3D [shape](#). It MUST have a [ShapeSheet_Type](#) or [StyleSheet_Type](#) parent element.

If both values of the sibling [BevelTopType](#) Cell_Type element and [BevelBottomType](#) Cell_Type element are zero, this value MUST be ignored.

The value of the structure MUST be greater than or equal to zero, and less than or equal to 1584 points.

2.4.4.33 BevelLightingAngle

The **BevelLightingAngle** cell is a [vScalar](#) custom token grouping that specifies the direction for lighting on a 3D [shape](#). It MUST have a [ShapeSheet_Type](#) or [StyleSheet_Type](#) parent element.

If both values of the sibling [BevelTopType](#) Cell_Type element and [BevelBottomType](#) Cell_Type element are zero, this value MUST be ignored.

The unit of the value is degrees. The value MUST be greater than or equal to zero, and less than 360. See [\[ISO/IEC-29500-1\]](#) section 20.1.10.30 for details regarding the meaning of this value.

2.4.4.34 BevelLightingType

The **BevelLightingType** cell is a [PtgByte](#) parse token that specifies the preset type of lighting on a 3D [shape](#). It MUST have a [ShapeSheet_Type](#) or [StyleSheet_Type](#) parent element.

If both values of the sibling [BevelTopType](#) Cell_Type element and [BevelBottomType](#) Cell_Type element are zero, this value MUST be ignored.

The value of the structure MUST be from the following table. See [\[ISO/IEC-29500-1\]](#) section 20.1.10.30 for details regarding the meaning of the listed values.

Value	Meaning
0	None
1	Three Point
2	Balance
3	Soft
4	Harsh
5	Flood
6	Contrasting
7	Morning
8	Sunrise
9	Sunset
10	Chilly
11	Freezing
12	Flat
13	Two Point
14	Glow
15	Bright Room

2.4.4.35 BevelMaterialType

The **BevelMaterialType** cell is a [PtgByte](#) parse token that specifies the preset surface appearance on a 3D [shape](#). It MUST have a [ShapeSheet_Type](#) or [StyleSheet_Type](#) parent element.

If both values of the sibling [BevelTopType](#) Cell_Type element and [BevelBottomType](#) Cell_Type element are zero, this value MUST be ignored.

The value of the structure MUST be from the following table. See [\[ISO/IEC-29500-1\]](#) section 20.1.10.50 for details regarding the meaning of the listed values.

Value	Meaning
0	None
1	Matte
2	Warm Matte
3	Plastic
4	Metal
5	Dark Edge
6	Soft Edge
7	Flat
8	Wireframe
9	Powder
10	Translucent Powder
11	Clear

2.4.4.36 BevelTopHeight

The **BevelTopHeight** cell is a [vLength](#) custom token grouping that specifies the height of the top [bevel](#) on a 3D [shape](#). It MUST have a [ShapeSheet_Type](#) or [StyleSheet_Type](#) parent element.

If the value of the sibling [BevelTopType](#) Cell_Type element is zero, this value MUST be ignored.

The value of the structure MUST be greater than or equal to zero, and less than or equal to 1584 points.

2.4.4.37 BevelTopType

The **BevelTopType** cell is a [PtgByte](#) parse token that specifies the preset [bevel](#) type for the top bevel on a 3D [shape](#). The bevel type specifies the appearance of a bevel. It MUST have a [ShapeSheet_Type](#) or [StyleSheet_Type](#) parent element.

The value of the structure MUST be from the following table.

Value	Meaning
0	None
1	Circle
2	Relaxed Inset
3	Cross
4	Cool Slant
5	Angle
6	Soft Round
7	Convex
8	Slope
9	Divot
10	Riblet
11	Hard Edge
12	Art Decoration

2.4.4.38 BevelTopWidth

The **BevelTopWidth** cell is a [vLength](#) custom token grouping that specifies the width of the top [bevel](#) on a 3D [shape](#). It MUST have a [ShapeSheet_Type](#) or [StyleSheet_Type](#) parent element.

If the value of the sibling [BevelTopType](#) Cell_Type element is zero, this value MUST be ignored.

The value of the structure MUST be greater than or equal to zero, and less than or equal to 1584 points.

2.4.4.39 BlockSizeX

The **BlockSizeX** cell is a [vScalar](#) custom token grouping that is used during [formula evaluation](#) only. It MUST have a [PageSheet_Type](#) parent element.

2.4.4.40 BlockSizeY

The **BlockSizeY** cell is a [vScalar](#) custom token grouping that is used during [formula evaluation](#) only. It MUST have a [PageSheet_Type](#) parent element.

2.4.4.41 Blur

The **Blur** cell is a [vScalar](#) custom token grouping that specifies the degree of blurring of an [image](#). It MUST have a [ShapeSheet_Type](#) or [StyleSheet_Type](#) parent element.

The value of the structure MUST be expressed as a percentage, and MUST be greater than or equal to zero and less than or equal to one. The value is normalized such that a value of 1 corresponds to 100 percent. A value of zero specifies there is no blurring; a value of one specifies maximum blurring.

2.4.4.42 BottomMargin

The **BottomMargin** cell is a [vLength](#) custom token grouping that specifies the margin between the bottom border of a [text block](#) and the last line of [text](#) it contains. It MUST have a [ShapeSheet Type](#) or a [StyleSheet Type](#) parent element.

2.4.4.43 Brightness

The **Brightness** cell is a [vScalar](#) custom token grouping that specifies the brightness of an [image](#). It MUST have a [ShapeSheet Type](#) or a [StyleSheet Type](#) parent element.

The value of the structure MUST be expressed as a percentage, and MUST be greater than or equal to zero and less than or equal to one. The value is normalized such that a value of 1 corresponds to 100 percent. A value of 0.5 is the default brightness. A value of less than 0.5 decreases the brightness of the image; a value of greater than 0.5 increases the brightness of the image.

2.4.4.44 Bullet

The **Bullet** cell is a [PtgByte](#) parse token that specifies the bullet for a [text](#) paragraph. It MUST have a [Row Type](#) parent element that has a [Paragraph Section Type](#) parent element. The bullet is specified by a character in a font.

A value of zero for the structure specifies no bullet is used. If there is a bullet, any non-empty character value of the sibling [BulletStr Cell Type](#) element is used in its place; any font value not equal to zero of the sibling [BulletFont Cell Type](#) element is used in its place.

The value of the structure MUST be from the following table.

Value	Character	Default Font	Appearance
0	None	None	
1	0xB7	Symbol	•
2	0x6F	Courier New	◆
3	0xA7	Wingdings	▪
4	0x71	Wingdings	□
5	0x76	Wingdings	❖
6	0xD8	Wingdings	➤
7	0xFC	Wingdings	✓

2.4.4.45 BulletFont

The **BulletFont** cell is a [vFont](#) structure that specifies the font to use for the bullet of a [text](#) paragraph. It MUST have a [Row Type](#) parent element that has a [Paragraph Section Type](#) parent element.

2.4.4.46 BulletFontSize

The **BulletFontSize** cell is a [vLength](#) token grouping that specifies the font size for the bullet of a [text](#) paragraph. It MUST have a [Row_Type](#) parent element that has a [Paragraph Section_Type](#) parent element.

If the value of the structure is greater than zero, the bullet font size is equal to the value of the structure. If the value of the structure is equal to zero, the font size is equal to the value of the font size of the first character following the bullet. If the value of the structure is less than zero, the font size is equal to the absolute value of the structure multiplied by the value of the font size of the first character following the bullet divided by 100.

2.4.4.47 BulletStr

The **BulletStr** cell is a [PtgString](#) parse token that specifies the character or characters to use for the bullet of a [text](#) paragraph. It MUST have a [Row_Type](#) parent element that has a [Paragraph Section_Type](#) parent element.

2.4.4.48 ButtonFace

The **ButtonFace** cell is a [PtgString](#) parse token that is used during [formula evaluation](#) only. It MUST have a [Row_Type](#) parent element that has a [Actions Section_Type](#) parent element or a [Row_Type](#) parent element that has a [ActionTag Section_Type](#) parent element.

2.4.4.49 C

The **C** cell is a [vScalar](#), [vAngle](#), [vAny](#) or [vLength](#) custom token grouping that specifies a property of a [shape](#) according to the [Row_Type](#) of its parent element. It MUST have a [Row_Type](#) parent element that has a [Geometry Section_Type](#) or [Scratch Section_Type](#) parent element.

If the structure has an [Ellipse Row_Type](#) parent element, it is a [vLength](#) that specifies the [geometry path](#) information according to the [Row_Type](#).

If the structure has an [EllipticalArcTo](#) or [RelEllipticalArcTo](#), it is a [vAngle](#) that specifies the geometry path information according to the [Row_Type](#).

If the structure has a [NURBSTo](#), [RelCubBezTo](#), or [SplineStart](#) [Row_Type](#) parent element, it is a [vScalar](#) that specifies geometry path information according to the [Row_Type](#).

If **C** is a descendant element of a [Scratch Section_Type](#) element, the structure is a [vAny](#) that is used during [formula evaluation](#) only.

2.4.4.50 Calendar

The **Calendar** cell is a [vScalar](#) custom token grouping that specifies the calendar system to use when formatting dates and times. The value of the structure MUST be specified by the [vCalendar](#) structure. It MUST have either a [ShapeSheet_Type](#) parent element or [Row_Type](#) parent element that has a [Field Section_Type](#) or [Property Section_Type](#) parent element.

If **Calendar** is a descendant of a [Field Section_Type](#) element, it specifies the calendar system used when formatting the [text field](#) specified by the element's parent [Row_Type](#) element. It is unused and MUST be ignored if it does not have a sibling [Cell_Type](#) element with an **N** attribute equal to "Type" and structure value equal to five.

If **Calendar** is a descendant of a [Property Section_Type](#) element, it specifies the calendar system to use when formatting the data specified by the element's parent [Row_Type](#) element. It is unused and

MUST be ignored if it does not have a sibling Cell_Type element with an **N** attribute equal to "Type" and structure value equal to five.

If **Calendar** is a child of a ShapeSheet_Type element, it is used during [formula evaluation](#) only.

2.4.4.51 CanGlue

The **CanGlue** cell is a [PtgBool](#) parse token that is used during [formula evaluation](#) only. It MUST have a [Row Type](#) parent element that has a [Control Section Type](#) parent element.

2.4.4.52 Case

The **Case** cell is a [PtgByte](#) parse token that specifies the displayed case of the [text](#) of a [shape](#). It MUST have a [Row Type](#) parent element that has a [Character Section Type](#) parent element.

The value of the structure MUST be from the following table.

Value	Meaning
0	Specifies that all characters are displayed with no changes to the case.
1	Specifies that all characters are capitalized.
2	Specifies that initial characters of each word are capitalized.

2.4.4.53 CategoryChanged

The **CategoryChanged** cell is a [PtgBool](#) parse token that is used during [formula evaluation](#) only. It MUST have a [ShapeSheet Type](#) or [StyleSheet Type](#) parent element.

2.4.4.54 CenterX

The **CenterX** cell is a [PtgBool](#) parse token that is used during [formula evaluation](#) only. It MUST have a [PageSheet Type](#) parent element.

2.4.4.55 CenterY

The **CenterY** cell is a [PtgBool](#) parse token that is used during [formula evaluation](#) only. It MUST have a [PageSheet Type](#) parent element.

2.4.4.56 Checked

The **Checked** cell is a [PtgBool](#) parse token that is used during [formula evaluation](#) only. It MUST have a [Row Type](#) parent element that has a [Actions Section Type](#) parent element.

2.4.4.57 ClippingPath

The **ClippingPath** cell is a [PtgString](#) parse token that specifies a [geometry path](#) used to clip an image. It MUST have a [ShapeSheet Type](#) parent element or a [StyleSheet Type](#) parent element with an **ID** attribute equal to zero. If the value of the structure is a [CellRef](#) associated with a geometry path, the image is clipped according to the geometry path; otherwise, the image is not clipped.

2.4.4.58 Color

The **Color** cell is a [PtgColorRGB](#) parse token that specifies either the color used for characters in a **text run**, the color used for stops in a fill gradient [fill property](#), the color used for stops in a line gradient [line property](#), or the color used for a [layer](#). It MUST have a [Row_Type](#) parent element that has a [Character Section_Type](#) parent element, a [FillGradient](#) Section_Type parent element, a [LineGradient](#) Section_Type parent element, a [Layer](#) Section_Type parent element, or a [Reviewer](#) Section_Type parent element.

The use of the value of the structure is specified by the parent element Section_Type of the Row_Type parent element as specified in the following table.

Parent element Section_Type of the Row_Type parent element	Meaning
Character	Specifies the color used for characters in a text run .
FillGradient	Specifies the color used for a stop in a fill gradient fill property.
LineGradient	Specifies the color used for a stop in a line gradient line property.
Layer	Specifies the color used for a layer.
Reviewer	Specifies that the value of the structure is used during formula evaluation only.

2.4.4.59 ColorSchemeIndex

The **ColorSchemeIndex** cell is a [PtgByte](#) parse token that specifies the index of the color scheme [dynamic theme component](#). It MUST have a [ShapeSheet_Type](#) parent element or a [StyleSheet_Type](#) parent element with an **ID** attribute equal to zero.

The value of the **V** attribute MUST be greater than or equal to zero and less than or equal to 65535 or MUST be equal to -2.

If the value of the **V** attribute is equal to 65535, the color scheme is specified by a [custom dynamic theme color scheme](#) specified by the [Master_Type](#) element associated with a [master](#) whose **UniqueID** attribute is equal to the argument of the [USE function token](#) of the **F** attribute of the **ColorSchemeIndex** [Cell_Type](#) element.

If the value of the structures of any of the Cell_Type elements **ColorSchemeIndex**, [FontSchemeIndex](#), or [ThemeIndex](#) is equal to zero, color is specified by the [root style sheet](#).

If the value of the **V** attribute is equal to -2, the index of the color scheme dynamic theme component of a [shape](#) is specified by the **V** attribute of the **ColorSchemeIndex** Cell_Type descendant element of the [PageSheet_Type](#) element containing the shape.

2.4.4.60 ColorTrans

The **ColorTrans** cell is a [vScalar](#) custom token grouping that specifies the color transparency used for characters in a **text run**, the color transparency used for stops in a fill gradient [fill property](#), the color transparency used for stops in a line gradient [line property](#), or the color transparency used for a [layer](#). It MUST have a [Row_Type](#) parent element that has a [Character Section_Type](#) parent element, a [FillGradient](#) Section_Type parent element, a [LineGradient](#) Section_Type parent element, or a [Layer](#) Section_Type parent element.

The value of the structure MUST be expressed as a percentage, and MUST be greater than or equal to zero and less than or equal to one. The value is normalized such that a value of 1 corresponds to 100 percent. A value of zero specifies that the color is completely opaque; a value of one specifies that the color is completely transparent.

The use of the value of the structure is specified by the parent element Section_Type of the Row_Type parent element as specified in the following table.

Parent element Section_Type of the Row_Type parent element	Meaning
Character	Specifies the color transparency used for characters in a text run .
FillGradient	Specifies the color transparency used for a stop in a fill gradient fill property.
LineGradient	Specifies the color transparency used for a stop in a line gradient line property.
Layer	Specifies the color transparency used for a layer.

2.4.4.61 Comment

The **Comment** cell is a [PtgString](#) parse token containing plain text annotations with no specification. It MUST have either a [ShapeSheet_Type](#) parent element, a [StyleSheet_Type](#) parent element, or a [Row_Type](#) parent element that has a [Annotation Section_Type](#) parent element.

If **Comment** is a child element of a ShapeSheet_Type or StyleSheet_Type, it is used during [formula evaluation](#) only.

If **Comment** is a child element of a Row_Type element that has a Annotation Section_Type parent, it is unused and MUST be ignored.

2.4.4.62 ComplexScriptFont

The ComplexScriptFont cell is a [vFont](#) structure that specifies the font used for complex script characters in a text run. It MUST have a [Row_Type](#) parent element that has a [Character Section_Type](#) parent element.

If the value of the structure is equal to zero or if the font specified does not include complex script characters, the font specified by the sibling [Font Cell_Type](#) element is used in its place.

2.4.4.63 ComplexScriptSize





The **ComplexScriptSize** cell is a [vLength](#) custom token grouping that specifies the font size used for complex script characters in a text run. It MUST have a [Row_Type](#) parent element that has a [Character Section_Type](#) parent element.

If the value of the structure is greater than zero, the font size is equal to the value of the structure. If the value of the structure is equal to zero, the font size is equal to the value of the sibling [Size Cell_Type](#) element. If the value of the structure is less than zero, the font size is equal to the absolute value of the structure multiplied by the value of the sibling Size Cell_Type element divided by 100.

2.4.4.64 CompoundType

The **CompoundType** cell is a [PtgByte](#) parse token that specifies the compound line style for a [shape](#). It MUST have a [ShapeSheet_Type](#) or [StyleSheet_Type](#) parent element.

The value of the structure MUST be from the following table.

Value	Meaning
0	Specifies a single line.
1	
2	
3	
4	

2.4.4.65 ConFixedCode

The **ConFixedCode** cell is a [PtgByte](#) parse token that is used during [formula evaluation](#) only. It MUST have a [ShapeSheet_Type](#) or [StyleSheet_Type](#) parent element.

2.4.4.66 ConLineJumpCode

The **ConLineJumpCode** cell is a [PtgByte](#) parse token that is used during [formula evaluation](#) only. It MUST have a [ShapeSheet_Type](#) or [StyleSheet_Type](#) parent element.

2.4.4.67 ConLineJumpDirX

The **ConLineJumpDirX** cell is a [PtgByte](#) parse token that is used during [formula evaluation](#) only. It MUST have a [ShapeSheet_Type](#) or [StyleSheet_Type](#) parent element.

2.4.4.68 ConLineJumpDirY

The **ConLineJumpDirY** cell is a [PtgByte](#) parse token that is used during [formula evaluation](#) only. It MUST have a [ShapeSheet_Type](#) or [StyleSheet_Type](#) parent element.

2.4.4.69 ConLineJumpStyle

The **ConLineJumpStyle** cell is a [PtgByte](#) parse token that is used during [formula evaluation](#) only. It MUST have a [ShapeSheet_Type](#) or [StyleSheet_Type](#) parent element.

2.4.4.70 ConLineRouteExt

The **ConLineRouteExt** cell is a [PtqByte](#) parse token that is used during [formula evaluation](#) only. It MUST have a [ShapeSheet_Type](#) or [StyleSheet_Type](#) parent element.

2.4.4.71 ConnectorSchemeIndex

The **ConnectorSchemeIndex** is a [PtqByte](#) parse token that specifies the index of the connector scheme [dynamic theme component](#). It MUST have a [ShapeSheet_Type](#) parent element or a [StyleSheet_Type](#) parent element with an **ID** attribute equal to zero.

The value of the **V** attribute MUST be greater than or equal to zero and less than or equal to 65534, or MUST be equal to -2.

If the value of the **V** attribute is equal to -2, the index of the connector scheme dynamic theme component of a [shape](#) is specified by the **V** attribute of the ConnectorSchemeIndex [Cell_Type](#) descendant element of the [PageSheet_Type](#) element containing the shape.

2.4.4.72 Contrast

The **Contrast** cell is a [vScalar](#) custom token grouping that specifies the contrast of an [image](#). It MUST have a [ShapeSheet_Type](#) parent element or a [StyleSheet_Type](#) parent element with an **ID** attribute equal to zero.

The value of the structure MUST be expressed as a percentage, and MUST be greater than or equal to zero and less than or equal to one. The value is normalized such that a value of 1 corresponds to 100 percent. A value of 0.5 is the default contrast. A value of less than 0.5 decreases the contrast of the image; a value of greater than 0.5 increases the contrast of the image.

2.4.4.73 Copyright

The **Copyright** cell is a [PtqString](#) parse token that is used during [formula evaluation](#) only. It MUST have a [ShapeSheet_Type](#) parent element or a [StyleSheet_Type](#) parent element with an **ID** attribute equal to zero.

2.4.4.74 CtrlAsInput

The **CtrlAsInput** cell is a [PtqBool](#) parse token that is used during [formula evaluation](#) only. It MUST have a [PageSheet_Type](#) parent element.

2.4.4.75 CurrentIndex

The **CurrentIndex** cell is a [PtqShort](#) parse token that is used during [formula evaluation](#) only. It MUST have a [Row_Type](#) parent element that has a [Reviewer Section_Type](#) parent element.

2.4.4.76 D

The **D** cell is a [vScalar](#) or [vAny](#) or [vLength](#) custom token grouping that specifies a property of a [shape](#) according to the [Row_Type](#) of its parent element. It MUST have a [Row_Type](#) parent element that has a [Geometry Section_Type](#) or [Scratch Section_Type](#) parent element.

If **D** has an [Ellipse](#) [Row_Type](#) parent element, it is a [vLength](#) that specifies [geometry path](#) information according to the [Row_Type](#).

If **D** has an [EllipticalArcTo](#), [RelCubBezTo](#), [RelEllipticalArcTo](#), [NURBSto](#), or [SplineStart](#) Row_Type parent element, it is a vScalar that specifies geometry path information according to the Row_Type.

If **D** is a descendant element of a Scratch Section_Type element, it is a vAny that used during [formula evaluation](#) only.

2.4.4.77 DataLinked

The **DataLinked** cell is a [PtgBool](#) parse token that specifies that a [shape data](#) item of the [data bound shape](#) is mapped to a field of a [recordset](#). It MUST have a [Row_Type](#) parent element that has a [Property Section_Type](#) parent element. If the shape is not a data bound shape, the token is used during [formula evaluation](#) only.

A value of one specifies that the shape data item is mapped to a field of recordset; a value of zero specifies that the shape data item is not mapped to a field of recordset.

2.4.4.78 Date

The **Date** cell is a [PtgDate](#) parse token that is unused and MUST be ignored. It MUST have a [Row_Type](#) parent element that has a [Annotation Section_Type](#) parent element.

2.4.4.79 DbUnderline

The **DbUnderline** cell is a [PtgBool](#) parse token that specifies whether a text run has a double underline [character property](#). It MUST have a [Row_Type](#) parent element that has a [Character Section_Type](#) parent element.

A value of one specifies that the text run has a double underline; a value of zero specifies that the text run does not have a double underline.

2.4.4.80 Default

The **Default** cell is a [PtgBool](#) parse token that specifies whether a hyperlink is the default hyperlink. It MUST have a [Row_Type](#) parent element that has a [Hyperlink Section_Type](#) parent element.

A value of one specifies that the hyperlink is the default hyperlink; a value of zero specifies that the hyperlink is not the default hyperlink.

2.4.4.81 DefaultTabStop

The **DefaultTabStop** cell is a [vLength](#) custom token grouping that specifies the default spacing between [tabs](#) in a text run. It MUST have a [ShapeSheet_Type](#) or a [StyleSheet_Type](#) parent element.

2.4.4.82 Denoise

The **Denoise** cell is a [vScalar](#) custom token grouping that specifies the amount of noise reduction applied to an [image](#) by modifying pixels that have randomly distributed color levels when compared to their surrounding pixels. It MUST have a [ShapeSheet_Type](#) or a [StyleSheet_Type](#) parent element.

The value of the structure MUST be expressed as a percentage, and MUST be greater than or equal to zero and less than or equal to one. The value is normalized such that a value of 1 corresponds to 100 percent. A value of zero specifies no noise reduction. As the value of the structure increases, more noise reduction is applied.

2.4.4.83 Description

The **Description** cell is a [PtgString](#) parse token that specifies a description of a hyperlink. It MUST have a [Row_Type](#) parent element that has a [Hyperlink Section_Type](#) parent element.

2.4.4.84 DirX

The **DirX** cell is a [vLength](#) custom token grouping that is used during [formula evaluation](#) only. It MUST have a [Row_Type](#) parent element that has a [Connection Section_Type](#) parent element.

2.4.4.85 DirY

The **DirY** cell is a [vLength](#) custom token grouping that is used during [formula evaluation](#) only. It MUST have a [Row_Type](#) parent element that has a [Connection Section_Type](#) parent element.

2.4.4.86 Disabled

The **Disabled** cell is a [PtgBool](#) parse token that is used during [formula evaluation](#) only. It MUST have either a [Row_Type](#) parent element that has a [Actions Section_Type](#) parent element or a [Row_Type](#) parent element that has a [ActionTag Section_Type](#) parent element.

2.4.4.87 DisplayLevel

The **DisplayLevel** cell is a [PtgInt](#) parse token that is used during [formula evaluation](#) only. It MUST have a [ShapeSheet_Type](#) or [StyleSheet_Type](#) parent element.

2.4.4.88 DisplayMode

The **DisplayMode** cell is a [PtgByte](#) parse token that specifies the way [shape](#) information is displayed. It MUST have either a [ShapeSheet_Type](#) parent element, a [StyleSheet_Type](#) parent element, or a [Row_Type](#) parent element that has an [ActionTag Section_Type](#) parent element.

If **DisplayMode** has a [Row_Type](#) parent element, the token is used during [formula evaluation](#) only.

If **DisplayMode** has a [ShapeSheet_Type](#) parent element or a [StyleSheet_Type](#) parent element, the value of the structure MUST be from the following table.

Value	Meaning
0	Specifies that the shape and its text is hidden.
1	Specifies that the shape is displayed behind its member shapes .
2	Specifies that the shape is displayed in front of its member shapes.

2.4.4.89 DistanceFromGround

The **DistanceFromGround** cell is a [vLength](#) custom token grouping that specifies the distance that a [shape](#) with [3D rotation properties](#) is raised from ground. The ground is the plane where the z-coordinate value is zero in the [coordinate system](#) of the shape. It MUST have a [ShapeSheet_Type](#) or [StyleSheet_Type](#) parent element.

The value of the structure MUST be greater than or equal to (-4000.0 / 72.0) inches, and less than or equal to (4000.0 / 72.0) inches. If the shape does not have 3D rotation properties, the token is used during [formula evaluation](#) only.

2.4.4.90 DocLangID

The **DocLangID** cell is a [vLanguageString](#) structure that specifies the locale settings of a [web drawing](#) as specified in [\[RFC4646\]](#) and [\[RFC4647\]](#). It MUST have a [DocumentSheet_Type](#) parent element, and MUST be equal to the value of the Language property, specified in [\[ISO/IEC-29500-2\]](#) section 11, from the [Core XML Part](#) of a web drawing.

2.4.4.91 DocLockReplace

The **DocLockReplacell** is a [PtgBool](#) parse token that is used during [formula evaluation](#) only. It MUST have a [DocumentSheet_Type](#) parent element.

2.4.4.92 DontMoveChildren

The **DontMoveChildren** cell is a [PtgBool](#) parse token that is used during [formula evaluation](#) only. It MUST have a [ShapeSheet_Type](#) or [StyleSheet_Type](#) parent element.

2.4.4.93 DoubleStrikethrough

The **DoubleStrikethrough** cell is a [PtgBool](#) parse token that specifies whether the text run has a double strikethrough [character property](#). It MUST have a [Row_Type](#) parent element that has a [Character Section_Type](#) parent element.

A value of one specifies that the text run has a double strikethrough; a value of zero specifies that the text run does not have a double strikethrough.

2.4.4.94 DrawingResizeType

The **DrawingResizeType** cell is a [PtgByte](#) parse token that is used during [formula evaluation](#) only. It MUST have a [PageSheet_Type](#) parent element.

2.4.4.95 DrawingScale

The **DrawingScale** cell is a [vLength](#) custom token grouping that specifies a unit of distance used to define the [scale](#) of the [web drawing](#). It MUST have a [PageSheet_Type](#) parent element.

The default value of the structure is one inch.

2.4.4.96 DrawingScaleType

The **DrawingScaleType** cell is a [PtgByte](#) parse token that specifies the type of [scale](#) of the [web drawing](#). It MUST have a [PageSheet_Type](#) parent element.

The value of the structure MUST be from the following table.

Value	Meaning
0	No Scale
1	Architectural Scale
2	Civil Engineering Scale
3	Custom Scale
4	Metric Scale

Value	Meaning
5	Mechanical Engineering Scale

The default value is zero.

2.4.4.97 DrawingSizeType

The **DrawingSizeType** cell is a [PtgByte](#) parse token that specifies the type of [size](#) of the [web drawing](#). It MUST have a [PageSheet Type](#) parent element.

Value	Meaning
0	Same as Print Setup
1	Tightly enclose objects on Page
2	Standard Physical Page Size
3	Custom Physical Page Size
4	Logical Page Size
5	Metric Page Size
6	ANSI Engineering Page Size
7	ANSI Architectural Page Size

The default value is zero.

2.4.4.98 DropOnPageScale

The **DropOnPageScale** cell is a [vScalar](#) custom token grouping that is used during [formula evaluation](#) only. It MUST have a [ShapeSheet Type](#) or [StyleSheet Type](#) parent element.

2.4.4.99 DynamicsOff

The **DynamicsOff** cell is a [PtgBool](#) parse token that is used during [formula evaluation](#) only. It MUST have a [PageSheet Type](#) parent element.

2.4.4.100 DynFeedback

The **DynFeedback** cell is a [PtgByte](#) parse token that is used during [formula evaluation](#) only. It MUST have a [ShapeSheet Type](#) or [StyleSheet Type](#) parent element.

2.4.4.101 E

The **E** cell is a [formula expression](#) that specifies the NURBS formula of a [geometric path](#) of a non-uniform rational B-spline(NURBS). It MUST have a [NURBSTo Row Type](#) parent element that has a [Geometry Section Type](#) parent element.

2.4.4.102 EffectSchemeIndex

The **EffectSchemeIndex** cell is a [PtgByte](#) token that specifies the index of the effect scheme [dynamic theme component](#). It MUST have a [ShapeSheet Type](#) parent element or a [StyleSheet Type](#) parent element with an **ID** attribute equal to zero.

The value of the **V** attribute MUST be greater than or equal to zero and less than or equal to 65534, or MUST be equal to -2.

If the value of the **V** attribute is equal to -2, the index of the effect scheme dynamic theme component of a [shape](#) is specified by the **V** attribute of the EffectSchemeIndex [Cell Type](#) descendant element of the [PageSheet Type](#) element containing the shape.

2.4.4.103 EnableFillProps

The **EnableFillProps** cell is a [PtgBool](#) parse token that specifies whether the [fill properties](#) of a [style](#) are included in [inheritance](#). It MUST have a [StyleSheet Type](#) parent element.

A value of one specifies that the fill properties are included in style inheritance; a value of zero specifies that the fill properties are not included in style inheritance.

2.4.4.104 EnableGrid

The **EnableGrid** cell is a [PtgBool](#) parse token that is used during [formula evaluation](#) only. It MUST have a [PageSheet Type](#) parent element.

2.4.4.105 EnableLineProps

The **EnableLineProps** cell is a [PtgBool](#) parse token that specifies whether the [line properties](#) of a [style](#) are included in [inheritance](#). It MUST have a [StyleSheet Type](#) parent element.

A value of one specifies that the line properties are included in style inheritance; a value of zero specifies that the line properties are not included in style inheritance.

2.4.4.106 EnableTextProps

The **EnableTextProps** cell is a [PtgBool](#) parse token that specifies the [character properties](#), [paragraph properties](#), [tabs properties](#) and [text block format](#) of a [style](#) are included in [inheritance](#). It MUST have a [StyleSheet Type](#) parent element.

A value of one specifies that the character properties, paragraph properties, tabs properties and text block format are included in style inheritance; a value of zero specifies that the character properties, paragraph properties, tabs properties and text block format are not included in style inheritance.

2.4.4.107 EndArrow

The **EndArrow** cell is a [PtgByte](#) parse token that specifies an arrowhead at the first vertex of a one-dimensional [shape](#). It MUST have a [ShapeSheet Type](#) or a [StyleSheet Type](#) parent element.

The value of the structure MUST be from the table specified in the [BeginArrow](#) cell.

2.4.4.108 EndArrowSize

The **EndArrowSize** cell is a [PtgByte](#) parse token that specifies the size of the arrowhead at the last vertex of a [shape](#). It MUST have a [ShapeSheet Type](#) or a [StyleSheet Type](#) parent element.

The value of the structure MUST be from the following table.

Value	Meaning
0	Very small
1	Small
2	Medium
3	Large
4	Extra Large
5	Jumbo
6	Colossal

2.4.4.109 EndTrigger

The **EndTrigger** cell is a [PtgByte](#) parse token that is used during [formula evaluation](#) only. It MUST have a [ShapeSheet_Type](#) parent element or a [StyleSheet_Type](#) parent element with an **ID** attribute equal to zero.

2.4.4.110 EndX

The **EndX** cell is a [vLength](#) custom token grouping that specifies the x-coordinate of the ending endpoint of a [one-dimensional shape](#). The value is defined in relation to the [coordinate system](#) of the [shape's parent](#). It MUST have a [ShapeSheet_Type](#) parent element or a [StyleSheet_Type](#) parent element with an **ID** attribute equal to zero.

If the one-dimensional shape has at least one [subshape](#), the custom token grouping is used during [formula evaluation](#) only.

2.4.4.111 EndY

The **EndY** cell is a [vLength](#) custom token grouping that specifies the y-coordinate of the ending endpoint of a [one-dimensional shape](#). The value is defined in relation to the [coordinate system](#) of the [shape's parent](#). It MUST have a [ShapeSheet_Type](#) parent element or a [StyleSheet_Type](#) parent element with an **ID** attribute equal to zero.

If the one-dimensional shape has at least one [subshape](#), the custom token grouping is used during [formula evaluation](#) only.

2.4.4.112 EventDbClick

The **EventDbClick** cell is a [vScalar](#) custom token grouping that is used during [formula evaluation](#) only. It MUST have a [ShapeSheet_Type](#) parent element or a [StyleSheet_Type](#) parent element with an **ID** attribute equal to zero.

2.4.4.113 EventDrop

The **EventDrop** cell is a [vScalar](#) custom token grouping that is used during [formula evaluation](#) only. It MUST have a [ShapeSheet_Type](#) parent element or a [StyleSheet_Type](#) parent element with an **ID** attribute equal to zero.

2.4.4.114 EventMultiDrop

The **EventMultiDrop** cell is a [vScalar](#) custom token grouping that is used during [formula evaluation](#) only. It MUST have a [ShapeSheet_Type](#) parent element or a [StyleSheet_Type](#) parent element with an **ID** attribute equal to zero.

2.4.4.115 EventXFMod

The **EventXFMod** cell is a [vScalar](#) custom token grouping that is used during [formula evaluation](#) only. It MUST have a [ShapeSheet_Type](#) or [StyleSheet_Type](#) parent element.

2.4.4.116 ExtraInfo

The **ExtraInfo** cell is a [PtgString](#) parse token that specifies a **URI query** string or zoom level string of the [drawing page](#) referenced by the [hyperlink](#). It MUST have a [Row_Type](#) parent element that has a [Hyperlink Section_Type](#) parent element.

The zoom level percentage is normalized such that 100 corresponds to 100 percent. If the hyperlink refers to a drawing page, the value of the structure is a zoom level string that is defined by the following:

ABNF

```
zoom-level-string = ["zoom=" zoom-level]
zoom-level = 1*digit
```

2.4.4.117 FillBkgnd

The **FillBkgnd** cell is a [vColor](#) custom input type that specifies the color of the background [fill](#) property of a [shape](#). It MUST have a [ShapeSheet_Type](#) or [StyleSheet_Type](#) parent element.

2.4.4.118 FillBkgndTrans

The **FillBkgndTrans** cell is a [vScalar](#) custom token grouping that specifies the transparency level of the background [fill](#) property color of a [shape](#). It MUST have a [ShapeSheet_Type](#) or [StyleSheet_Type](#) parent element.

The value of the structure MUST be expressed as a percentage, and MUST be greater than or equal to zero and less than or equal to one. The value is normalized such that a value of 1 corresponds to 100 percent. A value of zero specifies there is no transparency; a value of one specifies maximum transparency.

2.4.4.119 FillForegnd

The **FillForegnd** cell is a [vColor](#) custom input type that specifies the color of the foreground [fill](#) property of a [shape](#). It MUST have a [ShapeSheet_Type](#) or [StyleSheet_Type](#) parent element.

2.4.4.120 FillForegndTrans

The **FillForegndTrans** cell is a [vScalar](#) custom token grouping that specifies the transparency level of the foreground [fill](#) property color of a [shape](#). It MUST have a [ShapeSheet_Type](#) or [StyleSheet_Type](#) parent element.

The value of the structure MUST be expressed as a percentage, and MUST be greater than or equal to zero and less than or equal to one. The value is normalized such that a value of 1 corresponds to 100 percent. A value of zero specifies there is no transparency; a value of one specifies maximum transparency.

2.4.4.121 FillGradientAngle

The **FillGradientAngle** cell is a [vAngle](#) custom token grouping that specifies the orientation of the fill color gradient of a [shape](#). It MUST have a [ShapeSheet_Type](#) or [StyleSheet_Type](#) parent element.

A value of zero corresponds to the direction of the positive x-axis. If the sibling [FillGradientDirCell_Type](#) element is not equal to zero, this value MUST be ignored.

2.4.4.122 FillGradientDir

The **FillGradientDir** cell is a [PtgByte](#) parse token that specifies the type of the fill color gradient of a [shape](#). It MUST have a [ShapeSheet_Type](#) or [StyleSheet_Type](#) parent element.

The value of the structure MUST be from the following table.

Value	Meaning
0	Specifies a linear fill color gradient.
1	Specifies the fill color gradient of the shape is in radial mode from the bottom right corner of the bounding box of the shape.
2	Specifies the fill color gradient of the shape is in radial mode from the bottom left corner of the bounding box of the shape.
3	Specifies the fill color gradient of the shape is in radial mode from the center of the shape.
4	Specifies the fill color gradient of the shape is in radial mode from the center of the bottom edge of the shape.
5	Specifies the fill color gradient of the shape is in radial mode from the center of the top edge of the shape.
6	Specifies the fill color gradient of the shape is in radial mode from the top right corner of the bounding box of the shape.
7	Specifies the fill color gradient of the shape is in radial mode from the top left corner of the bounding box of the shape.
8	Specifies the fill color gradient of the shape is in rectangle mode from the bottom right corner of the bounding box of the shape.
9	Specifies the fill color gradient of the shape is in rectangle mode from the bottom left corner of the bounding box of the shape.
10	Specifies the fill color gradient of the shape is in rectangle mode from the center of the shape.
11	Specifies the fill color gradient of the shape is in rectangle mode from the top right corner of the bounding box of the shape.
12	Specifies the fill color gradient of the shape is in rectangle mode from the top left corner of the bounding box of the shape.





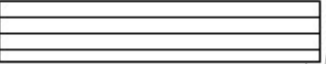





2.4.4.123 FillGradientEnabled

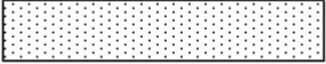





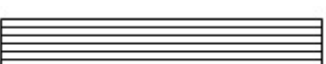

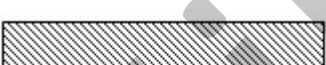




The **FillGradientEnabled** cell is a [PtgBool](#) parse token that specifies whether the fill color gradient is visible. It MUST have a [ShapeSheet Type](#) or [StyleSheet Type](#) parent element.















2.4.4.124 FillPattern


The **FillPattern** cell is a [PtgByte](#) parse token that specifies the fill pattern property of a [shape](#). It MUST have a [ShapeSheet Type](#) or [StyleSheet Type](#) parent element.

It MUST have a value from the following table.

Value	Meaning
0	Specifies a transparent fill.
1	Specifies a solid fill color.
2	
3	
4	
5	
6	
7	
8	
9	
10	
11	

Value	Meaning
12	
13	
14	
15	
16	
17	
18	
19	
20	
21	
22	
23	
24	
25	

Value	Meaning
26	
27	
28	
29	
30	
31	
32	
33	
34	
35	
36	
37	
38	
39	

Value	Meaning
40	
254	Use the master that is specified by the formula associated with this cell for the fill pattern.

2.4.4.125 Flags

The **Flags** cell is a [PtgByte](#) parse token that specifies the direction [text property](#) of a [text](#) paragraph. It MUST have a [Row Type](#) parent element that has a [Paragraph Section Type](#) parent element.

A value of zero specifies that the text direction is left to right; a value of one specifies that the text direction is right to left. Other values are used during [formula evaluation](#) only.

2.4.4.126 FlipX

The **FlipX** cell is a [vScalar](#) custom token grouping that specifies whether the [coordinate system](#) of a [shape](#) has an inverted x-axis. It MUST have a [ShapeSheet Type](#) parent element or a [StyleSheet Type](#) parent element with an **ID** attribute equal to zero.

The value of the structure MUST be equal to zero or one. A value of one specifies that the axis is inverted; a value of zero specifies that the axis is not inverted.

2.4.4.127 FlipY

The **FlipY** cell is a [vScalar](#) custom token grouping that specifies whether the [coordinate system](#) of a [shape](#) has an inverted y-axis. It MUST have a [ShapeSheet Type](#) parent element or a [StyleSheet Type](#) parent element with an **ID** attribute equal to zero.

The value of the structure MUST be equal to zero or one. A value of one specifies that the axis is inverted; a value of zero specifies that the axis is not inverted.

2.4.4.128 FlyoutChild

The **FlyoutChild** cell is a [PtgBool](#) parse token that is used during [formula evaluation](#) only. It MUST have a [Row Type](#) parent element that has a [Actions Section Type](#) parent element.

2.4.4.129 Font

The **Font** cell is a [vFont](#) structure that specifies the font used for the [text](#) in a text run. It MUST have a [Row Type](#) parent element that has a [Character Section Type](#) parent element.

2.4.4.130 FontScale

The **FontScale** cell is a [vScalar](#) custom token grouping that specifies the font width of a text run. It MUST have a [Row Type](#) parent element that has a [Character Section Type](#) parent element.

The value of the structure MUST be greater than or equal to zero and less than or equal to six. The value is normalized such that a value of 1 corresponds to 100 percent and the value of 6 corresponds to 600 percent.

2.4.4.131 FontSchemeIndex

The **FontSchemeIndex** cell is a [PtgByte](#) parse token that specifies the index of the font scheme [dynamic theme component](#). It MUST have a [ShapeSheet_Type](#) parent element or a [StyleSheet_Type](#) parent element with an **ID** attribute equal to zero.

The value of the **V** attribute MUST be greater than or equal to zero and less than or equal to 65534, or MUST be equal to -2.

If the value of any of the [Cell_Type](#) elements [ColorSchemeIndex](#), [FontSchemeIndex](#), or [ThemeIndex](#) is equal to zero, font is specified by the [root style sheet](#).

If the value of the **V** attribute is equal to -2, the index of the font scheme dynamic theme component of a [shape](#) is specified by the **V** attribute of the [FontSchemeIndex Cell_Type](#) descendant element of the [PageSheet_Type](#) element containing the shape.

2.4.4.132 Format

The **Format** cell is a [vFormatString](#) structure that specifies the [data formatting](#) to apply to a [text field](#) or [shape data](#) value. It MUST have a [Row_Type](#) parent element that has a [Field](#) or [Property Section_Type](#) parent element.

The formatting to apply is based on the type of the [Row_Type](#) element specified by a sibling [Cell_Type](#) element with an **N** attribute equal to "Type".

2.4.4.133 Frame

The **Frame** cell is a [PtgString](#) parse token that is used during [formula evaluation](#) only. It MUST have a [Row_Type](#) parent element that has a [Hyperlink Section_Type](#) parent element.

2.4.4.134 Gamma

The **Gamma** cell is a [vScalar](#) custom token grouping that specifies the **gamma correction** applied to an [image](#). It MUST have a [ShapeSheet_Type](#) or [StyleSheet_Type](#) parent element. When the value of the structure is equal to one, no correction is applied.

2.4.4.135 GlowColor

The **GlowColor** cell is a [vColor](#) custom input type that specifies the color of a [glow effect set](#) of a [shape](#). It MUST have a [ShapeSheet_Type](#) or [StyleSheet_Type](#) parent element.

2.4.4.136 GlowColorTrans

The **GlowColorTrans** cell is a [vScalar](#) custom token grouping that specifies the transparency of the color of a [glow effect set](#) of a [shape](#). It MUST have a [ShapeSheet_Type](#) or [StyleSheet_Type](#) parent element.

The value of the structure MUST be expressed as a percentage, and MUST be greater than or equal to zero and less than or equal to one. The value is normalized such that a value of 1 corresponds to 100 percent. A value of zero specifies there is no transparency; a value of one specifies maximum transparency.

2.4.4.137 GlowSize

The **GlowSize** cell is a [vLength](#) custom token grouping that specifies the thickness of a [glow effect set](#) of a [shape](#). It MUST have a [ShapeSheet_Type](#) or [StyleSheet_Type](#) parent element.

The value MUST be greater than or equal to zero points and less than or equal to 150 points.

2.4.4.138 Glue

The **Glue** cell is a [PtgBool](#) parse token that is used during [formula evaluation](#) only. It MUST have a [Row_Type](#) parent element that has a [Layer Section_Type](#) parent element.

2.4.4.139 GlueType

The GlueType cell is a [PtgByte](#) parse token that is used during [formula evaluation](#) only. It MUST have a [ShapeSheet_Type](#) parent element or a [StyleSheet_Type](#) parent element with an **ID** attribute equal to zero.

2.4.4.140 GradientStopColor

The **GradientStopColor** cell is a [vColor](#) custom input type that specifies the color of a gradient stop of a [shape](#). It MUST have a [LineGradient Section_Type](#) or [FillGradient Section_Type](#) parent element.

2.4.4.141 GradientStopColorTrans

The **GradientStopColorTrans** cell is a [vScalar](#) custom token grouping that specifies the transparency of the color of a gradient stop of a [shape](#). It MUST have a [LineGradient Section_Type](#) or [FillGradient Section_Type](#) parent element.

The value of the structure MUST be expressed as a percentage, and MUST be greater than or equal to zero and less than or equal to one. The value is normalized such that a value of 1 corresponds to 100 percent. A value of zero specifies there is no transparency; a value of one specifies maximum transparency.

2.4.4.142 GradientStopPosition

The **GradientStopPosition** cell is a [vScalar](#) custom token grouping that specifies the position of a gradient stop of a [shape](#). It MUST have a [LineGradient Section_Type](#) or [FillGradient Section_Type](#) parent element.

The value of the structure MUST be expressed as a percentage, and MUST be greater than or equal to zero and less than or equal to one. The value is normalized such that a value of 1 corresponds to 100 percent. A value of zero specifies a gradient stop at the starting point of the gradient; a value of one specifies a gradient stop at the ending point of the gradient.

The gradient starting and ending points are specified by [FillGradientDir](#) or [LineGradientDir](#) and [FillGradientAngle](#) or [LineGradientAngle](#) and [UseGroupGradient Cell_Type](#) elements. The value of the structure MUST be greater than or equal to the value of preceding GradientStopPosition structures in the same section.

2.4.4.143 Height

The **Height** cell is a [vLength](#) custom token grouping that specifies the height of a [shape](#). It MUST have a [ShapeSheet_Type](#) parent element or a [StyleSheet_Type](#) parent element with an **ID** attribute equal to zero.

2.4.4.144 HelpTopic

The **HelpTopic** cell is a [PtgString](#) parse token that is used during [formula evaluation](#) only. It MUST have a [ShapeSheet_Type](#) parent element or a [StyleSheet_Type](#) parent element with an **ID** attribute equal to zero.

2.4.4.145 HideForApply

The **HideForApply** cell is a [PtgBool](#) parse token that is used during [formula evaluation](#) only. It MUST have a [StyleSheet_Type](#) parent element.

2.4.4.146 HideText

The **HideText** cell is a [vScalar](#) custom token grouping that specifies whether the [text](#) of the [shape](#) is displayed. It MUST have a [ShapeSheet_Type](#) parent element or a [StyleSheet_Type](#) parent element with an **ID** attribute equal to zero.

The value of the structure MUST be equal to zero or one. A value of one specifies that the text is not displayed; a value of zero specifies that the text is displayed.

2.4.4.147 HorzAlign

The **HorzAlign** cell is a [PtgByte](#) parse token that specifies the horizontal alignment [text properties](#) of a [text](#) paragraph. It MUST have a [Row_Type](#) parent element that has a [Paragraph_Section_Type](#) parent element.

The value of the structure MUST be from the following table.

Value	Meaning
0	Specifies that the paragraph is left aligned.
1	Specifies that the paragraph is centered.
2	Specifies that the paragraph is right aligned.
3	Specifies that the paragraph is justified.
4	Specifies that the paragraph is distributed.

2.4.4.148 ImgHeight

The **ImgHeight** cell is a [vLength](#) custom token grouping that specifies the height of an [image](#). It MUST have a [ShapeSheet_Type](#) parent element or a [StyleSheet_Type](#) parent element with an **ID** attribute equal to zero.

2.4.4.149 ImgOffsetX

The **ImgOffsetX** cell is a [vLength](#) custom token grouping that specifies the horizontal offset of an [image](#). The value is defined in relation to the [coordinate system](#) of the [shape](#). It MUST have a [ShapeSheet_Type](#) parent element or a [StyleSheet_Type](#) parent element with an **ID** attribute equal to zero.

2.4.4.150 **ImgOffsetY**

The **ImgOffsetY** cell is a [vLength](#) custom token grouping that specifies the vertical offset of an [image](#). The value is defined in relation to the [coordinate system](#) of the [shape](#). It MUST have a [ShapeSheet Type](#) parent element or a [StyleSheet Type](#) parent element with an **ID** attribute equal to zero.

2.4.4.151 **ImgWidth**

The **ImgWidth** cell is a [vLength](#) custom token grouping that specifies the width of an image. It MUST have a [ShapeSheet Type](#) parent element or a [StyleSheet Type](#) parent element with an **ID** attribute equal to zero.

2.4.4.152 **IndFirst**

The **IndFirst** cell is a [vLength](#) custom token grouping that specifies the distance that the first line of [text](#) in each paragraph of a [shape's text block](#) is indented from the left edge of the paragraph. It MUST have a [Row Type](#) parent element that has a [Paragraph Section Type](#) parent element.

If the indentation position is located outside the boundary of the shape's text block, the closest position on the boundary of the shape's text block MUST be used in its place.

2.4.4.153 **IndLeft**

The **IndLeft** cell is a [vLength](#) custom token grouping that specifies the distance that all lines of [text](#) in a paragraph are indented from the left margin of the [text block](#) of a [shape](#). It MUST have a [Row Type](#) parent element that has a [Paragraph Section Type](#) parent element.

If the indentation position is located outside the boundary of the shape's text block, the closest position within the boundary of the shape's text block MUST be used in its place.

2.4.4.154 **IndRight**

The **IndRight** cell is a [vLength](#) custom token grouping that specifies the distance that all lines of [text](#) in a paragraph are indented from the right margin of the [text block](#) of a [shape](#). It MUST have a [Row Type](#) parent element that has a [Paragraph Section Type](#) parent element.

If the indentation position is located outside the boundary of the shape's text block, the closest position within the boundary of the shape's text block MUST be used in its place.

If the indentation is greater than the width of the shape less the cell value of [IndLeft](#), the text is positioned based on the IndLeft value.

2.4.4.155 **InhibitSnap**

The **InhibitSnap** cell is a [PtgBool](#) parse token that is used during [formula evaluation](#) only. It MUST have a [PageSheet Type](#) parent element.

2.4.4.156 **Initials**

The **Initials** cell is a [PtgString](#) parse token that is used during [formula evaluation](#) only. It MUST have a [Row Type](#) parent element that has a [Reviewer Section Type](#) parent element.

2.4.4.157 Invisible

The **Invisible** cell is a [PtgBool](#) parse token that specifies whether a hyperlink or [shape data](#) item is invisible on a [shape](#). It MUST have a [Row Type](#) parent element that has a [Hyperlink](#) or [Property Section Type](#) parent element.

A structure value of one specifies that the item is invisible; a structure value of zero specifies that the item is visible.

2.4.4.158 IsDropSource

The **IsDropSource** cell is a [PtgBool](#) parse token that is used during [formula evaluation](#) only. It MUST have a [ShapeSheet Type](#) or [StyleSheet Type](#) parent element.

2.4.4.159 IsDropTarget

The **IsDropTarget** cell is a [PtgBool](#) parse token that is used during [formula evaluation](#) only. It MUST have a [ShapeSheet Type](#) or [StyleSheet Type](#) parent element.

2.4.4.160 IsSnapTarget

The **IsSnapTarget** cell is a [PtgBool](#) parse token that is used during [formula evaluation](#) only. It MUST have a [ShapeSheet Type](#) or [StyleSheet Type](#) parent element.

2.4.4.161 IsTextEditTarget

The **IsTextEditTarget** cell is a [PtgBool](#) parse token that is used during [formula evaluation](#) only. It MUST have a [ShapeSheet Type](#) or [StyleSheet Type](#) parent element.

2.4.4.162 KeepTextFlat

The **KeepTextFlat** cell is a [PtgBool](#) parse token that specifies whether [3D rotation properties](#) apply to the [text](#) of a [shape](#). It MUST have a [ShapeSheet Type](#) or [StyleSheet Type](#) parent element.

A value of one specifies that 3D rotation properties do not apply to the shape text; a value of zero specifies that 3D rotation properties apply to the shape text.

2.4.4.163 Label

The **Label** cell is a [PtgString](#) parse token that specifies the label of a [shape data](#). It MUST have a [Row Type](#) parent element that has a [Property Section Type](#) parent element.

2.4.4.164 LangID

The **LangID** cell is a [vLanguageString](#) structure that specifies the locale settings to use for [character properties](#) and [paragraph properties](#), as specified in [\[RFC4646\]](#) and [\[RFC4647\]](#). It MUST have either a [ShapeSheet Type](#) parent element or a [Row Type](#) parent element that has a [Character](#) or [Property Section Type](#) parent element.

2.4.4.165 LayerMember

The **LayerMember** cell is a [PtgString](#) parse token that specifies a [layer](#) index list to which a [shape](#) is assigned. It MUST have a [ShapeSheet Type](#) parent element or a [StyleSheet Type](#) parent element with an **ID** attribute equal to zero.

A layer index list is a semicolon-delimited collection of layer indices defined by the following.

ABNF

```
layer-index-list = [layer-index *(";" layer-index)]
layer-index = 1*DIGIT
```

2.4.4.166 LeftMargin

The **LeftMargin** cell is a [vLength](#) custom token grouping that specifies the margin between the left border of a [text block](#) and the [text](#) it contains. It MUST have a [ShapeSheet Type](#) or a [StyleSheet Type](#) parent element.

2.4.4.167 Letterspace

The **Letterspace** cell is a [vLength](#) custom token grouping that specifies the amount of space added or subtracted between characters in a text run. It MUST have a [Row Type](#) parent element that has a [Character Section Type](#) parent element.

2.4.4.168 LineAdjustFrom

The **LineAdjustFrom** cell is a [PtqByte](#) parse token that is used during [formula evaluation](#) only. It MUST have a [PageSheet Type](#) parent element.

2.4.4.169 LineAdjustTo

The **LineAdjustTo** cell is a [PtqByte](#) parse token that is used during [formula evaluation](#) only. It MUST have a [PageSheet Type](#) parent element.

2.4.4.170 LineCap

The **LineCap** cell is a [PtqByte](#) parse token that specifies the line end style for a [shape](#). It MUST have a [ShapeSheet Type](#) or a [StyleSheet Type](#) parent element.

The value of the structure MUST be from the following table.

Value	Meaning
0	Rounded
1	Square
2	Extended

2.4.4.171 LineColor

The **LineColor** cell is a [vColor](#) custom input type that specifies the line color of a [shape](#). It MUST have a [ShapeSheet Type](#) or [StyleSheet Type](#) parent element.

2.4.4.172 LineColorTrans

The **LineColorTrans** cell is a [vScalar](#) custom token grouping that specifies the transparency of the line color of a [shape](#). It MUST have a [ShapeSheet Type](#) or [StyleSheet Type](#) parent element.

The value of the structure MUST be expressed as a percentage, and MUST be greater than or equal to zero and less than or equal to one. The value is normalized such that a value of 1 corresponds to 100 percent. A value of zero specifies that the image is completely opaque; a value of one specifies that the image is completely transparent.

2.4.4.173 LineGradientAngle

The **LineGradientAngle** cell is a [vAngle](#) custom token grouping that specifies the orientation of the line color gradient of a [shape](#). It MUST have a [ShapeSheet_Type](#) or [StyleSheet_Type](#) parent element.

A value of zero corresponds to the direction of the positive x-axis. If the sibling [FillGradientDirCell_Type](#) element is not equal to zero, this value MUST be ignored.

2.4.4.174 LineGradientDir

The **LineGradientDir** cell is a [PtqByte](#) parse token that specifies the type of the line color gradient of a [shape](#). It MUST have a [ShapeSheet_Type](#) or [StyleSheet_Type](#) parent element.

The value of the structure MUST be from the following table.

Value	Meaning
0	Specifies a linear line color gradient.
1	Specifies the line color gradient of the shape is in radial mode from the bottom right corner of the bounding box of the shape.
2	Specifies the line color gradient of the shape is in radial mode from bottom left corner of the bounding box of the shape.
3	Specifies the line color gradient of the shape is in radial mode from center of the shape.
4	Specifies the line color gradient of the shape is in radial mode from the center of the bottom edge of the shape.
5	Specifies the line color gradient of the shape is in radial mode from the center of the top edge of the shape.
6	Specifies the line color gradient of the shape is in radial mode from top right corner of the bounding box of the shape.
7	Specifies the line color gradient of the shape is in radial mode from top left corner of the bounding box of the shape.
8	Specifies the line color gradient of the shape is in rectangle mode from bottom right corner of the bounding box of the shape.
9	Specifies the line color gradient of the shape is in rectangle mode from bottom left corner of the bounding box of the shape.
10	Specifies the line color gradient of the shape is in rectangle mode from center of the shape.
11	Specifies the line color gradient of the shape is in rectangle mode from top right corner of the bounding box of the shape.
12	Specifies the line color gradient of the shape is in rectangle mode from top left corner of the bounding box of the shape.

2.4.4.175 LineGradientEnabled

The **LineGradientEnabled** cell is a [PtgBool](#) parse token that specifies whether the line gradient is visible. It MUST have a [ShapeSheet_Type](#) or [StyleSheet_Type](#) parent element.

2.4.4.176 LineJumpCode

The **LineJumpCode** cell is a [PtgByte](#) parse token that is used during [formula evaluation](#) only. It MUST have a [PageSheet_Type](#) parent element.

2.4.4.177 LineJumpFactorX

The **LineJumpFactorX** cell is a [vScalar](#) custom token grouping that is used during [formula evaluation](#) only. It MUST have a [PageSheet_Type](#) parent element.

2.4.4.178 LineJumpFactorY

The **LineJumpFactorY** cell is a [vScalar](#) custom token grouping that is used during [formula evaluation](#) only. It MUST have a [PageSheet_Type](#) parent element.







2.4.4.179 LineJumpStyle

The **LineJumpStyle** cell is a [PtgByte](#) parse token that is used during [formula evaluation](#) only. It MUST have a [PageSheet_Type](#) parent element.

2.4.4.180 LinePattern

The **LinePattern** cell is a [PtgByte](#) parse token that specifies the line pattern of a [shape](#). It MUST have a [ShapeSheet_Type](#) or [StyleSheet_Type](#) parent element.

The value of the structure MUST be from the following table.

Value	Meaning
0	Specifies transparent line.
1	Specifies a solid line .
2	
3	
4	
5	
6	
7	

Value	Meaning
8	— — — — —
9	-----
10
11	- . - . - . - . - .
12	- -
13	. - . - . - . - . - .
14	-----
15	-----
16	— — — — —
17
18	. — . — . — . — . — . —
19	. . — . . — . . — . . — . . — . . —
20	. — — — — . — — — — . — — — — . — — — —
21	— — — — —
22	— — — — —

Value	Meaning
23
254	Use the master that is specified by the formula associated with this cell for the line pattern.

2.4.4.181 LineRouteExt

The **LineRouteExt** cell is a [PtgByte](#) parse token that is used during [formula evaluation](#) only. It MUST have a [PageSheet Type](#) parent element.

2.4.4.182 LineToLineX

The **LineToLineX** cell is a [vScalar](#) custom token grouping that is used during [formula evaluation](#) only. It MUST have a [PageSheet Type](#) parent element.

2.4.4.183 LineToLineY

The **LineToLineY** cell is a [vScalar](#) custom token grouping that is used during [formula evaluation](#) only. It MUST have a [PageSheet Type](#) parent element.

2.4.4.184 LineToNodeX

The **LineToNodeX** cell is a [vScalar](#) custom token grouping that is used during [formula evaluation](#) only. It MUST have a [PageSheet Type](#) parent element.

2.4.4.185 LineToNodeY

The **LineToNodeY** cell is a [vScalar](#) custom token grouping that is used during [formula evaluation](#) only. It MUST have a [PageSheet Type](#) parent element.

2.4.4.186 LineWeight

The **LineWeight** cell is a [vLength](#) custom token grouping that specifies the line thickness of a [shape](#). It MUST have a [ShapeSheet Type](#) or a [StyleSheet Type](#) parent element. It MUST be greater than zero.

2.4.4.187 LocalizeMerge

The **LocalizeMerge** cell is a [PtgBool](#) parse token that is used during [formula evaluation](#) only. It MUST have a [ShapeSheet Type](#) or a [StyleSheet Type](#) parent element.

2.4.4.188 Lock

The **Lock** cell is a [PtgBool](#) parse token that specifies whether the [shapes](#) in a [layer](#) are [selectable](#). It MUST have a [Row Type](#) parent element that has a [Layer Section Type](#) parent element.

A value of one specifies that the shapes in this layer are not selectable; a value of zero specifies the shapes in this layer can be selected.

2.4.4.189 LockAspect

The **LockAspect** cell is a [PtgBool](#) parse token that is used during [formula evaluation](#) only. It MUST have a [ShapeSheet Type](#) parent element or a [StyleSheet Type](#) parent element with an **ID** attribute equal to zero.

2.4.4.190 LockBegin

The **LockBegin** cell is a [PtgBool](#) parse token that is used during [formula evaluation](#) only. It MUST have a [ShapeSheet Type](#) parent element or a [StyleSheet Type](#) parent element with an **ID** attribute equal to zero.

2.4.4.191 LockCalcWH

The **LockCalcWH** cell is a [PtgBool](#) parse token that is used during [formula evaluation](#) only. It MUST have a [ShapeSheet Type](#) parent element or a [StyleSheet Type](#) parent element with an **ID** attribute equal to zero.

2.4.4.192 LockCrop

The **LockCrop** cell is a [PtgBool](#) parse token that is used during [formula evaluation](#) only. It MUST have a [ShapeSheet Type](#) parent element or a [StyleSheet Type](#) parent element with an **ID** attribute equal to zero.

2.4.4.193 LockCustProp

The **LockCustProp** cell is a [PtgBool](#) parse token that is used during [formula evaluation](#) only. It MUST have a [ShapeSheet Type](#) parent element or a [StyleSheet Type](#) parent element with an **ID** attribute equal to zero.

2.4.4.194 LockDelete

The **LockDelete** cell is a [PtgBool](#) parse token that is used during [formula evaluation](#) only. It MUST have a [ShapeSheet Type](#) parent element or a [StyleSheet Type](#) parent element with an **ID** attribute equal to zero.

2.4.4.195 LockEnd

The **LockEnd** cell is a [PtgBool](#) parse token that is used during [formula evaluation](#) only. It MUST have a [ShapeSheet Type](#) parent element or a [StyleSheet Type](#) parent element with an **ID** attribute equal to zero.

2.4.4.196 LockFormat

The **LockFormat** cell is a [PtgBool](#) parse token that is used during [formula evaluation](#) only. It MUST have a [ShapeSheet Type](#) parent element or a [StyleSheet Type](#) parent element with an **ID** attribute equal to zero.

2.4.4.197 LockFromGroupFormat

The **LockFromGroupFormat** cell is a [PtgBool](#) parse token that is used during [formula evaluation](#) only. It MUST have a [ShapeSheet Type](#) parent element or a [StyleSheet Type](#) parent element with an **ID** attribute equal to zero.

2.4.4.198 LockGroup

The **LockGroup** cell is a [PtgBool](#) parse token that is used during [formula evaluation](#) only. It MUST have a [ShapeSheet Type](#) parent element or a [StyleSheet Type](#) parent element with an **ID** attribute equal to zero.

2.4.4.199 LockHeight

The **LockHeight** cell is a [PtgBool](#) parse token that is used during [formula evaluation](#) only. It MUST have a [ShapeSheet Type](#) parent element or a [StyleSheet Type](#) parent element with an **ID** attribute equal to zero.

2.4.4.200 LockMoveX

The **LockMoveX** cell is a [PtgBool](#) parse token that is used during [formula evaluation](#) only. It MUST have a [ShapeSheet Type](#) parent element or a [StyleSheet Type](#) parent element with an **ID** attribute equal to zero.

2.4.4.201 LockMoveY

The **LockMoveY** cell is a [PtgBool](#) parse token that is used during [formula evaluation](#) only. It MUST have a [ShapeSheet Type](#) parent element or a [StyleSheet Type](#) parent element with an **ID** attribute equal to zero.

2.4.4.202 LockPreview

The **LockPreview** cell is a [PtgBool](#) parse token that is used during [formula evaluation](#) only. It MUST have a [ShapeSheet Type](#) parent element or a [StyleSheet Type](#) parent element with an **ID** attribute equal to zero.

2.4.4.203 LockReplace

The **LockReplace** cell is a [PtgBool](#) parse token that is used during [formula evaluation](#) only. It MUST have a [ShapeSheet Type](#) parent element or a [StyleSheet Type](#) parent element with an **ID** attribute equal to zero.

2.4.4.204 LockRotate

The **LockRotate** cell is a [PtgBool](#) parse token that is used during [formula evaluation](#) only. It MUST have a [ShapeSheet Type](#) parent element or a [StyleSheet Type](#) parent element with an **ID** attribute equal to zero.

2.4.4.205 LockSelect

The **LockSelect** cell is a [PtgBool](#) parse token that specifies whether a [shape](#) is [selectable](#). It MUST have a [ShapeSheet Type](#) or [StyleSheet Type](#) parent element. If the [ProtectShapes Type](#) element in the [web drawing](#) has a value equal to zero, it is used during [formula evaluation](#) only.

A value of one specifies that the shape is not selectable; a value of zero specifies the shape is selectable.

2.4.4.206 LockTextEdit

The **LockTextEdit** cell is a [PtgBool](#) parse token that is used during [formula evaluation](#) only. It MUST have a [ShapeSheet Type](#) parent element or a [StyleSheet Type](#) parent element with an **ID** attribute equal to zero.

2.4.4.207 LockThemeColors

The **LockThemeColors** cell is a [PtgBool](#) parse token that is used during [formula evaluation](#) only. It MUST have a [ShapeSheet Type](#) parent element or a [StyleSheet Type](#) parent element with an **ID** attribute equal to zero.

2.4.4.208 LockThemeConnectors

The **LockThemeConnectors** cell is a [PtgBool](#) parse token that is used during [formula evaluation](#) only. It MUST have a [ShapeSheet Type](#) parent element or a [StyleSheet Type](#) parent element with an **ID** attribute equal to zero.

2.4.4.209 LockThemeEffects

The **LockThemeEffects** cell is a [PtgBool](#) parse token that is used during [formula evaluation](#) only. It MUST have a [ShapeSheet Type](#) parent element or a [StyleSheet Type](#) parent element with an **ID** attribute equal to zero.

2.4.4.210 LockThemeFonts

The **LockThemeFonts** cell is a [PtgBool](#) parse token that is used during [formula evaluation](#) only. It MUST have a [ShapeSheet Type](#) parent element or a [StyleSheet Type](#) parent element with an **ID** attribute equal to zero.

2.4.4.211 LockVtxEdit

The **LockVtxEdit** is a [PtgBool](#) parse token that is used during [formula evaluation](#) only. It MUST have a [ShapeSheet Type](#) parent element or a [StyleSheet Type](#) parent element with an **ID** attribute equal to zero.

2.4.4.212 LockWidth

The **LockWidth** cell is a [PtgBool](#) parse token that is used during [formula evaluation](#) only. It MUST have a [ShapeSheet Type](#) parent element or a [StyleSheet Type](#) parent element with an **ID** attribute equal to zero.

2.4.4.213 LocPinX

The **LocPinX** cell is a [vLength](#) custom token grouping that specifies the x-coordinate of the center of rotation of a [shape](#). The value is defined in relation to the [coordinate system](#) of the shape. It MUST have a [ShapeSheet Type](#) parent element or a [StyleSheet Type](#) parent element with an **ID** attribute equal to zero.

2.4.4.214 LocPinY

The **LocPinY** cell is a [vLength](#) custom token grouping that specifies the y-coordinate of the center of rotation of a [shape](#). The value is defined in relation to the [coordinate system](#) of the shape. It MUST

have a [ShapeSheet_Type](#) parent element or a [StyleSheet_Type](#) parent element with an **ID** attribute equal to zero.

2.4.4.215 MarkerIndex

The **MarkerIndex** cell is a [PtgShort](#) parse token that is unused and MUST be ignored. It MUST have a [Row_Type](#) parent element that has a [Annotation Section_Type](#) parent element.

2.4.4.216 Menu

The **Menu** cell is a [PtgString](#) parse token that is used during [formula evaluation](#) only. It MUST have a [Row_Type](#) parent element that has a [Actions Section_Type](#) parent element.

2.4.4.217 Name

The **Name** cell is a [PtgString](#) parse token that is used during [formula evaluation](#) only. It MUST have a [Row_Type](#) parent element that has a [Layer Section_Type](#) parent element or a [Row_Type](#) parent element that has a [Reviewer Section_Type](#) parent element.

2.4.4.218 NameUniv

The **NameUniv** cell is a [PtgString](#) parse token that is used during [formula evaluation](#) only. It MUST have a [Row_Type](#) parent element that has a [Layer Section_Type](#) parent element.

2.4.4.219 NewWindow

The **NewWindow** cell is a [PtgBool](#) parse token that is used during [formula evaluation](#) only. It MUST have a [Row_Type](#) parent element that has a [Hyperlink Section_Type](#) parent element.

2.4.4.220 NoAlignBox

The **NoAlignBox** cell is a [PtgBool](#) parse token that is used during [formula evaluation](#) only. It MUST have a [ShapeSheet_Type](#) or [StyleSheet_Type](#) parent element.

2.4.4.221 NoCoauth

The **NoCoauth** cell is a [PtgBool](#) parse token that is used during [formula evaluation](#) only. It MUST have a [DocumentSheet_Type](#) parent element.

2.4.4.222 NoCtlHandles

The **NoCtlHandles** cell is a [PtgBool](#) parse token that is used during [formula evaluation](#) only. It MUST have a [ShapeSheet_Type](#) or [StyleSheet_Type](#) parent element.

2.4.4.223 NoFill

The **NoFill** cell is a [PtgBool](#) parse token that specifies whether [fill properties](#) are applied to a [geometric path](#). It MUST have a [Geometry Section_Type](#) parent element.

A value of one specifies that fill properties are not applied to the geometric path; a value of zero specifies that fill properties are applied to the geometric path.

2.4.4.224 NoLine

The **NoLine** cell is a [PtgBool](#) parse token that specifies whether [line properties](#) are applied to a [geometric path](#). It MUST have a [Geometry Section Type](#) parent element.

A value of one specifies that line properties are not applied to the geometric path; a value of zero specifies that line properties are applied to the geometric path.

2.4.4.225 NoLiveDynamics

The **NoLiveDynamics** cell is a [PtgBool](#) parse token that is used during [formula evaluation](#) only. It MUST have a [ShapeSheet Type](#) or [StyleSheet Type](#) parent element.

2.4.4.226 NonPrinting

The **NonPrinting** cell is a [PtgBool](#) parse token that is used during [formula evaluation](#) only. It MUST have a [ShapeSheet Type](#) or [StyleSheet Type](#) parent element.

2.4.4.227 NoObjHandles

The **NoObjHandles** cell is a [PtgBool](#) parse token that is used during [formula evaluation](#) only. It MUST have a [ShapeSheet Type](#) or [StyleSheet Type](#) parent element.

2.4.4.228 NoQuickDrag

The **NoQuickDrag** cell is a [PtgBool](#) parse token that is used during [formula evaluation](#) only. It MUST have a [Geometry Section Type](#) parent element.

2.4.4.229 NoShow

The **NoShow** cell is a [PtgBool](#) parse token that specifies whether a [geometric path](#) is visible. It MUST have a [Geometry Section Type](#) parent element.

A value of one specifies that the geometric path is hidden; a value of zero specifies that the geometric path is visible.

2.4.4.230 NoSnap

The **NoSnap** cell is a [PtgBool](#) parse token that is used during [formula evaluation](#) only. It MUST have a [Geometry Section Type](#) parent element.

2.4.4.231 ObjectKind

The **ObjectKind** cell is a [PtgByte](#) parse token that specifies the direction of [text](#) for a [text field](#). It MUST have a [Row Type](#) parent element that has a [Field Section Type](#) parent element.

The value of the structure MUST be from the following table.

Value	Meaning
0	Specifies that the text field direction matches the text direction.
1	Specifies that the text field direction is horizontal.

2.4.4.232 ObjType

The **ObjType** cell is a [PtgByte](#) parse token that is used during [formula evaluation](#) only. It MUST have a [ShapeSheet_Type](#) or [StyleSheet_Type](#) parent element.

2.4.4.233 OnPage

The **OnPage** cell is a [PtgBool](#) parse token that is used during [formula evaluation](#) only. It MUST have a [PageSheet_Type](#) parent element.

2.4.4.234 OutputFormat

The **OutputFormat** cell is a [PtgByte](#) parse token that is used during [formula evaluation](#) only. It MUST have a [DocumentSheet_Type](#) parent element.

2.4.4.235 Overline

The **Overline** cell is a [PtgBool](#) parse token that specifies whether the text run has an over line [character property](#). It MUST have a [Row_Type](#) parent element that has a [Character_Section_Type](#) parent element.

A value of one specifies that the text run has an over line; a value of zero specifies that the text run does not have an over line.

2.4.4.236 PageBottomMargin

The **PageBottomMargin** cell is a [vScalar](#) custom token grouping that is used during [formula evaluation](#) only. It MUST have a [PageSheet_Type](#) parent element.

2.4.4.237 PageHeight

The **PageHeight** cell is a [vLength](#) custom token grouping that specifies the height of a [drawing page](#). It MUST have a [PageSheet_Type](#) parent element. The value of the structure MUST be greater than zero.

2.4.4.238 PageLeftMargin

The **PageLeftMargin** cell is a [vScalar](#) custom token grouping that is used during [formula evaluation](#) only. It MUST have a [PageSheet_Type](#) parent element.

2.4.4.239 PageLineJumpDirX

The **PageLineJumpDirX** cell is a [PtgByte](#) parse token that is used during [formula evaluation](#) only. It MUST have a [PageSheet_Type](#) parent element.

2.4.4.240 PageLineJumpDirY

The **PageLineJumpDirY** cell is a [PtgByte](#) parse token that is used during [formula evaluation](#) only. It MUST have a [PageSheet_Type](#) parent element.

2.4.4.241 PageLockReplace

The **PageLockReplace** cell is a [PtgBool](#) parse token that is used during [formula evaluation](#) only. It MUST have a [PageSheet_Type](#) parent element.

2.4.4.242 PageRightMargin

The **PageRightMargin** cell is a [vScalar](#) custom token grouping that is used during [formula evaluation](#) only. It MUST have a [PageSheet_Type](#) parent element.

2.4.4.243 PageScale

The **PageScale** cell is a [vLength](#) custom token grouping that specifies a unit of distance used to define the [scale](#) of the [web drawing](#). It MUST have a [PageSheet_Type](#) parent element.

The default value of the structure is one inch.

2.4.4.244 PageShapeSplit

The **PageShapeSplit** cell is a [PtgByte](#) parse token that is used during [formula evaluation](#) only. It MUST have a [PageSheet_Type](#) parent element.

2.4.4.245 PagesX

The **PagesX** cell is a [PtgUnsShort](#) parse token that is used during [formula evaluation](#) only. It MUST have a [PageSheet_Type](#) parent element.

2.4.4.246 PagesY

The **PagesY** cell is a [PtgUnsShort](#) parse token that is used during [formula evaluation](#) only. It MUST have a [PageSheet_Type](#) parent element.

2.4.4.247 PageTopMargin

The **PageTopMargin** cell is a [vScalar](#) custom token grouping that is used during [formula evaluation](#) only. It MUST have a [PageSheet_Type](#) parent element.

2.4.4.248 PageWidth

The **PageWidth** cell is a [vLength](#) custom token grouping that specifies the width of a [drawing page](#). It MUST have a [PageSheet_Type](#) parent element.

The value of the structure MUST be greater than zero.

2.4.4.249 PaperKind

The **PaperKind** cell is a [PtgUnsShort](#) parse token that is used during [formula evaluation](#) only. It MUST have a [PageSheet_Type](#) parent element.

2.4.4.250 PaperSource

The **PaperSource** cell is a [PtgUnsShort](#) parse token that is used during [formula evaluation](#) only. It MUST have a [PageSheet_Type](#) parent element.

2.4.4.251 Path

The **Path** cell is a [PtgBool](#) parse token that is used during [formula evaluation](#) only. It MUST have a [Geometry Section_Type](#) parent element.

2.4.4.252 Perspective

The **Perspective** cell is a [vAngle](#) or [vScalar](#) custom token grouping that specifies the angle of view for a [shape](#) with [3D rotation properties](#). It MUST have a [ShapeSheet_Type](#) or [StyleSheet_Type](#) parent element.

If the cell is a [vScalar](#), the value of the structure MUST be expressed as an [angleInternalUnitNumber](#) custom internal unit number. The value of the structure MUST be greater than or equal to zero, and less than or equal to 120 degrees. The value of zero specifies that the perspective projection is not applied.

If the sibling [RotationType](#) Cell_Type element does not have a value of two, this value MUST be zero.

2.4.4.253 PinX

The **PinX** cell is a [vLength](#) custom token grouping that specifies the x-coordinate of the center of rotation of a [shape](#). The value is defined in relation to the [coordinate system](#) of the shape's [parent](#). It MUST have a [ShapeSheet_Type](#) parent element or a [StyleSheet_Type](#) parent element with an **ID** attribute equal to zero.

2.4.4.254 PinY

The **PinY** cell is a [vLength](#) custom token grouping that specifies the y-coordinate of the center of rotation of a [shape](#). The value is defined in relation to the [coordinate system](#) of the shape's [parent](#). It MUST have a [ShapeSheet_Type](#) parent element or a [StyleSheet_Type](#) parent element with an **ID** attribute equal to zero.

2.4.4.255 PlaceDepth

The **PlaceDepth** cell is a [PtgByte](#) parse token that is used during [formula evaluation](#) only. It MUST have a [PageSheet_Type](#) parent element.

2.4.4.256 PlaceFlip

The **PlaceFlip** cell is a [PtgByte](#) parse token that is used during [formula evaluation](#) only. It MUST have a [PageSheet_Type](#) parent element.

2.4.4.257 PlaceStyle

The **PlaceStyle** cell is a [PtgByte](#) parse token that is used during [formula evaluation](#) only. It MUST have a [PageSheet_Type](#) parent element.

2.4.4.258 PlowCode

The **PlowCode** cell is a [PtgByte](#) parse token that is used during [formula evaluation](#) only. It MUST have a [PageSheet_Type](#) parent element.

2.4.4.259 Pos

The **Pos** cell is a [PtgByte](#) parse token that specifies the position [character properties](#) used to format a text run. It MUST have a [Row_Type](#) parent element that has a [Character Section_Type](#) parent element.

The value of the structure MUST be from the following table.

Value	Meaning
0	Specifies that the position of the text run is unchanged.
1	Specifies that the text run is displayed as superscript.
2	Specifies that the text run is displayed as subscript.

2.4.4.260 Position

The **Position** cell is a [vLength](#) custom token grouping that specifies the tab stop position for a [tabs property](#). It MUST have a [Row_Type](#) parent element that has a [Tabs Section_Type](#) parent element. The value is defined in relation to the [coordinate system](#) of the [shape](#) and relative to the edge of the shape's [text block](#). It MUST have an **N** attribute with the following format.

"Position" #

Where # is an unsigned long integer, and MUST be less than or equal to 59

2.4.4.261 PreviewQuality

The **PreviewQuality** cell is a [PtgByte](#) parse token that is used during [formula evaluation](#) only. It MUST have a [DocumentSheet_Type](#) parent element.

2.4.4.262 PreviewScope

The **PreviewScope** cell is a [PtgByte](#) parse token that is used during [formula evaluation](#) only. It MUST have a [DocumentSheet_Type](#) parent element.

2.4.4.263 Print

The **Print** cell is a [PtgBool](#) parse token that is used during [formula evaluation](#) only. It MUST have a [Row_Type](#) parent element that has a [Layer Section_Type](#) parent element.

2.4.4.264 PrintGrid

The **PrintGrid** cell is a [PtgBool](#) parse token that is used during [formula evaluation](#) only. It MUST have a [PageSheet_Type](#) parent element.

2.4.4.265 PrintPageOrientation

The **PrintPageOrientation** cell is a [PtgByte](#) parse token that is used during [formula evaluation](#) only. It MUST have a [PageSheet_Type](#) parent element.

2.4.4.266 Prompt

The **Prompt** cell is a [PtgString](#) parse token that is used during [formula evaluation](#) only. It MUST have either a [Row_Type](#) parent element that has a [Connection Section_Type](#) parent element, a [Row_Type](#) parent element that has a [Control Section_Type](#) parent element, a [Row_Type](#) parent element that has a [Property Section_Type](#) parent element, or a [Row_Type](#) parent element that has a [User Section_Type](#) parent element.

2.4.4.267 QuickStyleEffectsMatrix

The **QuickStyleEffectsMatrix** cell is a [PtgByte](#) parse token that specifies the index of the effects matrix quick style slice as specified in section [2.2.7.4.3](#). It MUST have a [ShapeSheet_Type](#) or [StyleSheet_Type](#) parent element.

The value of the structure MUST be greater than or equal to zero, and less than or equal to three.

If the value of the structure is greater than or equal to one and less than or equal to three, the set of [effect properties](#) is specified by a [dynamic theme](#) for the [ShdwForegndTrans](#), [ShdwPattern](#), [ShapeShdwType](#), [ShapeShdwOffsetX](#), [ShapeShdwOffsetY](#), [ShapeShdwObliqueAngle](#), [ShapeShdwScaleFactor](#), [ShapeShdwBlur](#), [BevelTopType](#), [BevelTopWidth](#), [BevelTopHeight](#), [BevelContourColor](#), [BevelContourSize](#), [BevelMaterialType](#), [BevelLightingType](#), [BevelLightingAngle](#), [ReflectionTrans](#), [ReflectionDist](#), [ReflectionSize](#), [ReflectionBlur](#), [SketchEnabled](#), [SketchSeed](#), [SketchAmount](#), [SketchLineWeight](#), [SketchLineChange](#), [SketchFillChange](#), [GlowColor](#), [GlowColorTrans](#), [GlowSize](#), and [SoftEdgesSize Cell_Type](#) elements.

If the value of the structure is equal to zero, the set of effect properties is specified by the [root style sheet](#) for the [ShdwForegndTrans](#), [ShdwPattern](#), [ShapeShdwType](#), [ShapeShdwOffsetX](#), [ShapeShdwOffsetY](#), [ShapeShdwObliqueAngle](#), [ShapeShdwScaleFactor](#), [ShapeShdwBlur](#), [BevelTopType](#), [BevelTopWidth](#), [BevelTopHeight](#), [BevelContourColor](#), [BevelContourSize](#), [BevelMaterialType](#), [BevelLightingType](#), [BevelLightingAngle](#), [ReflectionTrans](#), [ReflectionDist](#), [ReflectionSize](#), [ReflectionBlur](#), [SketchEnabled](#), [SketchSeed](#), [SketchAmount](#), [SketchLineWeight](#), [SketchLineChange](#), [SketchFillChange](#), [GlowColor](#), [GlowColorTrans](#), [GlowSize](#), and [SoftEdgesSize Cell_Type](#) elements.

2.4.4.268 QuickStyleFillColor

The **QuickStyleFillColor** cell is a [PtgByte](#) parse token that specifies the index of the fill color [quick style slice](#). It MUST have a [ShapeSheet_Type](#) or [StyleSheet_Type](#) parent element.

The value of the structure specifies a color from the color scheme [dynamic theme component](#) for the [FillForegnd](#) and [FillBkgnd Cell_Type](#) elements, and the [Color](#) Cell_Type child element of a [Row_Type](#) that has a [FillGradient Section_Type](#) parent element.

The value of the structure MUST be from the following table.

Value	Meaning
0	Specifies that the dk1 color from the color scheme dynamic theme component as specified in [ISO/IEC-29500-1] section 20.1.4.1.9 is used.
1	Specifies that the lt1 color from the color scheme dynamic theme component as specified in [ISO/IEC-29500-1] section 20.1.4.1.22 is used.
2	Specifies that the accent1 color from the color scheme dynamic theme component as specified in [ISO/IEC-29500-1] section 20.1.4.1.1 is used.
3	Specifies that the accent2 color from the color scheme dynamic theme component as specified in [ISO/IEC-29500-1] section 20.1.4.1.2 is used.
4	Specifies that the accent3 color from the color scheme dynamic theme component as specified in [ISO/IEC-29500-1] section 20.1.4.1.3 is used.
5	Specifies that the accent4 color from the color scheme dynamic theme component as specified in [ISO/IEC-29500-1] section 20.1.4.1.4 is used.

Value	Meaning
6	Specifies that the accent5 color from the color scheme dynamic theme component as specified in [ISO/IEC-29500-1] section 20.1.4.1.5 is used.
7	Specifies that the accent6 color from the color scheme dynamic theme component as specified in [ISO/IEC-29500-1] section 20.1.4.1.6 is used.
8	Specifies that the back ground color from the color scheme dynamic theme component as specified by the Bkgnd_Type is used.

2.4.4.269 QuickStyleFillMatrix

The **QuickStyleFillMatrix** cell is a [PtgByte](#) parse token that specifies the index of the fill matrix [quick style slice](#). It MUST have a [ShapeSheet_Type](#) or [StyleSheet_Type](#) parent element.

The value of the structure MUST be greater than or equal to zero, and less than or equal to three.

If the value of the structure is greater than or equal to one and less than or equal to three, the set of [fill properties](#) is specified by a [dynamic theme](#) for the [FillForegndTrans](#), [FillBkgndTrans](#), [FillPattern](#), [FillGradientDir](#), [FillGradientAngle](#), [FillGradientEnabled](#), [RotateGradientWithShape](#), [UseGroupGradient_Cell_Type](#) elements, and the [ColorTrans](#) and [Position_Cell_Type](#) child elements of a [Row_Type](#) that has a [FillGradient_Section_Type](#) parent element.

If the value of the structure is equal to zero, the set of fill properties is specified by the [root style sheet](#) for the cells belonging to the [FillForegndTrans](#), [FillBkgndTrans](#), [FillPattern](#), [FillGradientDir](#), [FillGradientAngle](#), [FillGradientEnabled](#), [RotateGradientWithShape](#), [UseGroupGradient_Cell_Type](#) elements, and the [ColorTrans](#) and [Position_Cell_Type](#) child elements of a [Row_Type](#) that has a [FillGradient_Section_Type](#) parent element.

2.4.4.270 QuickStyleFontColor

The **QuickStyleFontColor** cell is a [PtgByte](#) parse token that specifies the index of the font color [quick style slice](#). It MUST have a [ShapeSheet_Type](#) or [StyleSheet_Type](#) parent element.

The value of the structure specifies a color from the color scheme [dynamic theme component](#) for the [Color_Cell_Type](#) child element of a [Row_Type](#) that has a [Character_Section_Type](#) parent element.

The value of the structure MUST be specified by the table in [QuickStyleFillColor](#) cell.

2.4.4.271 QuickStyleLineColor

The **QuickStyleLineColor** cell is a [PtgByte](#) parse token that specifies the index of the line color [quick style slice](#). It MUST have a [ShapeSheet_Type](#) or [StyleSheet_Type](#) parent element.

The value of the structure specifies a color from the color scheme [dynamic theme component](#) for the [LineColor_Cell_Type](#) and the [Color_Cell_Type](#) child element of a [Row_Type](#) that has a [LineGradient_Section_Type](#) parent element.

The value of the structure MUST be specified by the table in [QuickStyleFillColor](#) cell.

2.4.4.272 QuickStyleLineMatrix

The **QuickStyleLineMatrix** cell is a [PtgByte](#) parse token that specifies the index of the line matrix [quick style slice](#). It MUST have a [ShapeSheet_Type](#) or [StyleSheet_Type](#) parent element.

The value of the structure MUST be greater than or equal to zero, and less than or equal to three.

If the value of the structure is greater than or equal to one and less than or equal to three, the set of [line properties](#) is specified by a [dynamic theme](#) for the [LinePattern](#), [LineWeight](#), [LineCap](#), [BeginArrow](#), [EndArrow](#), [LineColorTrans](#), [CompoundType](#), [BeginArrowSize](#), [EndArrowSize](#), [Rounding](#), [LineGradientDir](#), [LineGradientAngle](#), and [LineGradientEnabled Cell_Type](#) elements and the [ColorTrans](#) and [Position Cell_Type](#) child elements of a [Row_Type](#) that has a [LineGradient Section_Type](#) parent element.

If the value of the structure is equal to zero, the set of line properties is specified by the [root style sheet](#) for the [LinePattern](#), [LineWeight](#), [LineCap](#), [BeginArrow](#), [EndArrow](#), [LineColorTrans](#), [CompoundType](#), [BeginArrowSize](#), [EndArrowSize](#), [Rounding](#), [LineGradientDir](#), [LineGradientAngle](#), and [LineGradientEnabled Cell_Type](#) elements and the [ColorTrans](#) and [Position Cell_Type](#) child elements of a [Row_Type](#) that has a [LineGradient Section_Type](#) parent element.

2.4.4.273 QuickStyleShadowColor

The **QuickStyleShadowColor** cell is a [PtgByte](#) parse token that specifies the index of the [shadow color quick style slice](#). It MUST have a [ShapeSheet_Type](#) or [StyleSheet_Type](#) parent element.

The value of the structure specifies a color from the color scheme [dynamic theme component](#) for the [ShdwForegnd Cell_Type](#).

The value of the structure MUST be specified by the table in [QuickStyleFillColor](#) cell.

2.4.4.274 QuickStyleType

The **QuickStyleType** cell is a [PtgInt](#) parse token that specifies whether the [QuickStyleLineMatrix](#), [QuickStyleFillMatrix](#), and [QuickStyleEffectsMatrix Cell_Type](#) elements of a [shape](#), [master](#), or style refer to the effect scheme [dynamic theme component](#) or the connector scheme dynamic theme component regardless of whether the shape, master, or style is a [connector](#). It MUST have a [ShapeSheet_Type](#) or [StyleSheet_Type](#) parent element.

The value of the structure MUST be from the following table.

Value	Meaning
0	Specifies that the QuickStyleLineMatrix, QuickStyleFillMatrix, and QuickStyleEffectsMatrix Cell_Type elements refer to an effect scheme dynamic theme component if the shape, master, or style is a non-connector, or to a connector scheme dynamic theme component if the shape, master, or style is a connector.
1 and 2	Specifies that the QuickStyleLineMatrix, QuickStyleFillMatrix, and QuickStyleEffectsMatrix Cell_Type elements refer to an effect scheme dynamic theme component regardless if the shape, master, or style is a connector.
3	Specifies that the QuickStyleLineMatrix, QuickStyleFillMatrix, and QuickStyleEffectsMatrix Cell_Type elements refer to a connector scheme dynamic theme component regardless if the shape, master, or style is a connector.

2.4.4.275 ReadOnly

The **ReadOnly** cell is a [PtgBool](#) parse token that is used during [formula evaluation](#) only. It MUST have a [Row_Type](#) parent element that has a [Actions Section_Type](#) parent element.

2.4.4.276 ReflectionBlur

The **ReflectionBlur** cell is a [vLength](#) custom token grouping that specifies the amount of blur of a [shape's reflection](#). It MUST have a [ShapeSheet Type](#) or [StyleSheet Type](#) parent element.

The value of the structure MUST be greater than or equal to zero, and less than or equal to (100.0 / 72.0) inches. The value of zero specifies that there is no blur.

2.4.4.277 ReflectionDist

The **ReflectionDist** cell is a [vLength](#) custom token grouping that specifies the distance that the [reflection](#) is offset from a [shape](#). It MUST have a [ShapeSheet Type](#) or [StyleSheet Type](#) parent element.

The value of the structure MUST be greater than or equal to zero, and less than or equal to (100.0 / 72.0) inches.

2.4.4.278 ReflectionSize

The **ReflectionSize** cell is a [vScalar](#) custom token grouping that specifies the percentage of the [reflection](#) size relative to a [shape](#). It MUST have a [ShapeSheet Type](#) or [StyleSheet Type](#) parent element.

The value of the structure MUST be expressed as a percentage, and MUST be greater than or equal to zero and less than or equal to one. The value is normalized such that a value of 1 corresponds to 100 percent.

2.4.4.279 ReflectionTrans

The **ReflectionTrans** cell is a [vScalar](#) custom token grouping that specifies the [reflection](#) transparency of a [shape](#). It MUST have a [ShapeSheet Type](#) or [StyleSheet Type](#) parent element.

The value of the structure MUST be expressed as a percentage, and MUST be greater than or equal to zero and less than or equal to one. The value is normalized such that a value of 1 corresponds to 100 percent.

2.4.4.280 Relationships

The **Relationships** cell is a [PtgBool](#) parse token that is used during [formula evaluation](#) only. It MUST have a [ShapeSheet Type](#) or [StyleSheet Type](#) parent element.

2.4.4.281 RelChanged

The **RelChanged** cell is a [PtgBool](#) parse token that is used during [formula evaluation](#) only. It MUST have a [ShapeSheet Type](#) or [StyleSheet Type](#) parent element.

2.4.4.282 ReplaceLockFormat

The **ReplaceLockFormat** cell is a [PtgByte](#) parse token that is used during [formula evaluation](#) only. It MUST have a [ShapeSheet Type](#) parent element or a [StyleSheet Type](#) parent element with an **ID** attribute equal to zero.

2.4.4.283 ReplaceLockShapeData

The **ReplaceLockShapeData** cell is a [PtgByte](#) parse token that is used during [formula evaluation](#) only. It MUST have a [ShapeSheet_Type](#) parent element or a [StyleSheet_Type](#) parent element with an **ID** attribute equal to zero.

2.4.4.284 ReplaceLockText

The **ReplaceLockText** cell is a [PtgByte](#) parse token that is used during [formula evaluation](#) only. It MUST have a [ShapeSheet_Type](#) parent element or a [StyleSheet_Type](#) parent element with an **ID** attribute equal to zero.

2.4.4.285 ResizeMode

The **ResizeMode** cell is a [PtgByte](#) parse token that is used during [formula evaluation](#) only. It MUST have a [ShapeSheet_Type](#) parent element or a [StyleSheet_Type](#) parent element with an **ID** attribute equal to zero.

2.4.4.286 ResizePage

The **ResizePage** cell is a [PtgBool](#) parse token that is used during [formula evaluation](#) only. It MUST have a [PageSheet_Type](#) parent element.

2.4.4.287 ReviewerID

The **ReviewerID** cell is a [PtgShort](#) parse token that is used during [formula evaluation](#) only. It MUST have a [Row_Type](#) parent element that has a [Annotation_Section_Type](#) parent element or [Row_Type](#) that has a [Reviewer](#) [Section_Type](#) parent element.

2.4.4.288 RightMargin

The **RightMargin** cell is a [vLength](#) custom token grouping that specifies the margin between the right border of a [text block](#) and the [text](#) it contains. It MUST have a [ShapeSheet_Type](#) or a [StyleSheet_Type](#) parent element.

2.4.4.289 RotateGradientWithShape

The **RotateGradientWithShape** cell is a [PtgBool](#) parse token that specifies whether the orientation of the [fill color gradient](#) property rotates along with the rotation of a [shape](#). It MUST have a [ShapeSheet_Type](#) or [StyleSheet_Type](#) parent element.

A value of one specifies that the orientation of the fill color gradient property rotates along with the rotation of the shape; a value of zero specifies that the orientation of the fill color gradient property does not rotate along with the rotation of the shape

2.4.4.290 RotationType

The **RotationType** cell is a [PtgByte](#) parse token that specifies the type of projection of the effect properties of a [shape](#). It MUST have a [ShapeSheet_Type](#) or [StyleSheet_Type](#) parent element.

The value of the structure MUST be from the following table.

Value	Meaning
0	Specifies no 3D effects rotation.
1	Specifies that a parallel projection is applied to the 3D effect properties.
2	Specifies that the shape rotates in perspective projection.
3	Specifies that the shape rotates in oblique projection from the top left corner of the bounding box of the shape.
4	Specifies that the shape rotates oblique projection from the top right corner of the bounding box of the shape.
5	Specifies that the shape rotates oblique projection from the bottom left corner of the bounding box of the shape.
6	Specifies that the shape rotates oblique projection from the bottom right corner of the bounding box of the shape.

2.4.4.291 RotationXAngle

The **RotationXAngle** cell is a [vAngle](#) custom token grouping that specifies the counterclockwise rotation angle of a [shape](#) around the y-axis. It MUST have a [ShapeSheet Type](#) or [StyleSheet Type](#) parent element.

2.4.4.292 RotationYAngle

The **RotationYAngle** cell is a [vAngle](#) custom token grouping that specifies the counterclockwise rotation angle of a [shape](#) around the x-axis. It MUST have a [ShapeSheet Type](#) or [StyleSheet Type](#) parent element.

2.4.4.293 RotationZAngle

The **RotationZAngle** cell is a [vAngle](#) custom token grouping that specifies the counterclockwise rotation angle of a [shape](#) around the z-axis. It MUST have a [ShapeSheet Type](#) or [StyleSheet Type](#) parent element.

2.4.4.294 Rounding

The **Rounding** cell is a [vLength](#) custom token grouping that specifies the rounding radius of the outline of a [shape](#). It MUST have a [ShapeSheet Type](#) or [StyleSheet Type](#) parent element.

The value of the structure MUST be greater than or equal to zero inches. The value of zero specifies that there is no rounding. A value greater than zero specifies that any corner between two line segments, a line segment and an elliptical arc, or two elliptical arcs within the outline is rounded with a radius equal to the value.

2.4.4.295 RouteStyle

The **RouteStyle** cell is a [PtgByte](#) parse token that is used during [formula evaluation](#) only. It MUST have a [PageSheet Type](#) parent element.

2.4.4.296 ScaleX

The **ScaleX** cell is a [vScalar](#) custom token grouping that is used during [formula evaluation](#) only. It MUST have a [PageSheet_Type](#) parent element. It MUST be greater than zero.

2.4.4.297 ScaleY

The **ScaleY** cell is a [vScalar](#) custom token grouping that is used during [formula evaluation](#) only. It MUST have a [PageSheet_Type](#) parent element. It MUST be greater than zero.

2.4.4.298 SelectMode

The **SelectMode** cell is a [PtgByte](#) parse token that specifies information about the [selection](#) behavior of a [shape](#). It MUST have a [ShapeSheet_Type](#) or [StyleSheet_Type](#) parent element.

The value of the structure MUST be from the following table.

Value	Meaning
0	Specifies that the subshapes of the shape are not selectable.
1	Specifies that the subshapes of the shape are selectable if other conditions for shape selection hold.
2	Specifies that the subshapes of the shape are selectable if other conditions for shape selection hold.

2.4.4.299 ShapeFixedCode

The **ShapeFixedCode** cell is a [PtgByte](#) parse token that is used during [formula evaluation](#) only. It MUST have a [ShapeSheet_Type](#) or [StyleSheet_Type](#) parent element.

2.4.4.300 ShapeKeywords

The **ShapeKeywords** cell is a [PtgString](#) parse token that is used during [formula evaluation](#) only. It MUST have a [ShapeSheet_Type](#) or [StyleSheet_Type](#) parent element.

2.4.4.301 ShapePermeablePlace

The **ShapePermeablePlace** cell is a [PtgBool](#) parse token that is used during [formula evaluation](#) only. It MUST have a [ShapeSheet_Type](#) or [StyleSheet_Type](#) parent element.

2.4.4.302 ShapePermeableX

The **ShapePermeableX** cell is a [PtgBool](#) parse token that is used during [formula evaluation](#) only. It MUST have a [ShapeSheet_Type](#) or [StyleSheet_Type](#) parent element.

2.4.4.303 ShapePermeableY

The **ShapePermeableY** cell is a [PtgBool](#) parse token that is used during [formula evaluation](#) only. It MUST have a [ShapeSheet_Type](#) or [StyleSheet_Type](#) parent element.

2.4.4.304 ShapePlaceFlip

The **ShapePlaceFlip** cell is a [PtgByte](#) parse token that is used during [formula evaluation](#) only. It MUST have a [ShapeSheet_Type](#) or [StyleSheet_Type](#) parent element.

2.4.4.305 ShapePlaceStyle

The **ShapePlaceStyle** cell is a [PtgByte](#) parse token that is used during [formula evaluation](#) only. It MUST have a [ShapeSheet_Type](#) or [StyleSheet_Type](#) parent element.

2.4.4.306 ShapePlowCode

The **ShapePlowCode** cell is a [PtgByte](#) parse token that is used during [formula evaluation](#) only. It MUST have a [ShapeSheet_Type](#) or [StyleSheet_Type](#) parent element.

2.4.4.307 ShapeRouteStyle

The **ShapeRouteStyle** cell is a [PtgByte](#) parse token that is used during [formula evaluation](#) only. It MUST have a [ShapeSheet_Type](#) or [StyleSheet_Type](#) parent element.

2.4.4.308 ShapeShdwBlur

The **ShapeShdwBlur** cell is a [vLength](#) custom token grouping that specifies the blur of a [shadow effect set](#) of a [shape](#). It MUST have a [ShapeSheet_Type](#) or [StyleSheet_Type](#) parent element.

The value of the structure MUST be greater than or equal to zero, and equal or less than (100.0 / 72.0) points.

2.4.4.309 ShapeShdwObliqueAngle

The **ShapeShdwObliqueAngle** cell is a [vAngle](#) custom token grouping that specifies the angle of direction of an oblique [shadow effect set](#) of a [shape](#). It MUST have a [ShapeSheet_Type](#) or [StyleSheet_Type](#) parent element.

The value of the structure MUST be expressed as an [angleInternalUnitNumber](#) custom internal unit number. A value of zero in this cell specifies that the angle direction is straight up and is measured moving clockwise.

2.4.4.310 ShapeShdwOffsetX

The **ShapeShdwOffsetX** cell is a [vLength](#) custom token grouping that specifies the x-coordinate value of the [shadow effect set](#) on a [shape](#). The value is defined in relation to the [coordinate system](#) of the shape. It MUST have a [ShapeSheet_Type](#) or [StyleSheet_Type](#) parent element.

The [shadow distance](#) specified by this cell and the [ShapeShdwOffsetY](#) cell MUST be greater than or equal to zero, and equal or less than (200.0 / 72.0) inches.

2.4.4.311 ShapeShdwOffsetY

The **ShapeShdwOffsetY** cell is a [vLength](#) custom token grouping that specifies the vertical value of the [shadow effect set](#) on a [shape](#). The value is defined in relation to the [coordinate system](#) of the shape. It MUST have a [ShapeSheet_Type](#) or [StyleSheet_Type](#) parent element.

The [shadow distance](#) specified by this cell and the [ShapeShdwOffsetX](#) cell MUST be greater than or equal to zero, and equal or less than (200.0 / 72.0) inches.

2.4.4.312 ShapeShdwScaleFactor

The **ShapeShdwScaleFactor** cell is a [vScalar](#) custom token grouping that specifies the percentage by which the [shadow effect set](#) of a [shape](#) can be enlarged or reduced. It MUST have a [ShapeSheet Type](#) or [StyleSheet Type](#) parent element.

The value of the structure MUST be expressed as a percentage. It MUST be greater than or equal to zero, and less than or equal to two. The value is normalized such that a value of 2 corresponds to 200 percent. As the value of the structure increases, the shadow is enlarged.

2.4.4.313 ShapeShdwShow

The **ShapeShdwShow** cell is a [PtgByte](#) parse token that is used during [formula evaluation](#) only. It MUST have a [ShapeSheet Type](#) or [StyleSheet Type](#) parent element.

2.4.4.314 ShapeShdwType

The **ShapeShdwType** cell is a [PtgByte](#) parse token that specifies the [shadow effect set](#) type of a [shape](#). It MUST have a [ShapeSheet Type](#) or [StyleSheet Type](#) parent element.

The value of the structure MUST be from the following table.

Value	Meaning
0	Specifies that the page default shadow is used for the shadow effect set.
1	Specifies a simple shadow.
2	Specifies an oblique shadow.
3	Specifies an inner shadow.

2.4.4.315 ShapeSplit

The **ShapeSplit** cell is a [PtgByte](#) parse token that is used during [formula evaluation](#) only. It MUST have a [ShapeSheet Type](#) or [StyleSheet Type](#) parent element.

2.4.4.316 ShapeSplittable

The **ShapeSplittable** cell is a [PtgByte](#) parse token that is used during [formula evaluation](#) only. It MUST have a [ShapeSheet Type](#) or [StyleSheet Type](#) parent element.

2.4.4.317 Sharpen

The **Sharpen** cell is a [vScalar](#) custom token grouping that specifies the degree to which the contrast of adjacent pixels is increased in order to increase the sharpness of an [image](#). It MUST have a [ShapeSheet Type](#) or a [StyleSheet Type](#) parent element.

The value of the structure MUST be expressed as a percentage. It MUST be greater than or equal to zero, and less than or equal to one. The value is normalized such that a value of 1 corresponds to 100 percent. A value of zero specifies no increase in sharpness; a value of one specifies the maximum increase in sharpness.

2.4.4.318 ShdwForegnd

The **ShdwForegnd** cell is a [vColor](#) custom input type that specifies the color used for the [shadow effect set](#) of a [shape](#). It MUST have a [ShapeSheet_Type](#) or [StyleSheet_Type](#) parent element.

2.4.4.319 ShdwForegndTrans

The **ShdwForegndTrans** cell is a [vScalar](#) custom token grouping that specifies the color transparency level used for the [shadow effect set](#) of a [shape](#). It MUST have a [ShapeSheet_Type](#) or [StyleSheet_Type](#) parent element.

The value of the structure is specified by the [ColorTrans](#) cell.

2.4.4.320 ShdwObliqueAngle

The **ShdwObliqueAngle** cell is a [vScalar](#) custom token grouping that specifies the angle of oblique direction when the [page default shadow](#) is applied. It MUST have a [PageSheet_Type](#) parent element.

The angle specified in this cell is used whenever a [shape](#) specifies a page default shadow.

The value of the structure MUST be expressed as an [angleInternalUnitNumber](#) custom internal unit number. A value of zero specifies that the angle direction is straight up and is measured moving clockwise.

To set the behavior for an individual shape, use the [ShapeShdwObliqueAngle](#) cell.

2.4.4.321 ShdwOffsetX

The **ShdwOffsetX** cell is a [vLength](#) custom token grouping that specifies the horizontal offset of a [page sheet's shadow effect set](#). The value is defined in relation to the [coordinate system](#) of the [shape](#). It MUST have a [PageSheet_Type](#) parent element.

The [shadow distance](#) specified by this cell and the [ShdwOffsetY](#) cell MUST be greater than or equal to zero, and equal or less than (200.0 / 72.0) inches.

The value specified in **ShdwOffsetX** is used whenever a shape specifies a [page default shadow](#).

To set the behavior for an individual shape, use the [ShapeShdwOffsetX](#) cell.

2.4.4.322 ShdwOffsetY

The **ShdwOffsetY** cell is a [vLength](#) custom token grouping that specifies the vertical offset of a [page sheet's shadow effect set](#). The value is defined in relation to the [coordinate system](#) of the [shape](#). It MUST have a [PageSheet_Type](#) parent element.

The [shadow distance](#) specified by this cell and the [ShdwOffsetX](#) cell MUST be greater than or equal to zero, and equal or less than (200.0 / 72.0) inches.

The value specified in **ShdwOffsetY** is used whenever a shape specifies a [page default shadow](#).

To set the behavior for an individual shape, use the [ShapeShdwOffsetY](#) cell.

2.4.4.323 ShdwPattern

The **ShdwPattern** cell is a [PtgByte](#) parse token that specifies whether the [shadow effect set](#) is visible or not for a [shape](#). It MUST have a [ShapeSheet_Type](#) or [StyleSheet_Type](#) parent element.

The value of the structure MUST be equal to zero or one. The value of one specifies that the shadow is visible, while the value of zero specifies that the shadow is not visible.

2.4.4.324 ShdwScaleFactor

The **ShdwScaleFactor** cell is a [vScalar](#) custom token grouping that specifies the normalized percentage by which the [shadow effect set](#) of a [page sheet](#) can be enlarged or reduced. It MUST have a [PageSheet_Type](#) parent element.

The value of the structure MUST be expressed as a percentage. It MUST be greater than or equal to zero, and less than or equal to two. The value is normalized such that a value of 2 corresponds to 200 percent. As the value of the structure increases, the shadow is enlarged.

The value specified in **ShdwScaleFactor** is used whenever a [shape](#) specifies a [page default shadow](#).

To set the behavior for an individual shape, use the [ShapeShdwScaleFactor](#) cell.

2.4.4.325 ShdwType

The **ShdwType** cell is a [PtgByte](#) parse token that specifies the [shadow effect set](#) type of a [page sheet](#). It MUST have a [PageSheet_Type](#) parent element.

The value specified in this cell is used whenever a [shape](#) specifies a [page default shadow](#).

The value of the structure MUST be from the following table.

Value	Meaning
1	Specifies a simple shadow.
2	Specifies an oblique shadow.
3	Specifies an inner shadow.

To set the behavior for an individual shape, use the [ShapeShdwType](#) cell.

2.4.4.326 Size

The **Size** cell is a [vLength](#) custom token grouping that specifies the font size of a text run. It MUST have a [Row_Type](#) parent element that has a [Character Section_Type](#) parent element.

2.4.4.327 SketchAmount

The **SketchAmount** cell is a [PtgInt](#) parse token that specifies the number of points, distributed uniformly across each path segment of a [shape](#), where perturbations are performed for [sketch effect](#). It MUST have a [ShapeSheet_Type](#) or [StyleSheet_Type](#) parent element.

This cell MUST have a value greater than or equal to zero, and less than or equal to 25, with a default value of five.

2.4.4.328 SketchEnabled

The **SketchEnabled** cell is a [PtgBool](#) parse token that specifies whether [sketch effect](#) is applied to a [shape](#). It MUST have a [ShapeSheet_Type](#) or [StyleSheet_Type](#) parent element.

The value of zero specifies that the sibling cells [SketchAmount](#), [SketchFillChange](#), [SketchLineChange](#), [SketchLineWeight](#), and [SketchSeed](#) MUST be ignored. The default value is zero.

2.4.4.329 SketchFillChange

The **SketchFillChange** cell is a [vScalar](#) custom token grouping that specifies the amplitude of the fill perturbations for [sketch effect](#). It MUST have a [ShapeSheet_Type](#) or [StyleSheet_Type](#) parent element.

The value of the structure MUST be expressed as a percentage. It MUST be greater than or equal to zero, and less than or equal to one. The value is normalized such that a value of 1 corresponds to 100 percent. A value of zero specifies no perturbation to the fill; a value of one specifies the maximum perturbation to the fill.

2.4.4.330 SketchLineChange

The **SketchLineChange** cell is a [vScalar](#) custom token grouping that specifies the amplitude of the path perturbations for [sketch effect](#). It MUST have a [ShapeSheet_Type](#) or [StyleSheet_Type](#) parent element.

The value of the structure MUST be expressed as a percentage. It MUST be greater than or equal to zero, and less than or equal to one. The value is normalized such that a value of 1 corresponds to 100 percent. A value of zero specifies no perturbation to the path; a value of one specifies the maximum perturbation to the path.

2.4.4.331 SketchLineWeight

The **SketchLineWeight** cell is a [vLength](#) custom token grouping that specifies the additional line thickness to add to each path segment for [sketch effect](#). It MUST have a [ShapeSheet_Type](#) or [StyleSheet_Type](#) parent element.

The value MUST be greater than or equal to zero points, and less than or equal to 50 points. Its default value is three points.

2.4.4.332 SketchSeed

The **SketchSeed** cell is a [PtgInt](#) parse token that specifies a seed assigned to a [shape](#) for [sketch effect](#). It MUST have a [ShapeSheet_Type](#) or [StyleSheet_Type](#) parent element.

The value MUST have a value greater than or equal to zero, and less than or equal to 65535, with a default value of zero.

2.4.4.333 Snap

The **Snap** cell is a [PtgBool](#) parse token that is used during [formula evaluation](#) only. It MUST have a [Row_Type](#) parent element that has a [Layer Section_Type](#) parent element.

2.4.4.334 SoftEdgesSize

The **SoftEdgesSize** cell is a [vLength](#) custom token grouping that specifies the size of the soft edge in the [effect properties](#) of a [shape](#). It MUST have a [ShapeSheet_Type](#) or [StyleSheet_Type](#) parent element.

The value of the structure MUST be greater than or equal to zero, and less than or equal to (100.0 / 72.0) inches. The value of zero specifies the shape doesn't have soft edges.

2.4.4.335 SortKey

The **SortKey** cell is a [PtgString](#) parse token that is used during [formula evaluation](#) only. It MUST have either a [Row_Type](#) parent element that has a [Actions Section_Type](#) parent element, a [Row_Type](#) parent element that has a [Hyperlink Section_Type](#) parent element, or a [Row_Type](#) parent element that has a [Property Section_Type](#) parent element.

2.4.4.336 SpAfter

The **SpAfter** cell is a [vLength](#) custom token grouping that specifies an amount of space inserted after each paragraph in the [text block](#) of a [shape](#) except for the last paragraph. Other [paragraph properties](#) can specify additional amounts of space. It MUST have a [Row_Type](#) parent element that has a [Paragraph Section_Type](#) parent element.

2.4.4.337 SpBefore

The **SpBefore** cell is a [vLength](#) custom token grouping that specifies an amount of space inserted before each paragraph in the [text block](#) of a [shape](#) except for the first paragraph. Other [paragraph properties](#) can specify additional amounts of space. It MUST have a [Row_Type](#) parent element that has a [Paragraph Section_Type](#) parent element.

2.4.4.338 SpLine

The **SpLine** cell is a [vLength](#) custom token grouping that specifies the height of a line of [text](#) in the [text block](#) of a [shape](#). It MUST have a [Row_Type](#) parent element that has a [Paragraph Section_Type](#) parent element.

If the value of the structure is greater than zero, the height of the line is equal to the value of the structure. If the value of the structure is equal to zero, the height of the line is equal to the largest font size of text in the line. If the value of the structure is less than zero, the height of the line is equal to the absolute value of the structure multiplied by the largest font size of text in the line.

2.4.4.339 Status

The **Status** cell is a [PtgByte](#) parse token that is used during [formula evaluation](#) only. It MUST have a [Row_Type](#) parent element that has a [Layer Section_Type](#) parent element.

2.4.4.340 Strikethru

The **Strikethru** cell is a [PtgBool](#) parse token that specifies whether the text run has a strikethrough [character property](#). It MUST have a [Row_Type](#) parent element that has a [Character Section_Type](#) parent element.

A value of one specifies that the text run has a strikethrough; a value of zero specifies that the text run does not have a strikethrough.

2.4.4.341 Style

The **Style** cell is a [PtgByte](#) parse token that specifies [character properties](#) used to format a text run. It MUST have a [Row_Type](#) parent element that has a [Character Section_Type](#) parent element.

The value of the structure MUST be a bitwise OR combination of one or more of the values from the following table.

Value	Meaning
0x00	Specifies that the text run is unformatted.
0x01	Specifies that the text run has a bold character property.
0x02	Specifies that the text run has an italic character property.
0x04	Specifies that the text run has an underline character property.
0x08	Specifies that the text run has a small caps character property.

2.4.4.342 SubAddress

The **SubAddress** cell is a [PtgString](#) parse token that specifies a Uniform Resource Identifier (URI) **hyperlink location**. It MUST have a [Row_Type](#) parent element that has a [Hyperlink Section_Type](#) parent element.

The value of the sibling [Address](#) Cell_Type element determines the meaning of this value. If the value of Address Cell_Type element is empty, this value specifies the [drawing page](#) name and an optional [shape](#) name for the current [web Drawing](#) referenced by the [hyperlink](#). If the value of the Address Cell_Type element is an **HTTP** URI, as described in [\[RFC2616\]](#), this value specifies the hyperlink location. Otherwise, this value is used during [formula evaluation](#) only.

If the value of Address Cell_Type element is empty, the value of the structure is defined by the following:

ABNF

```
value = page-name [ "/" shape-name ]
page-name = string-value
shape-name = string-value
```

Where [string-value](#) is an ABNF formula, specified in section [2.5.1](#).

2.4.4.343 TagName

The **TagName** cell is a [PtgString](#) parse token that is used during [formula evaluation](#) only. It MUST have a [Row_Type](#) parent element with a [Actions Section_Type](#) parent element or Row_Type parent element with a [ActionTag](#) Section_Type parent element.

2.4.4.344 TextBkgnd

The **TextBkgnd** cell is a [PtgColorRGB](#) parse token that specifies the background color of a [text block](#). It MUST have a [ShapeSheet_Type](#) or [StyleSheet_Type](#) parent element.

2.4.4.345 TextBkgndTrans

The **TextBkgndTrans** cell is a [vScalar](#) custom token grouping that specifies the level of transparency of the background color of a [text block](#). It MUST have a [ShapeSheet_Type](#) or a [StyleSheet_Type](#) parent element.

The value of the structure MUST be expressed as a percentage. It MUST be greater than or equal to zero, and less than or equal to one. The value is normalized such that a value of 1 corresponds to

100 percent. A value of zero specifies that the background is completely opaque; a value of one specifies that the background is completely transparent.

2.4.4.346 TextDirection

The **TextDirection** cell is a [vScalar](#) custom token grouping that specifies the orientation of characters in a text block. It MUST have a [ShapeSheet_Type](#) or a [StyleSheet_Type](#) parent element.

The value of the structure MUST be zero or one. A value of zero specifies that the orientation is horizontal; a value of one specifies that the orientation is vertical.

2.4.4.347 TextPosAfterBullet

The **TextPosAfterBullet** cell is a [vLength](#) custom token grouping that specifies the distance from the beginning of the bullet and the [text](#) after the bullet in each bulleted item of a [paragraph](#). It MUST have a [Row_Type](#) parent element that has a Paragraph [Section_Type](#) parent element.

If the value is less than or equal to zero, 0.25 inch is used as the distance from the beginning of the bullet and the text after the bullet; if the value is less than the width of the bullet, there is no distance between the bullet and the text after the bullet.

2.4.4.348 TheData

The **TheData** cell is a [vScalar](#) custom token grouping that is used during [formula evaluation](#) only. It MUST have a [ShapeSheet_Type](#) parent element or a [StyleSheet_Type](#) parent element with an **ID** attribute equal to zero.

2.4.4.349 Theme

The **Theme** cell is a [PtgBool](#) parse token that is used during [formula evaluation](#) only. It MUST have a [ShapeSheet_Type](#) or [StyleSheet_Type](#) parent element.

2.4.4.350 ThemeIndex

The **ThemeIndex** cell is a [PtgInt](#) parse token that specifies the index of the primary scheme [dynamic theme component](#). It MUST have a [ShapeSheet_Type](#) parent element or a [StyleSheet_Type](#) parent element with an **ID** attribute equal to zero.

The value of the **V** attribute MUST be greater than or equal to zero and less than or equal to 65534, or it MUST be equal to -2.

If the value of any of the [Cell_Type](#) elements [ColorSchemeIndex](#), [ConnectorSchemeIndex](#), [EffectSchemeIndex](#), [FontSchemeIndex](#), or ThemeIndex is equal to zero, the properties [multiformat](#) and [embellishment](#) specify the value zero.

If the value of the **V** attribute is equal to -2, the index of the primary scheme dynamic theme component of a [shape](#) is specified by the **V** attribute of the **ThemeIndex** Cell_Type descendant element of the [PageSheet_Type](#) element containing the shape.

2.4.4.351 ThemeModern

The **ThemeModern** cell is a [PtgBool](#) parse token that is used during [formula evaluation](#) only. It MUST have a [ShapeSheet_Type](#) or [StyleSheet_Type](#) parent element.

2.4.4.352 TheText

The **TheText** cell is a [vScalar](#) custom token grouping that is used during [formula evaluation](#) only. It MUST have a [ShapeSheet Type](#) parent element or a [StyleSheet Type](#) parent element with an **ID** attribute equal to zero.

2.4.4.353 TopMargin

The **TopMargin** cell is a [vLength](#) custom token grouping that specifies the margin between the top border of a [text block](#) and the first line of [text](#) it contains. It MUST have a [ShapeSheet Type](#) or a [StyleSheet Type](#) parent element.

2.4.4.354 Transparency

The **Transparency** cell is a [vScalar](#) custom token grouping that specifies the level of transparency of an [image](#). It MUST have a [ShapeSheet Type](#) or a [StyleSheet Type](#) parent element.

The value of the structure MUST be expressed as a percentage. It MUST be greater than or equal to zero, and less than or equal to one. The value is normalized such that a value of 1 corresponds to 100 percent. A value of zero specifies that the image is completely opaque; a value of one specifies that the image is completely transparent.

2.4.4.355 TxtAngle

The **TxtAngle** cell is a [vAngle](#) or [vScalar](#) custom token grouping that specifies the angle of rotation of a [shape's text block](#). The value is defined in relation to the [coordinate system](#) of the shape. It MUST have a [ShapeSheet Type](#) parent element or a [StyleSheet Type](#) parent element with an **ID** attribute equal to zero. If **TxtAngle** is a [vScalar](#), the value of the structure MUST be expressed as an [angleInternalUnitNumber](#) custom internal unit number. Increasing numbers indicate counterclockwise rotation.

2.4.4.356 TxtHeight

The **TxtHeight** cell is a [vLength](#) custom token grouping that specifies the height of a [text block](#) of a [shape](#). It MUST have a [ShapeSheet Type](#) parent element or a [StyleSheet Type](#) parent element with an **ID** attribute equal to zero. It MUST be greater than or equal to zero.

2.4.4.357 TxtLocPinX

The **TxtLocPinX** cell is a [vLength](#) custom token grouping that specifies the x-coordinate of the center of rotation of a [shape's text block](#). The value is defined in relation to the [coordinate system](#) of the text block. It MUST have a [ShapeSheet Type](#) parent element or a [StyleSheet Type](#) parent element with an **ID** attribute equal to zero.

2.4.4.358 TxtLocPinY

The **TxtLocPinY** cell is a [vLength](#) custom token grouping that specifies the y-coordinate of the center of rotation of a [shape's text block](#). The value is defined in relation to the [coordinate system](#) of the text block. It MUST have a [ShapeSheet Type](#) parent element or a [StyleSheet Type](#) parent element with an **ID** attribute equal to zero.

2.4.4.359 TxtPinX

The **TxtPinX** cell is a [vLength](#) custom token grouping that specifies the x-coordinate of the center of rotation of a [shape's text block](#). The value is defined in relation to the [coordinate system](#) of the

shape. It MUST have a [ShapeSheet_Type](#) parent element or a [StyleSheet_Type](#) parent element with an **ID** attribute equal to zero.

2.4.4.360 TxtPinY

The **TxtPinY** cell is a [vLength](#) custom token grouping that specifies the y-coordinate of the center of rotation of a [shape's text block](#). The value is defined in relation to the [coordinate system](#) of the shape. It MUST have a [ShapeSheet_Type](#) parent element or a [StyleSheet_Type](#) parent element with an **ID** attribute equal to zero.

2.4.4.361 TxtWidth

The **TxtWidth** cell is a [vLength](#) custom token grouping that specifies the width of a [text block](#) of a [shape](#). It MUST have a [ShapeSheet_Type](#) parent element or a [StyleSheet_Type](#) parent element with an **ID** attribute equal to zero. It MUST be greater than or equal to zero.

2.4.4.362 Type

The **Type** cell is a [vScalar](#) custom token grouping that specifies the type of a [Row_Type](#) element. It MUST have a [Row_Type](#) parent element that has a [Connection Section_Type](#), [Field Section_Type](#), or [Property Section_Type](#) parent element.

If the cell is a descendant of a [Property Section_Type](#) parent element, it specifies a type of [shape data](#) stored in a sibling [Value Cell_Type](#) element. The value of the structure MUST be specified by a [vDataType](#) structure. If the cell is a descendant of a [Field](#) or [Connection Section_Type](#) parent element, it is used during [formula evaluation](#) only.

2.4.4.363 UIVisibility

The **UIVisibility** cell is a [PtgBool](#) parse token that specifies the visibility of a [page](#). It MUST have a [PageSheet_Type](#) parent element.

A value of one specifies that the page is not visible; a value of zero specifies the page is visible.

2.4.4.364 UpdateAlignBox

The **UpdateAlignBox** cell is a [PtgBool](#) parse token that is used during [formula evaluation](#) only. It MUST have a [ShapeSheet_Type](#) or [StyleSheet_Type](#) parent element.

2.4.4.365 UseGroupGradient

The **UseGroupGradient** cell is a [PtgBool](#) parse token that specifies whether a [subshape](#) uses the gradient starting and ending points of its [parent shape](#) for fill gradient. It MUST have a [ShapeSheet_Type](#) or [StyleSheet_Type](#) parent element.

A value of one specifies that the subshape uses the gradient starting and ending points of its parent shape for fill gradient; a value of zero specifies that the subshape uses its own gradient starting and ending points for fill gradient. If the [shape](#) is not a subshape, the token is used during [formula evaluation](#) only.

2.4.4.366 Value

The **Value** cell is a [vAny](#) custom token grouping that specifies the value of a [shape data](#), [text field](#), or user-defined cell. It MUST have a [Row_Type](#) parent element that has either a [Field Section_Type](#)

parent element, a Row_Type parent element that has a [Property](#) Section_Type parent element, or a Row_Type that has a [User](#) Section_Type parent element.

2.4.4.367 Verify

The **Verify** cell is a [PtgBool](#) parse token that is used during [formula evaluation](#) only. It MUST have a [Row_Type](#) parent element that has a [Property Section_Type](#) parent element.

2.4.4.368 VerticalAlign

The **VerticalAlign** cell is a [vScalar](#) custom token grouping that specifies the vertical alignment of [text](#) within a [text block](#). It MUST have a [ShapeSheet_Type](#) or a [StyleSheet_Type](#) parent element.

The value of the structure MUST be greater than or equal to zero, and less than or equal to 255.

The value of the structure MUST be from the following table.

Value	Meaning
0	Top
1	Middle
2	Bottom
3, or greater	Top

2.4.4.369 ViewMarkup

The **ViewMarkup** cell is a [PtgBool](#) parse token that is used during [formula evaluation](#) only. It MUST have a [DocumentSheet_Type](#) parent element.

2.4.4.370 Visible

The **Visible** cell is a [PtgBool](#) parse token that specifies whether the [shapes](#) in a [layer](#) are visible. It MUST have a [Row_Type](#) parent element that has a [Layer Section_Type](#) parent element.

A value of one specifies that the shapes in this layer are visible; a value of zero specifies the shapes in this layer are hidden.

2.4.4.371 WalkPreference

The **WalkPreference** cell is a [PtgByte](#) parse token that is used during [formula evaluation](#) only. It MUST have a [ShapeSheet_Type](#) parent element or a [StyleSheet_Type](#) parent element with an **ID** attribute equal to zero.

2.4.4.372 Width

The **Width** cell is a [vLength](#) custom token grouping that specifies the width of the shape. It MUST have a [ShapeSheet_Type](#) parent element or a [StyleSheet_Type](#) parent element with an **ID** attribute equal to zero.

2.4.4.373 X

The **X** cell is a [vLength](#) or [vScalar](#) custom token grouping that specifies the x-coordinate of a point in the [coordinate system](#) of a [shape](#). It MUST have a [Row_Type](#) parent element that has a [Geometry Section_Type](#), [Control Section_Type](#), [Scratch Section_Type](#), [ActionTag Section_Type](#), [Annotation Section_Type](#), or [Connection Section_Type](#) parent element.

If it is a child element of a [Row_Type](#) element that has a [Geometry Section_Type](#) parent, it specifies the x-coordinate of a vertex in a [geometry path](#). If it has an [ArcTo](#), [Ellipse](#), [EllipticalArcTo](#), [InfiniteLine](#), [LineTo](#), [MoveTo](#), [NURBSto](#), [PolyLineTo](#), [SplineKnot](#), or [SplineStart](#) [Row_Type](#) parent element, the cell is a [vLength](#). If it has a [RelCubBezTo](#), [RelEllipticalArcTo](#), [RelLineTo](#), [RelMoveTo](#), or [RelQuadBezTo](#) parent element, the cell is a [vScalar](#).

If it is a child element of a [Row_Type](#) element that has a [Control](#), [Scratch](#), [ActionTag](#), or [Connection Section_Type](#) parent, **X** is a [vLength](#) that is used during [formula evaluation](#) only. If it is a child element of a [Row_Type](#) element that has a [Annotation Section_Type](#) parent, **X** is a [vLength](#) that is unused and MUST be ignored.

2.4.4.374 XCon

The **XCon** cell is a [PtgByte](#) parse token that is used during [formula evaluation](#) only. It MUST have a [Row_Type](#) parent element with a [Control Section_Type](#) parent element.

2.4.4.375 XDyn

The **XDyn** cell is a [vLength](#) custom token grouping that is used during [formula evaluation](#) only. It MUST have a [Row_Type](#) parent element that has a [Control Section_Type](#) parent element.

2.4.4.376 XGridDensity

The **XGridDensity** cell is a [PtgByte](#) parse token that is used during [formula evaluation](#) only. It MUST have a [PageSheet_Type](#) parent element.

2.4.4.377 XGridOrigin

The **XGridOrigin** cell is a [vLength](#) custom token grouping that is used during [formula evaluation](#) only. It MUST have a [PageSheet_Type](#) parent element.

2.4.4.378 XGridSpacing

The **XGridSpacing** cell is a [vLength](#) custom token grouping that is used during [formula evaluation](#) only. It MUST have a [PageSheet_Type](#) parent element.

2.4.4.379 XJustify

The **XJustify** cell is a [PtgByte](#) parse token that is used during [formula evaluation](#) only. It MUST have a [Row_Type](#) parent element that has a [ActionTag Section_Type](#) parent element.

2.4.4.380 XRulerDensity

The **XRulerDensity** cell is a [PtgByte](#) parse token that is used during [formula evaluation](#) only. It MUST have a [PageSheet_Type](#) parent element.

2.4.4.381 XRulerOrigin

The **XRulerOrigin** cell is a [vLength](#) custom token grouping that is used during [formula evaluation](#) only. It MUST have a [PageSheet Type](#) parent element.

2.4.4.382 Y

The **Y** cell is a [vLength](#) or [vScalar](#) custom token grouping that specifies the y-coordinate of a point in the [coordinate system](#) of a [shape](#). It MUST have a [Row Type](#) parent element that has a [Geometry Section Type](#), [Control Section Type](#), [Scratch Section Type](#), [ActionTag Section Type](#), [Annotation Section Type](#), or [Connection Section Type](#) parent element.

If it is a child element of a [Row Type](#) element that has a [Geometry Section Type](#) parent, the cell specifies the y-coordinate of a vertex in a [geometry path](#). If it has an [ArcTo](#), [Ellipse](#), [EllipticalArcTo](#), [InfiniteLine](#), [LineTo](#), [MoveTo](#), [NURBTo](#), [PolyLineTo](#), [SplineKnot](#), or [SplineStart](#) [Row Type](#) parent element, the cell is a [vLength](#). If it has a [RelCubBezTo](#), [RelEllipticalArcTo](#), [RelLineTo](#), [RelMoveTo](#), or [RelQuadBezTo](#) parent element, the cell is a [vScalar](#).

If **Y** is a child element of a [Row Type](#) element that has a [Control](#), [Scratch](#), [ActionTag](#), or [Connection Section Type](#) parent, it is a [vLength](#) that is used during [formula evaluation](#) only. If **Y** is a child element of a [Row Type](#) element that has a [Annotation Section Type](#) parent, it is a [vLength](#) that is unused and MUST be ignored.

2.4.4.383 YCon

The **YCon** cell is a [PtgByte](#) parse token that is used during [formula evaluation](#) only. It MUST have a [Row Type](#) parent element that has a [Control Section Type](#) parent element.

2.4.4.384 YDyn

The **YDyn** cell is a [vLength](#) custom token grouping that is used during [formula evaluation](#) only. It MUST have a [Row Type](#) parent element that has a [Control Section Type](#) parent element.

2.4.4.385 YGridDensity

The **YGridDensity** cell is a [PtgByte](#) parse token that is used during [formula evaluation](#) only. It MUST have a [PageSheet Type](#) parent element.

2.4.4.386 YGridOrigin

The **YGridOrigin** cell is a [vLength](#) custom token grouping that is used during [formula evaluation](#) only. It MUST have a [PageSheet Type](#) parent element.

2.4.4.387 YGridSpacing

The **YGridSpacing** cell is a [vLength](#) custom token grouping that is used during [formula evaluation](#) only. It MUST have a [PageSheet Type](#) parent element.

2.4.4.388 YJustify

The **YJustify** cell is a [PtgByte](#) parse token that is used during [formula evaluation](#) only. It MUST have a [Row Type](#) parent element that has a [ActionTag Section Type](#) parent element.

2.4.4.389 YRulerDensity

The **YRulerDensity** cell is a [PtgByte](#) parse token that is used during [formula evaluation](#) only. It MUST have a [PageSheet_Type](#) parent element.

2.4.4.390 YRulerOrigin

The **YRulerOrigin** cell is a [vLength](#) custom token grouping that is used during [formula evaluation](#) only. It MUST have a [PageSheet_Type](#) parent element.

2.4.4.391 ZOrderChanged

The **ZOrderChanged** cell is a [PtgBool](#) parse token that is used during [formula evaluation](#) only. It MUST have a [PageSheet_Type](#) parent element.

2.5 Formula Expressions and Evaluation

This section specifies the syntax and semantics for [formula expressions](#).

2.5.1 Formula ABNF and Full Grammar Definition

A [formula expression](#) MUST conform to the following ABNF [\[RFC5234\]](#) grammar.

val = func / token / ref

val /= "(" val ")"; Enclose an expression in parens for higher precedence

func = [Abs](#) / [ACos](#) / [Add](#) / [And](#) / [Ang360](#) / [AngleToLoc](#) / [AngleToPar](#) / [ASin](#) / [ATan](#) / [ATan2](#) / [BitAnd](#) / [BitNot](#) / [BitOr](#) / [BitXor](#) / [BkgPageName](#) / [Blend](#) / [Bound](#) / [Cat](#) / [Category](#) / [Ceiling](#) / [CellIsThemed](#) / [Char](#) / [Company](#) / [Cos](#) / [CosH](#) / [Creator](#) / [CY](#) / [Date](#) / [DateTime](#) / [DateValue](#) / [Day](#) / [DayOfYear](#) / [Deg](#) / [DependsOn](#) / [Description](#) / [Directory](#) / [Div](#) / [DocCreation](#) / [DocLastEdit](#) / [DocLastPrint](#) / [DocLastSave](#) / [EEQ](#) / [EGE](#) / [EGT](#) / [ELE](#) / [ELT](#) / [ENE](#) / [FEQ](#) / [FGE](#) / [FGT](#) / [FieldPicture](#) / [FileName](#) / [Find](#) / [FLE](#) / [Floor](#) / [FLT](#) / [FNE](#) / [Format](#) / [FormatEx](#) / [Gravity](#) / [Guard](#) / [HasCategory](#) / [Hour](#) / [HSL](#) / [Hue](#) / [HueDiff](#) / [HyperlinkBase](#) / [ID](#) / [IF](#) / [IfError](#) / [Index](#) / [Int](#) / [IntersectX](#) / [IntersectY](#) / [Intup](#) / [Is1D](#) / [IsErr](#) / [IsErrNA](#) / [IsError](#) / [IsErrValue](#) / [IsThemed](#) / [Keywords](#) / [Language](#) / [Left](#) / [Len](#) / [Ln](#) / [Loc](#) / [LocToLoc](#) / [LocToPar](#) / [Log10](#) / [Lookup](#) / [Lower](#) / [Lum](#) / [LumDiff](#) / [Magnitude](#) / [Manager](#) / [MasterName](#) / [Max](#) / [Mid](#) / [Min](#) / [Minute](#) / [Modulus](#) / [Month](#) / [MsoShade](#) / [MsoTint](#) / [Mul](#) / [NA](#) / [Name](#) / [Not](#) / [Now](#) / [Nurbs](#) / [Or](#) / [PageCount](#) / [PageName](#) / [PageNumber](#) / [Par](#) / [Pct](#) / [Pi](#) / [Pnt](#) / [Pntx](#) / [PntY](#) / [PolyLine](#) / [Pow](#) / [Rad](#) / [Rand](#) / [Ref](#) / [Replace](#) / [RGB](#) / [Right](#) / [Round](#) / [Sat](#) / [SatDiff](#) / [Second](#) / [SetAtRef](#) / [SetAtRefEval](#) / [SetAtRefExpr](#) / [Shade](#) / [ShapeText](#) / [Sign](#) / [Sin](#) / [SinH](#) / [Sqrt](#) / [StrSame](#) / [StrSameEx](#) / [Sub](#) / [Subject](#) / [Substitute](#) / [Sum](#) / [Tan](#) / [TanH](#) / [TextHeight](#) / [TextWidth](#) / [Theme](#) / [ThemeCBV](#) / [ThemeGuard](#) / [ThemeProp](#) / [ThemeRestore](#) / [ThemeVal](#) / [Time](#) / [TimeValue](#) / [Tint](#) / [Title](#) / [Tone](#) / [Trim](#) / [Trunc](#) / [UMinus](#) / [UniChar](#) / [UPlus](#) / [Upper](#) / [Use](#) / [Version](#) / [WeekDay](#) / [Year](#) /
functiondef

functiondef = ALPHA *(ALPHA / DIGIT / "_") "(" [val *("," val)] ")"

token = [PtgAcre](#) / [PtgAngDD](#) / [PtgAngDft](#) / [PtgAngDMS](#) / [PtgAngRad](#) / [PtgBool](#) / [PtgByte](#) / [PtgColorRGB](#) / [PtgCy](#) / [PtgDate](#) / [PtgEDay](#) / [PtgEHour](#) / [PtgEMin](#) / [PtgErr](#) / [PtgESec](#) / [PtgEWeek](#) / [PtgHectare](#) / [PtgInt](#) / [PtgNum](#) / [PtgNumCM](#) / [PtgNumDft](#) / [PtgNumF](#) / [PtgNumFI](#) / [PtgNumI](#) / [PtgNumKM](#) / [PtgNumM](#) / [PtgNumMI](#) / [PtgNumMM](#) / [PtgNumMultiDim](#) / [PtgNumNM](#) / [PtgNumPct](#) / [PtgNumYards](#) / [PtgNurbs](#) / [PtgPageDft](#) / [PtgPnt](#) / [PtgPolyLine](#) / [PtgShort](#) / [PtgString](#) / [PtgTDurDft](#) / [PtgTypCD](#) / [PtgTypCi](#) / [PtgTypDft](#) / [PtgTypDi](#) / [PtgTypPi](#) / [PtgTypPP](#) / [PtgTypPt](#) / [PtgUnsShort](#)

ref = [sheetref "!"] [CellRef](#)

sheetref = [CrossPageRef](#) / [DocSheetRef](#) / [MasterSheetRef](#) / [PageSheetRef](#) / [ShapeSheetRef](#) / [StyleSheetRef](#)
 name = 1*(ALPHA / DIGIT / "_")
 nameid = "" name "" / name ["." 1*DIGIT]
 id = 1*DIGIT
 color-value = "#" 6HEXDIG
 dimension = unsigned-int-value
 int-value = ["+" / "-"] 1*DIGIT
 short-value = ["+" / "-"] 1*DIGIT
 unsigned-int-value = ["+"] 1*DIGIT
 unsigned-byte-value = ["+"] 1*DIGIT
 double-value = ["+" / "-"] (*DIGIT ["."] 1*DIGIT / 1*DIGIT ".") ["e" ["+" / "-"] 1*DIGIT]
 bool-value = ("true" / "1") / ("false" / "0")
 string-value = *utf8-char ; [RFC3629](#) UTF-8 strings
 utf8-char = ascii-char / utf8-non-ascii-chars
 ascii-char = HTAB / LF / CR / SP / VCHAR ; Whitespace and printing chars
 utf8-non-ascii-chars = (%xC0-DF 1utf8-content) /
 (%xE0-EF 2utf8-content) /
 (%xF0-F7 3utf8-content) /
 (%xF8-FB 4utf8-content) /
 (%xFC-FD 5utf8-content)
 utf8-content = %x80-BF

2.5.2 Order of Operations

When evaluating a [formula expression](#), a set of rules determines the order in which the different parts of the expression are evaluated. Rules with the lowest precedence numbers are evaluated first. Unless specified otherwise, expressions are evaluated from left to right.

Precedence	Operators	Meaning
1	()	<p>Parenthesized expressions are evaluated with the highest precedence in order of the most-nested to the least-nested expression, where most-nested is the expression enclosed in the most sets of matching parenthesis.</p> <p>In the following example val2 is the most-nested expression and would therefore be evaluated before val1:</p>

Precedence	Operators	Meaning
		(val1 + (val2))
2	+ (unary), - (unary)	Identity and negation expressions.
3	^	Exponentiation expressions: Pow .
4	*, /	Multiplication and division expressions: Mul , Div .
5	+ (binary), - (binary)	Addition and subtraction expressions: Add , Sub .
6	&	String concatenation expressions: Cat .
7	<, _LT_, <=, _LE_, >, _GT_, >=, _GE_	Fuzzy and exact comparison expressions: FLT , ELT , FLE , ELE , FGT , EGT , FGE , EGE .
8	=, _EQ_, <>, _NE_	Fuzzy and exact equality and inequality expressions: FEQ , EEQ , FNE , ENE .

2.5.3 Function Token Definitions

The following function token definition sections specify the [function tokens](#) that can be contained in a [formula expression](#), in addition to those defined through [sheet extensibility](#). The definition of each function specifies the function name, the type and sequence of expected arguments, and the type of token returned.

Information is also included about how the functions are evaluated. Unless a different [reference context](#) is explicitly specified, each function is evaluated in the reference context specified by the [sheet](#) containing the function's formula expression.

2.5.3.1 Abs

The **Abs** function performs an absolute value calculation.

ABNF:

```
Abs = "ABS(" val ")"
```

Required Arguments:

Name: Arg1

Type: [vDouble](#)

An argument that specifies the operand of the calculation.

Return Value:

Type: [vNum](#)

This function returns a vNum custom token grouping containing the absolute value of **Arg1**. The unit of the return value is equal to the unit of **Arg1**.

2.5.3.2 ACos

The **ACos** function performs an arccosine calculation.

ABNF:

```
ACos = "ACOS(" val ")"
```

Required Arguments:

Name: **Arg1**

Type: [vDouble](#)

An argument that specifies the operand of the calculation.

Return Value:

Type: [PtgAngDft](#), [PtgErr](#)

This function returns a PtgAngDft parse token containing the arccosine of the value of **Arg1**. If **Arg1** is less than -1 or greater than one, the function returns a PtgErr parse token with an error code equal to #VALUE!.

2.5.3.3 Add

The **Add** function performs an addition calculation.

ABNF:

```
Add = "_ADD(" val "," val ") " / val "+" val
```

Required Arguments:

Name: **Arg1**

Type: [vDoubleEx](#)

An argument that specifies the first operand of the calculation.

Name: **Arg2**

Type: vDoubleEx

An argument that specifies the second operand of the calculation.

Return Value:

Type: [vNum](#), [PtgCy](#), [PtgErr](#)

This function returns a vNum custom token grouping or a **PtgCy** parse token containing the sum of **Arg1** and **Arg2**. The type of the return value is calculated by the following algorithm.


```

SET returnType = PtgNum
SET returnDimension = 0
SET returnCurrencyID = 0

IF Arg1.Type = PtgCy AND Arg2.Type != PtgCy THEN
    SET returnType = PtgCy
    SET returnCurrencyID = currencyID of Arg1
ELSE IF Arg1.Type != PtgCy AND Arg2.Type = PtgCy THEN
    SET returnType = PtgCy
    SET returnCurrencyID = currencyID of Arg2
ELSE IF Arg1.Type = PtgCy AND Arg2.Type = PtgCy THEN
    SET returnType = PtgCy
    IF currencyID of Arg1 = currencyID of Arg2 OR currencyID of Arg2 = 1 THEN
        SET returnCurrencyID = currencyID of Arg1
    ELSE IF currencyID of Arg1 = 1 THEN
        SET returnCurrencyID = currencyID of Arg2
    ELSE
        SET returnType = PtgErr
    END IF
ELSE IF Arg1.Type = PtgDate THEN
    SET returnType = Arg1.Type
    SET returnDimension = 1
ELSE IF Arg2.Type = PtgDate THEN
    SET returnType = Arg2.Type
    SET returnDimension = 1
ELSE IF Arg1.Unit = PtgNumDft AND Arg2.Unit is a vUnitType THEN
    SET returnType = Arg2.Unit
    SET returnDimension = 1
ELSE IF Arg1.Unit is a vUnitType THEN
    SET returnType = Arg1.Unit
    IF Arg2.Dimension = 0 OR Arg2.Dimension = Arg1.Dimension THEN
        SET returnDimension = Arg1.Dimension
    ELSE
        SET returnDimension = 1
    END IF
END IF

IF (returnType = PtgAcre OR returnType = PtgHectare) AND returnDimension != 2 THEN
    SET returnType = PtgNumDft
END IF
ELSE IF Arg2.Unit is a vUnitType THEN
    SET returnType = Arg2.Unit
    IF Arg1.Dimension = 0 OR Arg2.Dimension = Arg1.Dimension THEN
        SET returnDimension = Arg2.Dimension
    ELSE
        SET returnDimension = 1
    END IF
END IF

IF (returnType = PtgAcre OR returnType = PtgHectare) AND returnDimension != 2 THEN
    SET returnType = PtgNumDft
END IF
END IF

```

IF returnType = PtgCy THEN

Return type is PtgCy with currencyID = returnCurrencyID

ELSE IF returnType = PtgErr THEN

Return type is PtgErr with error code of #VALUE!

ELSE IF returnDimension = 0 THEN

Return type is PtgNum

ELSE IF returnDimension = 1 THEN

Return type is returnType

ELSE

Return type is [PtgNumMultiDim](#) with unit = returnType and dimension = returnDimension

END IF

2.5.3.4 And

The **And** function converts arguments to a Boolean value according to the conversion specified by [vBoolean](#).

ABNF:

```
And = "AND(" val * ( "," val ) ")"
```

Required Arguments:

Name: **Args**

Type: [vBoolean](#)

A set of arguments that specifies an operand.

Return Value:

Type: [PtgBool](#)

This function returns a PtgBool parse token with a value of **FALSE** if any of the arguments are equal to **FALSE**; otherwise, the value of **TRUE** is returned.

2.5.3.5 Ang360

The **Ang360** function normalizes an angle.

ABNF:

```
Ang360 = " ANG360 (" val ")"
```

Required Arguments:

Name: **Arg1**

Type: [vDouble](#)

An argument that specifies the operand of the calculation.

Return Value:

Type: [vAngle](#)

This function returns a vAngle custom token grouping containing an angle equivalent to **Arg1**, normalized to be greater than or equal to zero and less than 2π , where the value of **Arg1** is assumed to have the unit of radians. If **Arg1** is a vAngle, the unit of the return value is equal to the unit of **Arg1**; otherwise, the function returns a [PtgAngDft](#) parse token.

2.5.3.6 AngleToLoc

The **AngleToLoc** function performs a transformation of an angle from the [coordinate system](#) of one [shape](#) into the coordinate system of another shape.

ABNF:

```
AngleToLoc = "ANGLETOLOC(" val "," val "," val ")"
```

Required Arguments:

Name: **Angle**

Type: [vDouble](#)

An argument that specifies an angle.

Name: **Source**

Type: [CellRef](#)

An argument that specifies a reference to a [cell](#) in a source shape.

Name: **Destination**

Type: CellRef

An argument that specifies a reference to a cell in a destination shape.

Return Value:

Type: [vNum](#)

This function returns a transformed angle in the coordinate system of the shape of **Destination** from **Angle** in a coordinate system of the shape of **Source**. If the **Source's** shape and the **Destination's** shape are not on the same [drawing page](#), the function returns a [PtgErr](#) parse token with an error code equal to #VALUE!.

2.5.3.7 AngleToPar

The **AngleToPar** function performs a transformation of an angle from the [coordinate system](#) of one [shape](#) into the coordinate system of the parent of another shape.

ABNF:

```
AngleToPar = "ANGLETOPAR(" val "," val "," val ")"
```

Required Arguments:

Name: **Angle**

Type: [vDouble](#)

An argument that specifies an angle.

Name: **Source**

Type: [CellRef](#)

An argument that specifies a reference to a [cell](#) in a source shape.

Name: **Destination**

Type: CellRef

An argument that specifies a reference to a cell in a destination shape.

Return Value:

Type: [vNum](#)

This function returns a transformed angle in the coordinate system of the parent [sheet](#) of a shape of **Destination** from **Angle** in the coordinate system of shape of **Source**. If the **Source's** shape and the **Destination's** shape are not on the same [drawing page](#), the function returns a [PtgErr](#) parse token with an error code equal to #VALUE!.

2.5.3.8 ASin

The **ASin** function performs an arcsine calculation.

ABNF:

```
ASin = "ASIN(" val ")"
```

Required Arguments:

Name: **Arg1**

Type: [vDouble](#)

An argument that specifies the operand of the calculation.

Return Value:

Type: [PtgAngDft](#), [PtgErr](#)

This function returns a PtgAngDft parse token containing the arcsine of the value of **Arg1**. If **Arg1** is less than -1 or greater than one, the function returns a PtgErr parse token with an error code equal to #VALUE!.

2.5.3.9 ATan2

The **ATan2** function calculates the angle between the positive x-axis and a vector.

ABNF:

```
ATan2 = "ATAN2(" val "," val ")"
```

Required Arguments:

Name: **Arg1**

Type: [vDouble](#)

An argument that specifies the y-component of the vector.

Name: **Arg2**

Type: vDouble

An argument that specifies the x-component of the vector.

Return Value:

Type: [PtgAngDft](#)

This function returns a PtgAngDft parse token containing the angle between the positive x-axis and the vector represented by **Arg1** and **Arg2**. The value is greater than -pi and less than or equal to pi. If **Arg1** is equal to zero and **Arg2** is equal to zero, the value is zero.

2.5.3.10 ATan

The **ATan** function performs an arctangent calculation.

ABNF:

```
ATan = "ATAN(" val ")"
```

Required Arguments:

Name: **Arg1**

Type: [vDouble](#)

An argument that specifies the operand of the calculation.

Return Value:

Type: [PtgAngDft](#)

This function returns a PtgAngDft parse token containing the arctangent of the value of **Arg1**.

2.5.3.11 BitAnd

The **BitAnd** function performs a bitwise AND operation.

ABNF:

```
BitAnd = "BITAND(" val "," val ")"
```

Required Arguments:

Name: **Arg1**

Type: [vUnsignedInt](#)

An argument that specifies the first operand of the calculation.

Name: **Arg2**

Type: [vUnsignedInt](#)

An argument that specifies the second operand of the calculation.

Return Value:

Type: [PtgNum](#)

This function returns a PtgNum parse token containing the value of the bitwise AND operation between **Arg1** and **Arg2**.

2.5.3.12 BitNot

The **BitNot** function performs a bitwise NOT operation.

ABNF:

```
BitNot = "BITNOT(" val ")"
```

Required Arguments:

Name: **Arg1**

Type: [vUnsignedInt](#)

An argument that specifies the operand of the calculation.

Return Value:

Type: [PtgNum](#)

This function returns a PtgNum parse token containing the value of the bitwise NOT operation on **Arg1**.

2.5.3.13 BitOr

The **BitOr** function performs a bitwise OR operation.

ABNF:

```
BitOr = "BITOR(" val "," val ")"
```

Required Arguments:

Name: **Arg1**

Type: [vUnsignedInt](#)

An argument that specifies the first operand of the calculation.

Name: **Arg2**

Type: vUnsignedInt

An argument that specifies the second operand of the calculation.

Return Value:

Type: [PtgNum](#)

This function returns a [PtgNum](#) parse token containing the value of the bitwise OR operation between **Arg1** and **Arg2**.

2.5.3.14 BitXor

The **BitXor** function performs a bitwise XOR operation.

ABNF:

```
BitXor = "BITXOR(" val "," val ")"
```

Required Arguments:

Name: **Arg1**

Type: [vUnsignedInt](#)

An argument that specifies the first operand of the calculation.

Name: **Arg2**

Type: vUnsignedInt

An argument that specifies the second operand of the calculation.

Return Value:

Type: [PtgNum](#)

This function returns a [PtgNum](#) parse token containing the value of the bitwise XOR operation between **Arg1** and **Arg2**.

2.5.3.15 BkgPageName

The **BkgPageName** function returns the name of a [background drawing page](#).

ABNF:

```
BkgPageName = [CrossPageRef "!"] "BKGPAGENAME(" [ val ] ")"
```

Optional Arguments:

Name: Arg1

Type: [vSignedInt](#)

An argument to specify the language of the return value.

Return Value:

Type: [PtgString](#)

This function returns the name of the background drawing page in the current [reference context](#) or reference context specified by [CrossPageRef](#).

If the value of **Arg1** is 750, the **NameU** attribute of the [Page_Type](#) element associated with the background drawing page is returned.

If the value of **Arg1** is not 750, the **Name** attribute of the Page_Type element associated with the background drawing page is returned.

If the [sheet](#) does not have a background drawing page and the value of **Arg1** is 750, the string "<no background>" is returned.

If the sheet does not have a background drawing page and the value of **Arg1** is not 750, a language-dependent translation of the string "<no background>" is returned.

2.5.3.16 Blend

The **Blend** function performs a blend of two colors.

ABNF:

```
Blend = "BLEND(" val "," val "," val ")"
```

Required Arguments:

Name: **Color1**

Type: [vColor](#)

An argument that specifies the first color.

Name: **Color2**

Type: [vColor](#)

An argument that specifies the second color.

Name: **Fraction**

Type: [vDouble](#)

An argument that specifies the fractional amount of **Color2** in the blended color.

Return Value:

Type: [PtgColorRGB](#), [PtgErr](#)

This function returns a PtgColorRGB parse token containing the blended color. If **Fraction** is less than zero or greater than one, the function returns a PtgErr parse token with an error code equal to #VALUE!.

2.5.3.17 Bound

The **Bound** function constrains a value by one or more ranges.

ABNF:

```
Bound = "BOUND(" val "," val 1*( "," val "," val "," val ) ")"
```

Required Arguments:

Name: **Number**

Type: [vDouble](#)

An argument that specifies the value to be constrained.

Name: **BoundType**

Type: [vUnsignedInt](#)

An argument that specifies the bounding type. The valid values are described in the following table.

Value	Meaning
0	Constrain Number inclusive of any of the ranges specified.
1	Constrain Number exclusive of all the ranges specified.
2	Do not constrain Number .

Name: **IgnoreRange**

Type: [vBoolean](#)

An argument that specifies whether this range is included in constraining the **Number**, or not.

Name: **ValueBeg**

Type: vDouble

An argument that specifies the beginning value of the range.

Name: **ValueEnd**

Type: vDouble

An argument that specifies the ending value of the range.

Optional Arguments:

Additional ranges MUST be specified using one or more additional groups of **IgnoreRange**, **ValueBeg**, and **ValueEnd**.

Name: **IgnoreRange**

Type: vBoolean

An argument that specifies if this range is not included in constraining the **Number**.

Name: **ValueBeg**

Type: vDouble

An argument that specifies the beginning value of the range.

Name: **ValueEnd**

Type: vDouble

An argument that specifies the ending value of the range.

Return Value:

Type: [vNum](#), [PtgErr](#)

This function returns a vNum custom token grouping containing the constrained value of **Number**, as described in the following table.

Condition	Result
BoundType = 0	If Number is in at least one range with IgnoreRange equal to FALSE, the function returns Number . Otherwise, consider the set of all ValueBeg and ValueEnd values that belong to a range with IgnoreRange equal to FALSE. The function returns the value in this set that is closest to Number . If more than one value has the same minimum distance from Number , the function returns the value in this set that has minimum distance from Number and that appears earliest in the argument list.
BoundType = 1	If Number is not in any range with IgnoreRange equal to FALSE, the function returns Number . Otherwise, consider the set of all ValueBeg and ValueEnd values that belong to a range with IgnoreRange equal to FALSE and that are not nested inside another range with IgnoreRange equal to FALSE. The function returns the value in this set that is closest to Number . If Number is in the exact middle of a ValueBeg value and a ValueEnd value in this set, the function returns the ValueEnd value.
BoundType = 2	The function returns Number .
Otherwise	The function returns a PtgErr parse token with an error code equal to #VALUE!.

If **Number** is a [vAngle](#) custom token grouping, the return value is normalized to be greater than or equal to zero and less than 2*pi. The unit of the return value is equal to the unit of **Number**. If **Number** is a [PtgPnt](#) or the wrong number of arguments is used, the function returns a PtgErr with an error code equal to #VALUE!.

2.5.3.18 Cat

The **Cat** function performs a concatenation of two strings.

ABNF:

```
Cat = "_CAT(" val "," val ")" / val "&" val
```

Required Arguments:

Name: **Arg1**

Type: [vString](#)

An argument that specifies the first string.

Name: **Arg2**

Type: vString

An argument that specifies the second string.

Return Value:

Type: [PtgString](#)

This function returns a PtgString parse token containing the concatenation of **Arg1** and **Arg2**.

2.5.3.19 Category

The **Category** function returns a Category property of a [web drawing](#).

ABNF:

```
Category = "CATEGORY() "
```

Return Value:

Type: [PtgString](#)

This function returns the Category property, specified in [ISO/IEC-29500-2](#) section 11, from the [Core XML part](#) of a web drawing.

2.5.3.20 Ceiling

The **Ceiling** function performs a ceiling calculation.

ABNF:

```
Ceiling = "CEILING(" val [ "," val ] ")"
```

Required Arguments:

Name: **Number**

Type: [vDouble](#)

An argument that specifies the value to be rounded.

Optional Arguments:

Name: **Multiple**

Type: vDouble

An argument that specifies the rounding increment. The default value is one if **Number** is greater than or equal to zero, and -1 if **Number** is less than zero.

Return Value:

Type: [vNum](#), [PtgErr](#)

This function returns a vNum custom token grouping containing the next multiple of **Multiple** after **Number** that is further from zero. The unit of the return value is equal to the unit of **Number**.

If **Number** is a multiple of **Multiple**, the returned value is equal to **Number**.

If either **Number** or **Multiple** is equal to zero, the returned value is zero.

If **Number** and **Multiple** do not have the same sign, the function returns a PtgErr parse token with an error code equal to #NUM!.

If **Number** does not specify a vNum, the function returns a PtgErr with an error code equal to #VALUE!.

2.5.3.21 CellIsThemed

The **CellIsThemed** function returns a value of the passed argument.

ABNF:

```
CellIsThemed = "CELLISTHEMED(" val ")"
```

Required Arguments:

Name: Arg1

Type: [vBoolean](#)

An argument to be returned.

Return Value:

Type: [PtgBool](#)

This function returns a PtgBool parse token with the value of **Arg1**.

2.5.3.22 Char

The **Char** function performs a conversion from an integer to the corresponding character in the **ANSI character set**.

ABNF:

```
Char = "CHAR(" val ")"
```

Required Arguments:

Name: **Number**

Type: [vUnsignedInt](#)

An argument that specifies an integer.

Return Value:

Type: [PtgString](#), [PtgErr](#)

This function returns a PtgString parse token containing the character that corresponds to **Number**. If **Number** is less than one or greater than 255, the function returns a PtgErr parse token with an error code equal to #VALUE!.

2.5.3.23 Company

The **Company** function returns a **Company** property of a [web drawing](#).

ABNF:

```
Company = "COMPANY () "
```

Return Value:

Type: [PtgString](#)

This function returns the **Company** property, specified in [\[ISO/IEC-29500-1\]](#) section 22.2.2.5, from the [App XML part](#) of a web drawing.

2.5.3.24 Cos

The **Cos** function performs a cosine calculation.

ABNF:

```
Cos = "COS(" val ") "
```

Required Arguments:

Name: **Arg1**

Type: [vDouble](#)

An argument that specifies the operand of the calculation. If **Arg1** is not a [vAngle](#) custom token grouping, the value of **Arg1** is assumed to have the unit of radians.

Return Value:

Type: [PtgNum](#)

This function returns a PtgNum parse token containing the cosine of the value of **Arg1**.

2.5.3.25 CosH

The **CosH** function performs the hyperbolic cosine calculation.

ABNF:

```
CosH = "COSH(" val ")"
```

Required Arguments:

Name: **Arg1**

Type: [vDouble](#)

An argument that specifies the operand of the calculation. If **Arg1** is not a [vAngle](#) custom token grouping, the value of **Arg1** is assumed to have the unit of radians.

Return Value:

Type: [PtgNum](#)

This function returns a PtgNum parse token containing the hyperbolic cosine of **Arg1**.

2.5.3.26 Creator

The **Creator** function returns a Creator property of a [web drawing](#).

ABNF:

```
Creator = "CREATOR()"
```

Return Value:

Type: [PtgString](#)

This function returns the **Creator** property, specified in [\[ISO/IEC-29500-2\]](#) section 11, from the [Core XML part](#) of a web drawing.

2.5.3.27 CY

The **CY** function returns a currency.

ABNF:

```
CY = "CY(" val [ "," val ] ")"
```

Required Arguments:

Name: **Value**

Type: [vDouble](#)

An argument that specifies the currency value.

Optional Arguments:

Name: **Cy**

Type: [vCurrency](#)

An argument that specifies the currency. It defaults to a value of -1, if missing.

Return Value:

Type: [PtgCY](#), [PtgErr](#)

This function returns a PtgCY parse token containing **Value** and **Cy**. If **Cy** is not found in the table of vCurrency the function returns a PtgErr parse token with an error code equal to #VALUE!.

2.5.3.28 Date

The **Date** function returns a date, according to the Gregorian calendar, from values representing a year, month, and day.

ABNF:

```
Date = "DATE(" val "," val "," val ")"
```

Required Arguments:

Name: **Year**

Type: [vUnsignedInt](#)

An argument that specifies a year. A value between zero and 29 corresponds to the range of years between 2000 and 2029. A value between 30 and 100 corresponds to the range of years between 1930 and 2000. A value greater than 100 corresponds to that year. It MUST be less than or equal to 9999.

Name: **Month**

Type: [vSignedInt](#)

An argument that specifies an offset in months from December 1st of the previous year.

Name: **Day**

Type: [vSignedInt](#)

An argument that specifies an offset in days from the last day of the previous month.

Return Value:

Type: [PtgDate](#), [PtgErr](#)

This function returns a PtgDate parse token containing the date, according to the Gregorian calendar, represented by **Year**, **Month**, and **Day**. If the arguments specify a date before January 1st, 1899 or between January 1st, 1900 and November 30th, 1900 inclusively, the function returns a PtgErr parse token with an error code equal to #NUM!. If either **Month** or **Day** cannot be interpreted as a type of vSignedInt, the function returns a PtgErr with an error code equal to #VALUE!.

2.5.3.29 DateTime

The **DateTime** function converts a value to a date and time.

ABNF:

```
DateTime = "DATETIME(" val [ "," val ] ")"
```

Required Arguments:

Name: **DateTimeArg**

Type: [vAny](#)

An argument that specifies a value representing a date and time.

Optional Arguments:

Name: **Locale**

Type: [vLanguageID](#)

An argument that specifies an **language code identifier (LCID)** to use when parsing **DateTimeArg**. The default value is specified by the **Language** property, defined in [ISO/IEC-29500-2](#) section 11, from the [Core XML part](#) of a [web drawing](#).

Return Value:

Type: [PtgDate](#), [PtgErr](#)

If **DateTimeArg** is a [PtgString](#) parse token, this function attempts to parse it using date and time format strings according to .NET globalization rules for **Locale**. For more information about .NET globalization rules, see [\[MSDN-ENCLOC\]](#). If the string is successfully parsed, the function returns a [PtgDate](#) parse token containing the parsed date and time. If the string is not successfully parsed, the function returns a [PtgErr](#) parse token with an error code equal to #VALUE!.

If **DateTimeArg** is not a [PtgString](#), the function returns a [PtgDate](#) containing the value of **DateTimeArg** interpreted as a type of [vDouble](#). If **DateTimeArg** cannot be interpreted as a [vDouble](#), the function returns a [PtgErr](#) with an error code equal to #VALUE!.

2.5.3.30 DateValue

The **DateValue** function returns a date component from a value representing a date and time.

ABNF:

```
DateValue = "DATEVALUE(" val [ "," val ] ")"
```

Required Arguments:

Name: **DateTimeArg**

Type: [vAny](#)

An argument that specifies a value representing a date and time.

Optional Arguments:

Name: **Locale**

Type: [vLanguageID](#)

An argument that specifies an LCID to use when parsing **DateTimeArg**. The default value is specified by the **Language** property, defined in [\[ISO/IEC-29500-2\]](#) section 11, from the [Core XML part](#) of a [web drawing](#).

Return Value:

Type: [PtgDate](#), [PtgErr](#)

This function attempts a conversion, as described by the [DateTime](#) function, of **DateTimeArg** to a PtgDate parse token. If the conversion is successful, the function returns a PtgDate containing the date component of **DateTimeArg**. If the conversion fails, the function returns a PtgErr parse token with an error code equal to #VALUE!.

2.5.3.31 Day

The **Day** function returns a day of the month, according to the Gregorian calendar, from a value representing a date and time.

ABNF:

```
Day = "DAY(" val [", " val] ")"
```

Required Arguments:

Name: **DateTimeArg**

Type: [vAny](#)

An argument that specifies a date and time value.

Optional Arguments:

Name: **Locale**

Type: [vLanguageID](#)

An argument that specifies an LCID to use when parsing **DateTimeArg**. The default value is specified by the **Language** property, defined in [\[ISO/IEC-29500-2\]](#) section 11, from the [Core XML part](#) of a [web drawing](#).

Return Value:

Type: [PtgNum](#), [PtgErr](#)

This function attempts a conversion, as described by the [DateTime](#) function, of **DateTimeArg** to a [PtgDate](#) parse token. If the conversion is successful, the function returns a PtgNum parse token containing the day of the month component of **DateTimeArg**. If the conversion fails, the function returns a PtgErr parse token with an error code equal to #VALUE!.

2.5.3.32 DayOfYear

The **DayOfYear** function returns a day of the year, according to the Gregorian calendar, from a value representing a date and time.

ABNF:

```
DayOfYear = "DAYOFYEAR(" val [", " val] ")"
```

Required Arguments:

Name: **DateTimeArg**

Type: [vAny](#)

An argument that specifies a date and time value.

Optional Arguments:

Name: **Locale**

Type: [vLanguageID](#)

An argument that specifies an LCID to use when parsing **DateTimeArg**. The default value is specified by the **Language** property, defined in [\[ISO/IEC-29500-2\]](#) section 11, from the [Core XML part](#) of a [web drawing](#).

Return Value:

Type: [PtgNum](#), [PtgErr](#)

This function attempts a conversion, as described by the [DateTime](#) function, of **DateTimeArg** to a [PtgDate](#) parse token. If the conversion is successful, the function returns a [PtgNum](#) parse token containing the day of the year component from **DateTimeArg**. If the conversion fails, the function returns a [PtgErr](#) parse token with an error code equal to #VALUE!.

2.5.3.33 Deg

The **Deg** function performs a conversion to an angle in degrees.

ABNF:

```
Deg = "DEG(" val ")"
```

Required Arguments:

Name: **Angle**

Type: [vDouble](#)

An argument that specifies an angle.

Return Value:

Type: [PtgAngDD](#)

This function returns a [PtgAngDD](#) parse token containing the value of **Angle**.

2.5.3.34 DependsOn

The **DependsOn** function returns a value of FALSE.

ABNF:

```
DependsOn = "DEPENDSON( 1*( val ) )"
```

Required Arguments:

Name: Arg1

Type: [vAny](#)

One or more arguments to be ignored.

Return Value:

Type: [PtgBool](#)

This function returns a PtgBool parse token with a value of FALSE.

2.5.3.35 Description

The **Description** function returns the **Description** property of a [web drawing](#).

ABNF:

```
Description = "DESCRIPTION()"
```

Return Value:

Type: [PtgString](#)

This function returns the **Description** property, specified in [\[ISO/IEC-29500-2\]](#) section 11, from the [Core XML part](#) of a web drawing.

2.5.3.36 Directory

The **Directory** function returns a path to a [web drawing](#).

ABNF:

```
Directory = "DIRECTORY()"
```

Return Value:

Type: [PtgString](#)

This function returns the path to a web drawing.

2.5.3.37 Div

The **Div** function performs a division calculation.

ABNF:

```
Div = "_DIV( val ", val ") / val "/" val
```

Required Arguments:

Name: **Arg1**

Type: [vDoubleEx](#)

An argument that specifies the first operand of the division operation.

Name: **Arg2**

Type: [vDoubleEx](#)

An argument that specifies the second operand of the division operation.

Return Value:

Type: [vNum](#), [PtgCy](#), [PtgErr](#)

This function returns a **vNum** custom token grouping (section [2.5.7.4](#)) or a **PtgCy** parse token (section [2.5.4.9](#)) containing the result of **Arg1** divided by **Arg2**. The type of the return value is calculated by the following algorithm.

```
SET returnType = PtgNum
SET returnError = #VALUE!
SET returnDimension = 0
SET returnCurrencyID = 0

IF Arg2.Value = 0 THEN
    SET returnType = PtgErr
    SET returnError = #DIV/0
ELSE IF Arg1.Type = PtgCy AND Arg2.Type != PtgCy THEN
    SET returnType = PtgCy
    SET returnCurrencyID = currencyID of Arg1
ELSE IF Arg1.Type != PtgCy AND Arg2.Type = PtgCy THEN
    SET returnType = PtgCy
    SET returnCurrencyID = currencyID of Arg2
ELSE IF Arg1.Type = PtgCy AND Arg2.Type = PtgCy THEN
    SET returnType = PtgCy
    IF currencyID of Arg1 = currencyID of Arg2 OR currencyID of Arg2 = 1 THEN
        SET returnCurrencyID = currencyID of Arg1
    ELSE IF currencyID of Arg1 = 1 THEN
        SET returnCurrencyID = currencyID of Arg2
    ELSE
        SET returnType = PtgErr
        SET returnError = #VALUE!
    END IF
ELSE IF Arg1.Unit is a vUnitType AND Arg2.Unit is not a vUnitType THEN
    SET returnType = Arg1.Unit
    SET returnDimension = Arg1.Dimension
ELSE IF Arg1.Unit is not a vUnitType AND Arg2.Unit is a vUnitType THEN
    SET returnType = Arg2.Unit
    SET returnDimension = Arg2.Dimension
ELSE
    IF Arg1.Unit = PtgNumPct AND Arg2.Unit = PtgNumPct THEN
        SET returnDimension = 1
    ELSE IF Arg1.Unit = PtgNumPct THEN
        SET returnDimension = -Arg2.Dimension
    ELSE IF Arg2.Unit = PtgNumPct THEN
        SET returnDimension = Arg1.Dimension
```

```

ELSE
    SET returnDimension = Arg1.Dimension - Arg2.Dimension
END IF

IF Arg1.Unit is a vUnitType THEN
    SET returnType = Arg1.Unit
ELSE
    SET returnType = Arg2.Unit
END IF

END IF

IF returnType = PtgCy THEN
    Return type is PtgCy with currencyID = returnCurrencyID
ELSE IF returnType = PtgErr THEN
    Return type is PtgErr with error code of returnError
ELSE IF (returnType = PtgAcre OR returnType = PtgHectare) AND returnDimension != 2 THEN
    Return type is PtgNumMultiDim with unit = PtgNumDft and dimension = returnDimension
ELSE IF returnDimension = 0 THEN
    Return type is PtgNum
ELSE IF returnDimension = 1 THEN
    Return type is returnType
ELSE
    Return type is PtgNumMultiDim with unit = returnType and dimension = returnDimension
END IF

```

2.5.3.38 DocCreation

This function returns the DocCreation property of a [Web drawing](#).

ABNF:

```
DocCreation = "DOCCREATION()"
```

Return Value:

Type: [PtgDate](#)

This function returns the **DocCreation** property, specified in [\[ISO/IEC-29500-2\]](#) section 11, from the [Core XML part](#) of a web drawing.

2.5.3.39 DocLastEdit

The **DocLastEdit** function returns a **Modified** property of a [web drawing](#).

ABNF:

```
DocLastEdit = "DOCLASTEDIT()"
```

Return Value:

Type: [PtgDate](#)

This function returns the **Modified** property, specified in [\[ISO/IEC-29500-2\]](#) section 11, from the [Core XML part](#) of a web drawing.

2.5.3.40 DocLastPrint

The **DocLastPrint** function returns the **lastPrinted** property of a [web drawing](#).

ABNF:

```
DocLastPrint = "DOCLASTPRINT()"
```

Return Value:

Type: [PtgDate](#)

This function returns the **lastPrinted** property, specified in [\[ISO/IEC-29500-2\]](#) section 11, from the [Core XML part](#) of a web drawing.

2.5.3.41 DocLastSave

The **DocLastSave** function returns a **Modified** property of a [web drawing](#).

ABNF:

```
DocLastSave = "DOCLASTSAVE()"
```

Return Value:

Type: [PtgDate](#)

This function returns the **Modified** property, specified in [\[ISO/IEC-29500-2\]](#) section 11, from the [Core XML part](#) of a web drawing.

2.5.3.42 EEQ

The **EEQ** function calculates if **Arg1** is equal to **Arg2**.

ABNF:

```
EEQ = "_EEQ(" val "," val ") " / val "_EQ_" val
```

Required Arguments:

Name: **Arg1**

Type: [vDouble](#)

An argument that specifies the first operand of the calculation.

Name: **Arg2**

Type: vDouble

An argument that specifies the second operand of the calculation.

Return Value:

Type: [PtgBool](#)

This function returns a PtgBool parse token with a value of **TRUE** if **Arg1** is equal to **Arg2**; otherwise, the value **FALSE** is returned.

2.5.3.43 EGE

The **EGE** function calculates if **Arg1** is greater than or equal to **Arg2**.

ABNF:

```
EGE = "_EGE(" val "," val ")" / val "_GE_" val
```

Required Arguments:

Name: **Arg1**

Type: [vDouble](#)

An argument that specifies the first operand of the calculation.

Name: **Arg2**

Type: vDouble

An argument that specifies the second operand of the calculation.

Return Value:

Type: [PtgBool](#)

This function returns a PtgBool parse token with a value of **TRUE** if **Arg1** is greater than or equal to **Arg2**; otherwise, the value **FALSE** is returned.

2.5.3.44 EGT

The **EGT** function calculates if **Arg1** is greater than **Arg2**.

ABNF:

```
EGT = "_EGT(" val "," val ")" / val "_GT_" val
```

Required Arguments:

Name: **Arg1**

Type: [vDouble](#)

An argument that specifies the first operand of the calculation.

Name: **Arg2**

Type: vDouble

An argument that specifies the second operand of the calculation.

Return Value:

Type: [PtgBool](#)

This function returns a PtgBool parse token with a value of **TRUE** if **Arg1** is greater than **Arg2**; otherwise, the value **FALSE** is returned.

2.5.3.45 ELE

The **ELE** function calculates if **Arg1** is less than or equal to **Arg2**.

ABNF:

```
ELE = "_ELE(" val "," val ")" / val "_LE_" val
```

Required Arguments:

Name: **Arg1**

Type: [vDouble](#)

An argument that specifies the first operand of the calculation.

Name: **Arg2**

Type: vDouble

An argument that specifies the second operand of the calculation.

Return Value:

Type: [PtgBool](#)

This function returns a PtgBool parse token with a value of **TRUE** if **Arg1** is less than or equal to **Arg2**; otherwise, the value **FALSE** is returned.

2.5.3.46 ELT

The **ELT** function calculates if **Arg1** is less than **Arg2**.

ABNF:

```
ELT = "_ELT(" val "," val ")" / val "_LT_" val
```

Required Arguments:

Name: **Arg1**

Type: [vDouble](#)

An argument that specifies the first operand of the calculation.

Name: **Arg2**

Type: vDouble

An argument that specifies the second operand of the calculation.

Return Value:

Type: [PtgBool](#)

This function returns a PtgBool parse token with a value of **TRUE** if **Arg1** is less than **Arg2**; otherwise, the value **FALSE** is returned.

2.5.3.47 ENE

The **ENE** function calculates if **Arg1** is not equal to **Arg2**.

ABNF:

```
ENE = "_ENE(" val "," val ")" / val "_NE_" val
```

Required Arguments:

Name: **Arg1**

Type: [vDouble](#)

An argument that specifies the first operand of the calculation.

Name: **Arg2**

Type: vDouble

An argument that specifies the second operand of the calculation.

Return Value:

Type: [PtgBool](#)

This function returns a PtgBool parse token with a value of **TRUE** if **Arg1** is not equal to **Arg2**; otherwise, the value of **FALSE** is returned.

2.5.3.48 FEQ

The **FEQ** function calculates if the absolute value of the difference between **Arg1** and **Arg2** is less than or equal to 1E-9 (0.000000001).

ABNF:

```
FEQ = "_FEQ(" val "," val ")" / val "=" val
```

Required Arguments:

Name: **Arg1**

Type: [vDouble](#)

An argument that specifies the first operand of the calculation.

Name: **Arg2**

Type: vDouble

An argument that specifies the second operand of the calculation.

Return Value:

Type: [PtgBool](#)

This function returns a PtgBool parse token with a value of **TRUE** if the absolute value of the difference between **Arg1** and **Arg2** is less than or equal to 1E-9; otherwise, the value **FALSE** is returned.

2.5.3.49 FGE

The **FGE** function calculates if the difference between **Arg1** and **Arg2** is greater than or equal to -1E-9 (-0.000000001).

ABNF:

```
FGE = "_FGE(" val "," val ")" / val ">=" val
```

Required Arguments:

Name: **Arg1**

Type: [vDouble](#)

An argument that specifies the first operand of the calculation.

Name: **Arg2**

Type: vDouble

An argument that specifies the second operand of the calculation.

Return Value:

Type: [PtgBool](#)

This function returns a PtgBool parse token with a value of **TRUE** if the difference between **Arg1** and **Arg2** is greater than or equal to 1E-9; otherwise, the value **FALSE** is returned.

2.5.3.50 FGT

The **FGT** function calculates if **Arg1** is greater than **Arg2** by at least the amount of 1E-9 (0.000000001).

ABNF:

```
FGT = "_FGT(" val "," val ")" / val ">" val
```

Required Arguments:

Name: **Arg1**

Type: [vDouble](#)

An argument that specifies the first operand of the calculation.

Name: **Arg2**

Type: vDouble

An argument that specifies the second operand of the calculation.

Return Value:

Type: [PtgBool](#)

This function returns a PtgBool parse token with a value of **TRUE** if **Arg1** is greater than **Arg2** by more than 1E-9 (0.000000001); otherwise, the value **FALSE** is returned.

2.5.3.51 FieldPicture

The **FieldPicture** function returns a format string.

ABNF:

```
FieldPicture = "FIELDPICTURE(" val ")"
```

Required Arguments:

Name: **Index**

Type: [vFieldPicture](#)

An argument that specifies a field picture index.

Return Value:

Type: [PtgString](#)

This function returns a field picture format string based on **Index** as specified in the vFieldPicture custom structure.

2.5.3.52 FileName

The **FileName** function returns a file name of a [web drawing](#).

ABNF:

```
FileName = "FILENAME() "
```

Return Value:

Type: [PtgString](#)

This function returns the file name of a web drawing.

2.5.3.53 Find

The **Find** function returns the index of the first instance of a text string within another text string.

ABNF:

```
Find = "FIND(" val ", " val [ ", " [ val ] ", " [ val ] ] ") "
```

Required Arguments:

Name: FindText

Type: [vString](#)

An argument that specifies the string to be found.

Name: WithinText

Type: vString

An argument that specifies the string to search within.

Optional Arguments:

Name: StartNum

Type: [vUnsignedInt](#)

An argument that specifies the one-based position at which this function starts a search. The default value is one.

Name: IgnoreCase

Type: [vBoolean](#)

An argument that specifies whether the search is case insensitive. A value of **TRUE** specifies that case is ignored. The default value is **FALSE**.

Return Value:

Type: [PtgInt](#), [PtgErr](#)

This function returns a PtgInt parse token containing the one-based position in **WithinText** at which **FindText** is found.

If **FindText** is empty and **StartNum** is less than or equal to the number of characters in **WithinText**, the function returns a PtgInt containing the value of **StartNum**.

If **FindText** is empty and **StartNum** is greater than the number of characters in **WithinText**, the function returns a PtgInt containing the value of the number of characters in **WithinText** + 1.

If **FindText** is not found or if **StartNum** is equal to zero or greater than the number of characters in **WithinText**, the function returns a PtgErr parse token with an error code equal to #VALUE!.

The search is performed according to .NET globalization rules based on the value of the **Language** property, specified in [\[ISO/IEC-29500-2\]](#) section 11, from the [Core XML part](#) of a [web drawing](#). For more information about .NET globalization rules, see [\[MSDN-ENCLOC\]](#).

2.5.3.54 FLE

The **FLE** function calculates if the difference between **Arg1** and **Arg2** is less than or equal to 1E-9 (0.000000001).

ABNF:

```
FLE = "_FLE(" val "," val ")" / val "<=" val
```

Required Arguments:

Name: **Arg1**

Type: [vDouble](#)

An argument that specifies the first operand of the calculation.

Name: **Arg2**

Type: vDouble

An argument that specifies the second operand of the calculation.

Return Value:

Type: [PtgBool](#)

This function returns a PtgBool parse token with a value of **TRUE** if the difference between **Arg1** and **Arg2** is less than or equal to 1E-9; otherwise, the value FALSE is returned.

2.5.3.55 Floor

The **Floor** function performs a floor calculation.

ABNF:

```
Floor = "FLOOR(" val [ "," val ] ")"
```

Required Arguments:

Name: **Number**

Type: [vDouble](#)

An argument that specifies the value to be rounded.

Optional Arguments:

Name: **Multiple**

Type: vDouble

An argument that specifies the rounding increment. The default value is one if **Number** is greater than or equal to zero, and -1 if **Number** is less than zero.

Return Value:

Type: [vNum](#), [PtgErr](#)

This function returns a vNum custom token grouping containing the previous multiple of **Multiple** before **Number** that is closer to zero. The unit of the return value is equal to the unit of **Number**.

If **Number** is a multiple of **Multiple**, the returned value is equal to **Number**.

If either **Number** or **Multiple** is equal to zero, the returned value is zero.

If **Number** and **Multiple** do not have the same sign, the function returns a PtgErr parse token with an error code equal to #NUM!.

If **Number** does not specify a vNum, the function returns a PtgErr with an error code equal to #VALUE!.

2.5.3.56 FLT

The **FLT** function calculates if **Arg1** is less than **Arg2** by at least the amount of 1E-9 (0.000000001).

ABNF:

```
FLT = "_FLT(" val " ," val ")" / val "<" val
```

Required Arguments:

Name: **Arg1**

Type: [vDouble](#)

An argument that specifies the first operand of the calculation.

Name: **Arg2**

Type: vDouble

An argument that specifies the second operand of the calculation.

Return Value:

Type: [PtgBool](#)

This function returns a PtgBool parse token with a value of **TRUE** if **Arg1** is less than **Arg2** by more than 1E-9 (0.000000001); otherwise, the value FALSE is returned.

2.5.3.57 FNE

The **FNE** function calculates if **Arg1** differs from **Arg2** by at least the amount of 1E-9 (0.000000001).

ABNF:

```
FNE = "_FNE(" val "," val ")" / val "<>" val
```

Required Arguments:

Name: **Arg1**

Type: [vDouble](#)

An argument that specifies the first operand of the calculation.

Name: **Arg2**

Type: [vDouble](#)

An argument that specifies the second operand of the calculation.

Return Value:

Type: [PtgBool](#)

This function returns a PtgBool parse token with a value of **TRUE** if **Arg1** differs from **Arg2** by more than 1E-9 (0.000000001); otherwise, the value FALSE is returned.

2.5.3.58 Format

The **Format** function formats a value as a string using the specified format string.

ABNF:

```
Format = "FORMAT(" val "," val ")"
```

Required Arguments:

Name: **Value**

Type: [vAny](#)

An argument that specifies the value to be formatted.

Name: **FormatString**

Type: [vFormatString](#)

An argument that specifies the formatting information used to format **Value**.

Return Value:

Type: [PtgString](#)

This function returns a PtgString parse token containing **Value** formatted as a string with **FormatString**. The formatting is performed as described in the custom structure vFormatString.

2.5.3.59 FormatEx

The **FormatEx** function formats a value as a string.

ABNF:

```
FormatEx = "FORMATEX(" val "," val [ "," [ val ] [ "," [ val ] [ "," [ val ] [ "," [ val ] ] ] ] ] ")"
```

Required Arguments:

Name: **Value**

Type: [vAny](#)

An argument that specifies the value to be formatted.

Name: **FormatString**

Type: [vFormatString](#)

An argument that specifies the formatting information used to format **Value**.

Optional Arguments:

Name: **SrcUnit**

Type: [vUnitString](#)

An argument that specifies the unit of **Value**.

Name: **DstUnit**

Type: [PtgString](#)

An argument that specifies the unit displayed in the resulting string. It MUST be a vUnitString custom structure or a value equal to "NOCAST".

Name: **LangID**

Type: [vLanguageID](#)

An argument that specifies an LCID used to format **Value**. The default value is specified by the **Language** property, defined in [\[ISO/IEC-29500-2\]](#) section 11, from the [Core XML part](#) of a [web drawing](#).

Name: **CalID**

Type: [vCalendar](#)

An argument that specifies a calendar system used to format **Value**. If the argument is omitted the value of zero is used.

Return Value:

Type: PtgString

This function returns a PtgString parse token containing **Value** with the unit specified by **SrcUnit**, converted into the unit specified by **DstUnit**, formatted as a string as specified by **FormatString**, **LangID**, and **CalID**. The formatting is performed as described in the custom structure vFormatString.

Value is converted into the unit specified by **DstUnit** as follows. If **DstUnit** contains the value of "NOCAST", the conversion is not performed. If **Value** is a [vScalar](#) custom token grouping, **Value** is multiplied by a factor that converts the unit of **SrcUnit** into the [custom internal unit type](#) associated with the type of **SrcUnit**. The resulting value, or **Value** if **Value** is a [vUnitType](#), is multiplied by a factor that converts the custom internal unit type associated with the type of **DstUnit** into the unit of **DstUnit**.

2.5.3.60 Gravity

The **Gravity** function returns an angle.

ABNF:

```
Gravity = "GRAVITY(" val [ "," val [ "," val ]] ")"
```

Required Arguments:

Name: **Angle**

Type: [vDouble](#)

An argument that specifies an angle. It is normalized to be greater than or equal to zero and less than 2*pi. If **Angle** is not a [vAngle](#) custom token grouping, the value of **Angle** is assumed to have the unit of degrees.

Optional Arguments:

Name: **Limit1**

Type: vDouble

An argument that specifies the first limit of rotation. It is normalized to be greater than or equal to zero and less than 2*pi. It defaults to a value of 90 degrees.

Name: **Limit2**

Type: vDouble

An argument that specifies the second limit of rotation. It is normalized to be greater than or equal to zero and less than 2*pi. It defaults to a value of 270 degrees.

Return Value:

Type: vAngle

This function returns a vAngle with a value of 180 degrees if **Angle** is between the value specified by **Limit1** and **Limit2**. Otherwise, the function returns a vAngle with a value of zero degrees.

2.5.3.61 Guard

The **Guard** function returns a value of the passed argument.

ABNF:

```
Guard = "GUARD(" val ")"
```

Required Arguments:

Name: Arg1

Type: [vAny](#)

An argument to be returned.

Return Value:

Type: vAny

This function returns the value of **Arg1**.

2.5.3.62 HasCategory

The **HasCategory** function returns whether there is any intersection of the category list of the [shape](#) and the category list of the operand. The category list of a shape is specified by the value its [msvShapeCategories](#) [user row](#).

ABNF:

```
HasCategory = "HASCATEGORY(" val ")"
```

Required Arguments:

Name: Arg1

Type: [vString](#)

An argument that specifies a semicolon-delimited list of category names. This category list has the same form as the category list described in [msvShapeCategories](#).

Return Value:

Type: [PtgBool](#)

This function returns a PtgBool parse token with the value of **TRUE** if the shape's category list contains any of the categories specified by **Arg1**'s category list. If either the shape or **Arg1** has an empty category list, this function returns a **PtgBool** with the value of **FALSE**.

2.5.3.63 Hour

The **Hour** function returns an hour from a value representing a date and time.

ABNF:

```
Hour = "HOUR(" val [", " val] ")"
```

Required Arguments:

Name: **DateTimeArg**

Type: [vAny](#)

An argument that specifies a date and time value.

Optional Arguments:

Name: **Locale**

Type: [vLanguageID](#)

An argument that specifies an LCID to use when parsing **DateTimeArg**. The default value is specified by the **Language** property, defined in [\[ISO/IEC-29500-2\]](#) section 11, from the [Core XML part](#) of a [web drawing](#).

Return Value:

Type: [PtgNum](#), [PtgErr](#)

This function attempts a conversion, as described by the [DateTime](#) function, of **DateTimeArg** to a [PtgDate](#) parse token. If the conversion is successful, the function returns a [PtgNum](#) parse token containing the hour component from **DateTimeArg**. If the conversion fails, the function returns a [PtgErr](#) parse token with an error code equal to #VALUE!.

2.5.3.64 HSL

The **HSL** function transforms a color specified in the **hue-saturation-luminance (HSL) color space** into a color specified in the RGB color space. **HSL** component values are in the range zero to 240, inclusive.

ABNF:

```
HSL = "HSL(" val " ," val " ," val ")"
```

Required Arguments:

Name: **Hue**

Type: [vUnsignedInt](#)

An argument that specifies the hue component.

Name: **Saturation**

Type: [vUnsignedInt](#)

An argument that specifies the saturation component.

Name: **Luminance**

Type: [vUnsignedInt](#)

An argument that specifies the luminance component.

Return Value:

Type: [PtgColorRGB](#)

This function returns a [PtgColorRGB](#) parse token containing the color value specified by **Hue**, **Saturation** and **Luminance**. If **Hue** is greater than 240 and less than or equal to 0xFF, this function sets the value to 240 and performs the operation. If the value of any of the arguments is greater than 0xFF, the function sets the argument's value to the result of the bitwise AND operation between the original value and 0xFF, before performing the operation.

2.5.3.65 Hue

The **Hue** function calculates the hue component, as specified in the hue-saturation-luminance (HSL) color space, of a color value.

ABNF:

```
Hue = "HUE(" val ")"
```

Required Arguments:

Name: **Arg1**

Type: [vColor](#)

An argument that specifies the color.

Return Value:

Type: [PtgNum](#)

This function returns a [PtgNum](#) parse token containing the hue of **Arg1**. The value is less than or equal to 240.

2.5.3.66 HueDiff

The **HueDiff** function calculates the difference in hue, as specified in the hue-saturation-luminance (HSL) color space, between two color values.

ABNF:

```
HueDiff = "HUEDIFF(" val "," val ")"
```

Required Arguments:

Name: **Arg1**

Type: [vColor](#)

An argument that specifies the first color.

Name: **Arg2**

Type: [vColor](#)

An argument that specifies the second color.

Return Value:

Type: [PtgNum](#)

This function returns a [PtgNum](#) parse token containing a value that is equal to the hue of **Arg1** minus the hue of **Arg2**. This value is greater than or equal to -240 and less than or equal to 240.

2.5.3.67 HyperlinkBase

The **HyperlinkBase** function returns the **HyperlinkBase** property of a [web drawing](#).

ABNF:

```
HyperlinkBase = "HYPERLINKBASE()"
```

Return Value:

Type: [PtgString](#)

This function returns the **HyperlinkBase** property, specified in [\[ISO/IEC-29500-1\]](#) section 22.2.2.11, from the [App XML part](#) of a web drawing.

2.5.3.68 ID

The **ID** function returns a value of the identifier of a [shape](#).

ABNF:

```
ID = [ShapeSheetRef "!"] "ID()"
```

Return Value:

Type: [PtgInt](#)

This function returns a [PtgInt](#) parse token containing the **ID** attribute of the [ShapeSheet Type](#) element associated with the [shape sheet](#) of a shape in the current [reference context](#) or reference context specified by [ShapeSheetRef](#).

2.5.3.69 IF

The **IF** function returns the value of one of its operands based on the value of its first operand.

ABNF:

```
If = "IF(" val "," [ val ] "," [ val ] ")"
```

Required Arguments:

Name: Arg1

Type: [vBoolean](#)

An argument that specifies which argument to return based on its value.

Name: Arg2

Type: [vAny](#)

An argument that defaults to a [PtgBool](#) parse token with the value of **TRUE** if missing.

Name: Arg3

Type: vAny

An argument that defaults to a PtgBool with the value of **FALSE** if missing.

Return Value:

Type: vAny

This function returns one of its arguments according to the following table.

Arg1 Value	Return Value
TRUE	Arg2
FALSE	Arg3
Error	Arg1

2.5.3.70 IfError

The **IfError** function returns the value of the first operand if it does not evaluate to an error; otherwise, the value of the second operand is returned.

ABNF:

```
IfError = "IFERROR(" val ", " [ val ] ")"
```

Required Arguments:

Name: Arg1

Type: [vAny](#)

An argument.

Name: Arg2

Type: vAny

An argument that defaults to a [PtgBool](#) with the value of FALSE if missing.

Return Value:

Type: vAny

This function returns either **Arg1** if it does not evaluate to an error or **Arg2** otherwise.

2.5.3.71 Index

The **Index** function returns a substring from a delimited text string.

ABNF:

```
Index = "INDEX(" val "," val [ "," [ val ] "," [ val ] ] ")"
```

Required Arguments:

Name: IndexPosition

Type: [vSignedInt](#)

An argument that specifies a **zero-based index** into **List**.

Name: List

Type: [vString](#)

An argument that specifies a string consisting of a list of substrings delimited by **Delimiter**. Consecutive delimiters or delimiters at the beginning and/or end of **List** specify empty substrings.

Optional Arguments:

Name: Delimiter

Type: vString

An argument that specifies the delimiter that separates substrings inside **List** with a default value of ";", if missing.

Name: ErrorValue

Type: vString, [PtgErr](#)

An argument that specifies a string or error to be returned if **Index** is out of range. The default value is an empty string.

Return Value:

Type: [PtgString](#), PtgErr

This function returns a PtgString parse token equal to the substring at the zero-based index location **IndexPosition** in **List**, which is delimited by **Delimiter**.

If **IndexPosition** is less than zero or greater than or equal to the number of items in **List** and **ErrorValue** is of the parse token type PtgErr, the function returns **ErrorValue** as a PtgErr.

If **IndexPosition** is less than zero or greater than or equal to the number of items in **List** and **ErrorValue** is of custom structure type vString, the function returns a PtgString token that specifies **ErrorValue**.

2.5.3.72 Int

The **Int** function performs a rounding calculation down to the next lesser integer value.

ABNF:

```
Int = "INT(" val ")"
```

Required Arguments:

Name: **Arg1**

Type: [vDouble](#)

An argument that specifies the value to be rounded.

Return Value:

Type: [vNum](#)

This function returns a custom token grouping of the type vNum containing the next lesser integer value if **Arg1** is not an integer. The unit of the return value is equal to the unit of **Arg1**.

2.5.3.73 IntersectX

The **IntersectX** function calculates the x-coordinate of the point where two lines intersect. Each line is defined by a point on the line and an angle.

ABNF:

```
IntersectX = "INTERSECTX(" val "," val "," val "," val "," val "," val "," val ")"
```

Required Arguments:

Name: **X1**

Type: [vDouble](#)

An argument that specifies the x-coordinate of a point defining the first line.

Name: **Y1**

Type: vDouble

An argument that specifies the y-coordinate of a point defining the first line.

Name: **Angle1**

Type: vDouble

An argument that specifies an angle of the first line relative to the positive x-axis.

Name: **X2**

Type: vDouble

An argument that specifies the x-coordinate of a point defining the second line.

Name: **Y2**

Type: vDouble

An argument that specifies the y-coordinate of a point defining the second line.

Name: **Angle2**

Type: vDouble

An argument that specifies the angle of a second line relative to the positive x-axis.

Return Value:

Type: [vNum](#), [PtgErr](#)

This function returns a custom token grouping of the type vNum containing the x-coordinate of the point where two lines intersect. If any of the arguments **X1**, **Y1**, **X2**, **Y2** are a custom token grouping of the type [vUnitType](#), the unit of the return value is equal to the unit of the first of those arguments that is a vUnitType. If none of those arguments is a vUnitType, the function returns a [PtgNum](#) parse token. If **Angle1** equals **Angle2**, the function returns a PtgErr parse token with an error code equal to #DIV/0.

2.5.3.74 IntersectY

The **IntersectY** function calculates the y-coordinate of the point where two lines intersect. Each line is defined by a point on the line and an angle.

ABNF:

```
IntersectY = "INTERSECTY(" val "," val "," val "," val "," val "," val ")"
```

Required Arguments:

Name: **X1**

Type: [vDouble](#)

An argument that specifies the x-coordinate of a point defining the first line.

Name: **Y1**

Type: vDouble

An argument that specifies the y-coordinate of a point defining the first line.

Name: **Angle1**

Type: vDouble

An argument that specifies an angle of the first line relative to the positive x-axis.

Name: **X2**

Type: vDouble

An argument that specifies a x-coordinate of the point defining the second line.

Name: **Y2**

Type: vDouble

An argument that specifies a y-coordinate of the point defining the second line.

Name: **Angle2**

Type: vDouble

An argument that specifies an angle of the second line relative to the positive x-axis.

Return Value:

Type: [vNum](#), [PtgErr](#)

This function returns a custom token grouping of the type vNum containing the y-coordinate of the point where two lines intersect. If any of the arguments **X1**, **Y1**, **X2**, **Y2** are a custom token grouping of the type [vUnitType](#), the unit of the return value is equal to the unit of the first of those arguments that is a vUnitType. If none of those arguments are a vUnitType, the function returns a [PtgNum](#) parse token. If **Angle1** equals **Angle2**, the function returns a PtgErr parse token with an error code equal to #DIV/0.

2.5.3.75 Intup

The **Intup** function performs a rounding calculation up to the next greater integer value.

ABNF:

```
Intup = "INTUP(" val ")"
```

Required Arguments:

Name: **Arg1**

Type: [vDouble](#)

An argument that specifies a value to be rounded.

Return Value:

Type: [vNum](#)

This function returns a custom token grouping of the type vNum containing the next greater integer value if **Arg1** is not an integer. The unit of the return value is equal to the unit of **Arg1**.

2.5.3.76 Is1D

The **Is1D** function returns whether the [shape](#) contains [BeginX](#), [BeginY](#), [EndX](#), or [EndY](#) cells.

ABNF:

```
Is1D = "IS1D()"
```

Return Value:

Type: [PtgBool](#)

This function returns a PtgBool parse token with the value of **TRUE** if the shape contains any of the following cells: BeginX, BeginY, EndX, or EndY. Otherwise, it returns a PtgBool with the value of **FALSE**.

2.5.3.77 IsErr

The **IsErr** function calculates if the operand is a [PtgErr](#) parse token that does not have an error code equal to #N/A.

ABNF:

```
IsErr = "ISERR(" val ")"
```

Required Arguments:

Name: **Token**

Type: [vAny](#)

An argument that specifies the operand of the calculation.

Return Value:

Type: [PtgBool](#)

This function returns a parse token of the type PtgBool with a value of **TRUE** if **Token** is a PtgErr parse token and the value of **Token** is not equal to #N/A; otherwise, the value of **FALSE** is returned.

2.5.3.78 IsErrNA

The **IsErrNA** function calculates if the operand is a [PtgErr](#) parse token with an error code equal to #N/A.

ABNF:

```
IsErrNa = "ISERRNA(" val ")"
```

Required Arguments:

Name: **Token**

Type: [vAny](#)

An argument that specifies the operand of the calculation.

Return Value:

Type: [PtgBool](#)

This function returns a parse token of the type PtgBool with a value of **TRUE** if **Token** is a PtgErr and the value of **Token** is equal to #N/A; otherwise, the value **FALSE** is returned.

2.5.3.79 IsError

The **IsError** function calculates if the operand is a [PtgErr](#) parse token.

ABNF:

```
IsError = "ISERROR(" val ")"
```

Required Arguments:

Name: **Token**

Type: [vAny](#)

An argument that specifies the operand of the calculation.

Return Value:

Type: [PtgBool](#)

This function returns a parse token of the type [PtgBool](#) with a value of **TRUE** if **Token** is a [PtgErr](#);; otherwise, the value **FALSE** is returned.

2.5.3.80 IsErrValue

The **IsErrValue** function calculates if the operand is a parse token of the type [PtgErr](#) with an error code equal to #VALUE!.

ABNF:

```
IsErrValue = "ISERRVALUE(" val ")"
```

Required Arguments:

Name: **Token**

Type: [vAny](#)

An argument that specifies the operand of the calculation.

Return Value:

Type: [PtgBool](#)

This function returns a parse token of the type [PtgBool](#) with a value of **TRUE**, if **Token** is a [PtgErr](#) and the value of **Token** is equal to #VALUE!; otherwise, the value **FALSE** is returned.

2.5.3.81 IsThemed

The **IsThemed** function returns whether the [shape](#) has a [theme](#) applied.

ABNF:

```
IsThemed = "ISTHEMED()"
```

Return Value:

Type: [PtgBool](#)

This function returns a parse token of the type PtgBool with the value of **FALSE** if any of the following cells on the shape has a value equal to zero: [ColorSchemeIndex](#), [EffectSchemeIndex](#), [ConnectorSchemeIndex](#), or [FontSchemeIndex](#). Otherwise, it returns a PtgBool with the value of **TRUE**.

2.5.3.82 Keywords

The **Keywords** function returns the **Keyword** property of a [web drawing](#).

ABNF:

```
Keyword = "KEYWORD()"
```

Return Value:

Type: [PtgString](#)

This function returns the **Keyword** property, specified in [\[ISO/IEC-29500-2\]](#) section 11, from the [Core XML part](#) of a web drawing.

2.5.3.83 Language

The **Language** function converts the operand from a **culture name** or an LCID to an implementation-specific language identifier.

ABNF:

```
Language = "LANGUAGE(" val ")"
```

Required Arguments:

Name: **Arg1**

Type: [vLanguage](#)

An argument that specifies the language.

Return Value:

Type: [PtgInt](#)

This function returns a parse token of the type PtgInt which uniquely identifies a language in the [vLanguageString](#) custom structure table. The value is specific to the implementation.

2.5.3.84 Left

The **Left** function returns a string containing the first character or characters in a string.

ABNF:

```
Left = "LEFT(" val [ "," val ] ")"
```

Required Arguments:

Name: **Text**

Type: [vString](#)

An argument that specifies a string.

Optional Arguments:

Name: **NumChars**

Type: [vSignedLong](#)

An argument that specifies the number of characters to be returned. The default value is one.

Return Value:

Type: [PtgString](#)

This function returns a parse token of the type PtgString containing the first **NumChars** characters of **Text**.

If **NumChars** is less than zero or greater than the number of characters in **Text**, the function returns a PtgString containing **Text**.

If **NumChars** is equal to zero, the function returns a PtgString containing an empty string.

2.5.3.85 Len

The **Len** function performs a calculation of the length of a string.

ABNF:

```
Len = "LEN(" val ")"
```

Required Arguments:

Name: **Text**

Type: [vString](#)

An argument that specifies a string.

Return Value:

Type: [PtgNum](#)

This function returns a PtgNum parse token containing the number of characters in **Text**.

2.5.3.86 Ln

The **Ln** function performs a natural logarithm calculation.

ABNF:

```
Ln = "LN(" val ")"
```

Required Arguments:

Name: **Arg1**

Type: [vDouble](#)

An argument that specifies the operand of the calculation.

Return Value:

Type: [vNum](#), [PtgErr](#)

This function returns a custom token grouping of the type [vNum](#) containing the natural logarithm of **Arg1**. The unit of the return value is equal to the unit of **Arg1**. If **Arg1** is less than or equal to zero, the function returns a PtgErr parse token with an error code equal to #NUM!.

2.5.3.87 Loc

The **Loc** function performs a transformation of a point from the [coordinate system](#) of another [shape](#) into the coordinate system of the shape associated with the formula.

ABNF:

```
Loc = "LOC(" val ")"
```

Required Arguments:

Name: **Arg1**

Type: [PtgPnt](#)

An argument that specifies a point in the coordinate system of a shape.

Return Value:

Type: PtgPnt

This function transforms the point value of **Arg1** in the coordinate system of the shape associated with **Arg1** into an equivalent point in the coordinate system of the shape associated with the formula and returns the transformed point. If the shape associated with the formula and the shape associated with **Arg1** are not on the same [drawing page](#), the function returns a [PtgErr](#) parse token with an error code equal to #VALUE!.

2.5.3.88 LocToLoc

The **LocToLoc** function performs a transformation of a point from the [coordinate system](#) of one [shape](#) into the coordinate system of another shape.

ABNF:

```
LocToLoc = "LOCTOLOC(" val "," val "," val ")"
```

Required Arguments:

Name: **Point**

Type: [PtgPnt](#)

An argument that specifies a point.

Name: **Source**

Type: [CellRef](#)

An argument that specifies a reference to a [cell](#) in a source shape.

Name: **Destination**

Type: [CellRef](#)

An argument that specifies a reference to a cell in a destination shape.

Return Value:

Type: [PtgPnt](#)

This function returns a transformed point in the coordinate system of the shape of **Destination** from the value of **Point** in a coordinate system of the shape of **Source**. If the **Source** shape and **Destination** shape are not on the same [drawing page](#), the function returns a [PtgErr](#) parse token with an error code equal to #VALUE!.

2.5.3.89 LocToPar

The **LocToPar** function performs a transformation of a point from the [coordinate system](#) of one [shape](#) into the coordinate system of the parent of another shape.

ABNF:

```
LocToPar = "LOCTOPAR(" val "," val "," val ")"
```

Required Arguments:

Name: **Point**

Type: [PtgPnt](#)

An argument that specifies a point.

Name: **Source**

Type: [CellRef](#)

An argument that specifies a reference to a [cell](#) in a source shape.

Name: **Destination**

Type: CellRef

An argument that specifies a reference to a cell in a destination shape.

Return Value:

Type: PtgPnt

This function returns a transformed point in the coordinate system of the parent [sheet](#) of the shape of **Destination** from the value of **Point** in the coordinate system of the shape of **Source**. If the **Source's** shape and **Destination's** shape are not on the same [drawing page](#), the function returns a [PtgErr](#) with an error code equal to #VALUE!.

2.5.3.90 Log10

The **Log10** function performs a base 10 logarithm calculation.

ABNF:

```
Log10 = "LOG10(" val ")"
```

Required Arguments:

Name: **Arg1**

Type: [vDouble](#)

An argument that specifies the operand of the calculation.

Return Value:

Type: [vNum](#), [PtgErr](#)

This function returns a custom token grouping of the type [vNum](#) containing the base 10 logarithm of **Arg1**. The unit of the return value is equal to the unit of **Arg1**. If the value of **Arg1** is less than or equal to zero, the function returns a [PtgErr](#) parse token with an error code equal to #NUM!.

2.5.3.91 Lookup

The **Lookup** function returns the index of a substring in a list of substrings.

ABNF:

```
Lookup = "LOOKUP(" val ", " val [ ", " [ val ] ] ")"
```

Required Arguments:

Name: Substring

Type: [vString](#)

An argument that specifies the substring to find.

Name: List

Type: [vString](#)

An argument that specifies a string consisting of a list of substrings delimited by **Delimiter**. Consecutive delimiters or delimiters at the beginning and/or end of **List** specify empty substrings.

Optional Arguments:

Name: Delimiter

Type: vString

An argument that specifies the delimiter that separates substrings inside **List** with a default value of ";", if missing.

Return Value:

Type: [PtgNum](#)

This function returns a parse token of the type PtgNum containing the zero-based index location of the substring in **List** that matches **Substring**. The leading and trailing spaces of substrings in **List** are ignored for the comparison. If **Substring** contains **Delimiter** or if **Substring** is not found in **List**, the function returns a PtgNum containing a value of -1.

The comparison is performed according to .NET globalization rules based on the value specified by the **Language** property, defined in [\[ISO/IEC-29500-2\]](#) section 11, from the [Core XML part](#) of a [web drawing](#). For more information about .NET globalization rules, see [\[MSDN-ENCLOC\]](#).

2.5.3.92 Lower

The **Lower** function performs lower case conversion.

ABNF:

```
Lower = "LOWER(" val ")"
```

Required Arguments:

Name: Arg1

Type: [vString](#)

An argument that specifies the string to convert.

Return Value:

Type: [PtgString](#)

This function returns a parse token of the type PtgString containing the string converted to lower case. The conversion is performed according to .NET globalization rules based on the value specified by the **Language** property, defined in [\[ISO/IEC-29500-2\]](#) section 11, from the [Core XML part](#) of a [web drawing](#). For more information about .NET globalization rules, see [\[MSDN-ENCLOC\]](#).

2.5.3.93 Lum

The **Lum** function calculates a luminance component, as specified in the hue-saturation-luminance (HSL) color space, of a color value.

ABNF:

```
Lum = "LUM(" val ")"
```

Required Arguments:

Name: **Arg1**

Type: [vColor](#)

An argument that specifies the color.

Return Value:

Type: [PtgNum](#)

This function returns a PtgNum parse token containing the luminance of **Arg1**. The value is less than or equal to 240.

2.5.3.94 LumDiff

The **LumDiff** function calculates the difference in luminance, as specified in the hue-saturation-luminance (HSL) color space, between two color values.

ABNF:

```
LumDiff = "LUMDIFF(" val "," val ")"
```

Required Arguments:

Name: **Arg1**

Type: [vColor](#)

An argument that specifies the first color.

Name: **Arg2**

Type: vColor

An argument that specifies the second color.

Return Value:

Type: [PtgNum](#)

This function returns a PtgNum parse token containing a value that is equal to the luminance of **Arg1** minus the luminance of **Arg2**. This value is greater than or equal to -240 and less than or equal to 240.

2.5.3.95 Magnitude

The **Magnitude** function performs a magnitude calculation of a vector.

ABNF:

```
Magnitude = "MAGNITUDE(" val "," val "," val "," val ")"
```

Required Arguments:

Name: **ConstantRise**

Type: [vDouble](#)

An argument that specifies the constant factor for the rise.

Name: **Rise**

Type: vDouble

An argument that specifies a rise of the vector.

Name: **ConstantRun**

Type: vDouble

An argument that specifies a constant factor for the run.

Name: **Run**

Type: vDouble

An argument that specifies a run of the vector.

Return Value:

Type: [PtgNum](#), [PtgErr](#)

The function returns a PtgNum parse token containing the calculated magnitude. The magnitude calculation is performed using the following formula:

$\text{SQRT}((\text{ConstantRise} * \text{Rise})^2 + (\text{ConstantRun} * \text{Run})^2)$

If **Rise** or **Run** is a [PtgNumMultiDim](#) parse token, the function returns a PtgErr parse token with an error code equal to #DIM!.

2.5.3.96 Manager

The **Manager** function returns the **Manager** property of a [web drawing](#).

ABNF:

```
Manager = "MANAGER()"
```

Return Value:

Type: [PtgString](#)

This function returns the **Manager** property, specified in [\[ISO/IEC-29500-1\]](#) section 22.2.2.15, from the [App XML part](#) of a web drawing.

2.5.3.97 MasterName

The **MasterName** function returns the name of the [master](#) of a [shape](#).

ABNF:

```
MasterName = [ShapeSheetRef "!"] "MASTERNAME(" [ val ] ")"
```

Optional Arguments:

Name: **Arg1**

Type: [PtgInt](#)

An argument to specify the language of the return value.

Return Value:

Type: [PtgString](#)

This function returns the name of the master of a shape in the current [reference context](#) or reference context specified by a [ShapeSheetRef](#) reference token.

If the value of **Arg1** is 750, the **NameU** attribute of the [Master_Type](#) element associated with the master is returned.

If the value of **Arg1** is not 750, the **Name** attribute of the Master_Type element associated with the master is returned.

If the shape does not have a master and the value of **Arg1** is 750, the string "<no master>" is returned.

If the shape does not have a master and the value of **Arg1** is not 750, language-dependent translation of the string "<no master>" is returned.

2.5.3.98 Max

The **Max** function performs a search for the largest number from a list of operands.

ABNF:

```
Max = "MAX(" val * ("," val) ")"
```

Required Arguments:

Name: **Arg1**

Type: [vDouble](#)

An argument that specifies the first operand.

Optional Arguments:

Zero or more operands of type vDouble.

Return Value:

Type: [vNum](#)

This function returns a vNum custom token grouping containing the first occurrence of the largest operand. The unit of the return value is equal to the unit of that operand.

2.5.3.99 Mid

The **Mid** function returns part of a string, starting at the position specified, based on the number of characters specified.

ABNF:

```
Mid = "MID(" val "," val "," val ")"
```

Required Arguments:

Name: **Text**

Type: [vString](#)

An argument that specifies a text string.

Name: **StartPos**

Type: [vSignedLong](#)

An argument that specifies the one-based index in **Text** which represents the beginning of a substring to be returned.

Name: **NumChars**

Type: vSignedLong

An argument that specifies the number of characters to be returned.

Return Value:

Type: [PtgString](#), [PtgErr](#)

This function returns a PtgString parse token containing a substring of **Text**, starting from **StartPos** up to the character at **StartPos** plus **NumChars** -1. If **StartPos** is zero, the function returns a PtgErr parse token with an error code equal to #VALUE!. If **StartPos** is less than zero or greater than the number of characters in **Text**, the function returns a PtgString containing an empty string. If **StartPos** plus **NumChars** -1 exceeds the length of **Text**, or if **NumChars** is less than zero, the function returns a PtgString containing the substring of **Text** starting from **StartPos** up to the end of **Text**.

2.5.3.100 Min

The **Min** function performs a search for the smallest number from a list of operands.

ABNF:

```
Min = "MIN(" val *("," val) ")"
```

Required Arguments:

Name: **Arg1**

Type: [vDouble](#)

An argument that specifies the first operand.

Optional Arguments:

Zero or more operands of type vDouble.

Return Value:

Type: [vNum](#)

This function returns a [vNum](#) custom token grouping containing the first occurrence of the smallest operand. The unit of the return value is equal to the unit of that operand.

2.5.3.101 Minute

The **Minute** function returns a minute from a value representing a date and time.

ABNF:

```
Minute = "MINUTE(" val ["," val] ")"
```

Required Arguments:

Name: **DateTimeArg**

Type: [vAny](#)

An argument that specifies a date and time value.

Optional Arguments:

Name: **Locale**

Type: [vLanguageID](#)

An argument that specifies an LCID to use when parsing **DateTimeArg**. The default value is specified by the **Language** property, defined in [\[ISO/IEC-29500-2\]](#) section 11, from the [Core XML part](#) of a [web drawing](#).

Return Value:

Type: [PtgNum](#), [PtgErr](#)

This function attempts a conversion, as described by the [DateTime](#) function, of **DateTimeArg** to a [PtgDate](#) parse token. If the conversion is successful, the function returns a PtgNum parse token containing the minute component from **DateTimeArg**. If the conversion fails, the function returns a PtgErr parse token with an error code equal to #VALUE!.

2.5.3.102 Modulus

The **Modulus** function performs a modulus calculation.

ABNF:

```
Modulus = "MODULUS(" val "," val ")"
```

Required Arguments:

Name: **Number**

Type: [vDouble](#)

An argument that specifies a number to be divided by **Divisor**.

Name: **Divisor**

Type: [vFloat](#)

An argument that specifies the divisor of the calculation.

Return Value:

Type: [vNum](#), [PtgErr](#)

This function returns a vNum custom token grouping containing the remainder when **Number** is divided by **Divisor**. If **Number** is a vNum, the unit of the return value is equal to the unit of **Number**; otherwise, the function returns a [PtgNum](#) parse token. If **Divisor** is zero, the function returns a PtgErr parse token with an error code equal to #DIV/0.

2.5.3.103 Month

The **Month** function returns a month, according to the Gregorian calendar, from a value representing a date and time.

ABNF:

```
Month = "MONTH(" val ["," val] ")"
```

Required Arguments:

Name: **DateTimeArg**

Type: [vAny](#)

An argument that specifies a date and time value.

Optional Arguments:

Name: **Locale**

Type: [vLanguageID](#)

An argument that specifies an LCID to use when parsing **DateTimeArg**. The default value is specified by the **Language** property, defined in [\[ISO/IEC-29500-2\]](#) section 11, from the [Core XML part](#) of a [web drawing](#).

Return Value:

Type: [PtgNum](#), [PtgErr](#)

This function attempts a conversion, as described by the [DateTime](#) function, of **DateTimeArg** to a [PtgDate](#) parse token. If the conversion is successful, the function returns a [PtgNum](#) parse token containing the month component from **DateTimeArg**. If the conversion fails, the function returns a [PtgErr](#) parse token with an error code equal to #VALUE!.

2.5.3.104 MsoShade

The **MsoShade** function performs a modification to a color by decreasing the luminance component, as specified in the hue-saturation-luminance (HSL) color space, by a percentage.

ABNF:

```
MsoShade = "MSOSHADE(" val "," val ")"
```

Required Arguments:

Name: **Color**

Type: [vColor](#)

An argument that specifies a color.

Name: **Delta**

Type: [vSignedInt](#)

An argument that specifies the percentage to decrease the luminance of **Color**. If the value is less than zero, the luminance is increased.

Return Value:

Type: [PtgColorRGB](#)

This function returns a [PtgColorRGB](#) parse token containing the shaded color. If **Delta** is greater than zero, the luminance of **Color** is decreased by the percentage specified by the absolute value of **Delta**. If **Delta** is less than zero, the luminance of **Color** is increased by the following amount: the percentage specified by **Delta** multiplied by the result of 240 minus the luminance of **Color**. If **Delta** is less than -100, the function sets the value to -100 and performs the operation. If **Delta** is greater than 100, the function sets the value to 100 and performs the operation.

2.5.3.105 MsoTint

The **MsoTint** function modifies a color by increasing the luminance component, as specified in the hue-saturation-luminance (HSL) color space, by a percentage.

ABNF:

```
MsoTint = "MSOTINT(" val "," val ")"
```

Required Arguments:

Name: **Color**

Type: [vColor](#)

An argument that specifies a color.

Name: **Delta**

Type: [vSignedInt](#)

An argument that specifies the percentage to increase the luminance of **Color**. If the value is less than zero, the luminance is decreased.

Return Value:

Type: [PtgColorRGB](#)

This function returns a PtgColorRGB parse token containing the tinted color. If **Delta** is greater than zero, the luminance of **Color** is increased by the following amount: the percentage specified by **Delta** multiplied by the result of 240 minus the luminance of **Color**. If **Delta** is less than zero, the luminance of **Color** is decreased by the percentage specified by the absolute value of **Delta**. If **Delta** is less than -100, the function sets the value to -100 and performs the operation. If **Delta** is greater than 100, the function sets the value to 100 and performs the operation.

2.5.3.106 Mul

The **Mul** function performs a multiplication calculation.

ABNF:

```
Mul = "_MUL(" val "," val ")" / val "*" val
```

Required Arguments:

Name: **Arg1**

Type: [vDoubleEx](#)

An argument that specifies the first operand of the multiplication operation.

Name: **Arg2**

Type: vDoubleEx

An argument that specifies the second operand of the multiplication operation.

Return Value:

Type: [vNum](#), [PtgCy](#), [PtgErr](#)

This function returns a custom token grouping of the type **vNum** (section [2.5.7.4](#)) or a **PtgCy** parse token (section [2.5.4.9](#)) containing **Arg1** multiplied by **Arg2**. The type of the return value is by the following algorithm.

```
SET return type = PtgNum
SET returnDimension = 0
SET returnCurrencyID = 0

IF Arg1.Type = PtgCy AND Arg2.Type != PtgCy THEN
    SET returnType = PtgCy
    SET returnCurrencyID = currencyID of Arg1
```

```

ELSE IF Arg1.Type != PtgCy AND Arg2.Type = PtgCy THEN
    SET returnType = PtgCy
    SET returnCurrencyID = currencyID of Arg2
ELSE IF Arg1.Type = PtgCy AND Arg2.Type = PtgCy THEN
    SET returnType = PtgCy
    IF currencyID of Arg1 = currencyID of Arg2 OR currencyID of Arg2 = 1 THEN
        SET returnCurrencyID = currencyID of Arg1
    ELSE IF currencyID of Arg1 = 1 THEN
        SET returnCurrencyID = currencyID of Arg2
    ELSE
        SET returnType = PtgErr
    END IF
ELSE IF Arg1.Unit = PtgNumPct AND Arg2.Unit = PtgNumPct
    SET returnType = PtgNumPct
    SET returnDimension = 1
ELSE IF Arg1.Unit = PtgNumPct
    SET returnType = PtgNumPct
    SET returnDimension = Arg2.dimension
ELSE IF Arg2.Unit = PtgNumPct
    IF Arg1.Unit is a vUnitType
        SET returnType = Arg1.Unit
        SET returnDimension = Arg1.Dimension
    ELSE
        SET returnType = Arg2.Unit
        SET returnDimension = Arg1.Dimension
    END IF
ELSE IF Arg1.Unit is a vUnitType THEN
    SET returnType = Arg1.Unit
    SET returnDimension = Arg1.Dimension + Arg2.Dimension
ELSE IF Arg2.Unit is a vUnitType THEN
    SET returnType = Arg2.Unit
    SET returnDimension = Arg1.Dimension + Arg2.Dimension
END IF

IF returnType = PtgCy THEN
    Return type is PtgCy with currencyID = returnCurrencyID
ELSE IF returnType = PtgErr THEN
    Return type is PtgErr with error code of #VALUE!
ELSE IF (returnType = PtgAcre OR returnType = PtgHectare) AND returnDimension != 2 THEN
    Return type is PtgNumMultiDim with unit = PtgNumDft and dimension = returnDimension
ELSE IF returnDimension = 0 THEN
    Return type is PtgNum
ELSE IF returnDimension = 1 THEN
    Return type is returnType
ELSE
    Return type is PtgNumMultiDim with unit = returnType and dimension = returnDimension
END IF

```

2.5.3.107 NA

The **NA** function returns the error code #N/A.

ABNF:

```
NA = "NA()"
```

Return Value:

Type: [PtgErr](#)

This function returns a PtgErr parse token with the error code equal to #N/A.

2.5.3.108 Name

The **Name** function returns a name of a [shape](#) or style.

ABNF:

```
Name = [ (ShapeSheetRef / StyleSheetRef) "!" ] "NAME(" [ val ] ")"
```

Optional Arguments:

Name: **Arg1**

Type: [PtgInt](#)

An argument to specify the language of the return value.

Return Value:

Type: [PtgString](#)

This function returns the name of the shape or style in the current [reference context](#) or reference context specified by [ShapeSheetRef](#) or [StyleSheetRef](#).

If the value of **Arg1** is 750, the **NameU** attribute of the [ShapeSheet_Type](#) element or [StyleSheet_Type](#) element associated with the shape or style is returned.

If the value of **Arg1** is not 750, the **Name** attribute of the ShapeSheet_Type element or StyleSheet_Type element associated with the shape or style is returned.

2.5.3.109 Not

The **Not** function performs the Boolean NOT operation.

ABNF:

```
Not = "NOT(" val ")"
```

Required Arguments:

Name: **Value**

Type: [vBoolean](#)

An argument that specifies an operand.

Return Value:

Type: [PtgBool](#)

This function returns a PtgBool parse token containing the value of the Boolean NOT operation on **Value**.

2.5.3.110 Now

The **Now** function returns the current date and time.

ABNF:

```
Now = "NOW()"
```

Return Value:

Type: [PtgDate](#)

This function returns a PtgDate parse token containing the value of current date and time.

2.5.3.111 Nurbs

The **Nurbs** function returns a non-uniform rational B-spline (NURBS).

ABNF:

```
Nurbs = "NURBS(" val "," val "," val "," val *("," val "," val "," val "," val) ")"
```

Required Arguments:

Name: **knotLast**

Type: [vDouble](#)

An argument that specifies the last knot.

Name: **degree**

Type: [vSignedInt](#)

An argument that specifies the degree of the B-spline.

Name: **xType**

Type: [vUnsignedInt](#)

An argument that specifies how to interpret the x-coordinates. If **xType** is zero, the input **xN** is interpreted as [relative coordinates](#). Otherwise, the input **xN** is interpreted in the [coordinate system](#) of the [shape](#).

Name: **yType**

Type: [vUnsignedInt](#)

An argument that specifies how to interpret the y-coordinates. If **yType** is zero, the input **yN** is interpreted as relative coordinates. Otherwise, the input **yN** is interpreted in the coordinate system of the shape.

Optional Arguments:

Additional x-coordinates, y-coordinates, knots, and weights MUST be specified using additional groups of **xN**, **yN**, **knotN**, and **weightN**.

Name: **xN**

Type: vDouble

An argument that specifies a x-coordinate.

Name: **yN**

Type: vDouble

An argument that specifies a y-coordinate.

Name: **knotN**

Type: vDouble

An argument that specifies a knot on the B-spline.

Name: **weightN**

Type: vDouble

An argument that specifies a weight on the B-spline.

Return Value:

Type: [PtgNurbs](#), [PtgErr](#)

This function returns a PtgNurbs parse token containing **knotLast**, **degree**, **xType**, **yType**, **xN**, **yN**, **knotN**, and **weightN**. If the wrong number of arguments is used, the function returns a PtgErr parse token with a value equal to #VALUE!.

2.5.3.112 Or

The **Or** function returns a Boolean value.

ABNF:

```
Or = "OR(" val * ( "," val ) ")"
```

Required Arguments:

Name: **Args**

Type: [vBoolean](#)

A set of arguments that specifies an operand of the calculation.

Return Value:

Type: [PtgBool](#)

This function returns a PtgBool parse token with a value of **TRUE** if any of the arguments are equal to **TRUE**; otherwise, the value of **FALSE** is returned.

2.5.3.113 PageCount

The **PageCount** function returns a count of the number of [foreground drawing pages](#) in a [web drawing](#).

ABNF:

```
PageCount = "PAGECOUNT()"
```

Return Value:

Type: [PtgInt](#)

The number of foreground drawing pages in a web drawing.

2.5.3.114 PageName

The **PageName** function returns a name of a [drawing page](#).

ABNF:

```
PageName = [ (CrossPageRef / PageSheetRef) "!" ] "PAGENAME(" [ val ] ")"
```

Optional Arguments:

Name: **Arg1**

Type: [PtgInt](#)

An argument to specify the language of the return value.

Return Value:

Type: [PtgString](#)

This function returns the name of the drawing page in the current [reference context](#) or reference context specified by [CrossPageRef](#) or [PageSheetRef](#).

If the value of **Arg1** is 750, the **NameU** attribute of the [Page_Type](#) element associated with the drawing page is returned.

If the value of **Arg1** is not 750, the **Name** attribute of the Page_Type element associated with the drawing page is returned.

If the function is called from outside the context of a page, an empty string is returned.

2.5.3.115 PageNumber

The **PageNumber** function returns an index of a [drawing page](#).

ABNF:

```
PageNumber = "PAGENUMBER()"
```

Return Value:

Type: [PtgInt](#)

This function returns an index of the drawing page.

If the drawing page is a [background page](#) or if the function is called outside of a page context, zero is returned.

2.5.3.116 Par

The **Par** function performs a transformation of a point from the [coordinate system](#) of another [shape](#) into the coordinate system of the [parent](#) of the shape associated with the formula.

ABNF:

```
Par = "PAR(" val ")"
```

Required Arguments:

Name: **Arg1**

Type: [PtgPnt](#)

An argument that specifies a point in the coordinate system of a shape.

Return Value:

Type: [PtgPnt](#)

This function transforms a point value of **Arg1** in the coordinate system of the shape associated with **Arg1** into an equivalent point in the coordinate system of the parent [sheet](#) of the shape associated with the formula. If the shape associated with the formula and the shape associated with the **Arg1** are not on the same [drawing page](#), the function returns a [PtgErr](#) parse token with an error code equal to #VALUE!.

2.5.3.117 Pct

The **Pct** function performs a percent conversion on the operand.

ABNF:

```
Pct = "_PCT(" val ")"
```

Required Arguments:

Name: **Value**

Type: [vDouble](#)

An argument that specifies an operand that will be converted to a percent.

Return Value:

Type: [PtgNumPct](#)

This function returns a [PtgNumPct](#) parse token containing **Value** / 100.

2.5.3.118 Pi

The **Pi** function returns the mathematical constant pi.

ABNF:

```
Pi = "PI() "
```

Return Value:

Type: [PtgNum](#)

This function returns a PtgNum parse token containing the value of the mathematical constant pi.

2.5.3.119 Pnt

The **Pnt** function returns a point in the [coordinate system](#) of a [shape](#).

ABNF:

```
Pnt = "PNT(" val "," val ") "
```

Required Arguments:

Name: **X**

Type: [vDouble](#)

An argument that specifies a x-coordinate of the point.

Name: **Y**

Type: vDouble

An argument that specifies a y-coordinate of the point.

Return Value:

Type: [PtgPnt](#)

This function returns a PtgPnt parse token containing a value of **X** and **Y** as coordinates. If **X** or **Y** is a [CellRef](#), the function returns a PtgPnt parse token containing the value of **X**, **Y**, and the shape specified by the CellRef.

2.5.3.120 Pntx

The **Pntx** function returns a value of the x-coordinate of a point.

ABNF:

```
PntX = "PNTX(" val ") "
```

Required Arguments:

Name: **Arg1**

Type: [vNum](#), [PtgPnt](#)

An argument that specifies a point.

Return Value:

Type: vNum

If **Arg1** is a PtgPnt parse token, this function returns a custom token grouping of the type vNum with the value of the x-coordinate of the point. If **Arg1** is a vNum, the function returns **Arg1**.

2.5.3.121 PntY

The **PntY** function returns a value of a y-coordinate of a point.

ABNF:

```
PntY = "PNTY(" val ")"
```

Required Arguments:

Name: **Arg1**

Type: [vNum](#), [PtgPnt](#)

An argument that specifies a point.

Return Value:

Type: vNum

If **Arg1** is a PtgPnt parse token, this function returns a custom token grouping of the type vNum with the value of the y-coordinate of the point. If **Arg1** is a vNum, the function returns **Arg1**.

2.5.3.122 PolyLine

The **PolyLine** function returns a polyline.

ABNF:

```
Polyline = "POLYLINE(" val "," val *("," val "," val) ")"
```

Required Arguments:

Name: **xType**

Type: [vUnsignedInt](#)

An argument that specifies how to interpret the x-coordinates. If **xType** is zero, the input **xN** is interpreted as [relative coordinates](#). Otherwise, the input **xN** is interpreted in the [coordinate system](#) of the [shape](#).

Name: **yType**

Type: vUnsignedInt

An argument that specifies how to interpret the y-coordinates. If **yType** is zero, the input **yN** is interpreted as relative coordinates. Otherwise, the input **yN** is interpreted in the coordinate system of the shape.

Optional Arguments:

Additional x and y-coordinates MUST be specified using additional pairs of **xN** and **yN**.

Name: **xN**

Type: [vDouble](#)

An argument that specifies a x-coordinate.

Name: **yN**

Type: [vDouble](#)

An argument that specifies a y-coordinate.

Return Value:

Type: [PtgPolyline](#), [PtgErr](#)

This function returns a PtgPolyline parse token containing **xType**, **yType**, **xN**, and **yN**. If the wrong number of arguments are used, the function returns a PtgErr parse token with a value equal to #VALUE!.

2.5.3.123 Pow

The **Pow** function performs an exponentiation calculation.

ABNF:

```
Pow = "POW(" val "," val ")" / val "^" val
```

Required Arguments:

Name: **Base**

Type: [vDouble](#)

An argument that specifies a number to be raised to the power of **Exponent**.

Name: **Exponent**

Type: [vDouble](#)

An argument that specifies an exponent by which to raise **Base**.

Return Value:

Type: [vNum](#), [PtgErr](#)

This function returns the custom token grouping **vNum** (section [2.5.7.4](#)) or **PtgErr** parse token (section [2.5.4.14](#)) containing **Base** raised to the power of **Exponent**. The type of the return value is calculated by the following algorithm.

```

SET returnType = PtgNum
SET returnError = #NUM!
SET returnDimension = 0

IF Base.Value = 0 THEN
    IF Exponent.Value = 0 THEN
        SET returnType = PtgErr
        SET returnError = #NUM!
    ELSE IF Exponent.Value < 0 THEN
        SET returnType = PtgErr
        SET returnError = #DIV/0
    END IF
ELSE IF Base.Value < 0 AND Exponent is not an integer THEN
    SET returnType = PtgErr
    SET returnError = #DIM!
ELSE IF Base.Unit = PtgNumPct THEN
    SET returnType = PtgNumPct
    SET returnDimension = 1
ELSE
    SET returnType = Base.Unit
    SET returnDimension = Base.Dimension * Exponent.Value
END IF

IF returnType = PtgErr THEN
    Return type is PtgErr with error code of returnError
ELSE IF returnDimension = 0 THEN
    Return type is PtgNum
ELSE IF returnDimension = 1 THEN
    Return type is returnType
ELSE
    Return type is PtgNumMultiDim with unit = returnType and dimension = returnDimension
END IF

```

2.5.3.124 Rad

The **Rad** function converts a value to an angle in radians.

ABNF:

```
Rad = "RAD(" val ")"
```

Required Arguments:

Name: **Angle**

Type: [vDouble](#)

An argument that specifies an angle.

Return Value:

Type: [PtgAngRad](#)

This function returns a parse token of the type PtgAngRad. If **Angle** is a [vAngle](#) custom token grouping, the value is equal to the value of **Angle**. Otherwise, **Angle** is interpreted as an angle in degrees and the return value is equal to:

$\pi / 180.0 * \text{value of } \mathbf{Angle}$

2.5.3.125 Rand

The **Rand** function generates a random number.

ABNF:

```
Rand = "RAND()"
```

Return Value:

Type: [PtgNum](#)

This function returns a PtgNum parse token containing a random double precision floating-point number greater than or equal to 0.0 and less than 1.0.

2.5.3.126 Ref

The **Ref** function returns an error code #REF!.

ABNF:

```
Ref = "REF()"
```

Return Value:

Type: [PtgErr](#)

This function returns a PtgErr parse token with the error code equal to #REF!.

2.5.3.127 Replace

The **Replace** function replaces part of a text string with another text string.

ABNF:

```
Replace = "REPLACE(" val ", " val ", " val ", " val ")"
```

Required Arguments:

Name: **SourceText**

Type: [vString](#)

An argument that specifies a string to perform replacement on.

Name: **StartPos**

Type: [vSignedLong](#)

An argument that specifies the one-based starting position in **SourceText** where replacement begins.

Name: **NumChars**

Type: vSignedLong

An argument that specifies the number of characters in **SourceText** to be replaced by **ReplaceText**.

Name: **ReplaceText**

Type: vString

An argument that specifies a string to use for replacement.

Return Value:

Type: [PtgString](#), [PtgErr](#)

This function returns a PtgString parse token containing **SourceText** modified with the replaced text. If **StartPos** is less than or equal to zero or greater than the number of characters in **SourceText**, the function returns a PtgString containing **SourceText** with **ReplaceText** appended at the end. If **StartPos** plus **NumChars** -1 exceeds the length of **SourceText**, or if **NumChars** is less than zero, the function returns a PtgString containing **SourceText** truncated starting from **StartPos** and with **ReplaceText** appended at the end.

2.5.3.128 RGB

The **RGB** function calculates an RGB color value as a combination of red, green and blue components.

ABNF:

```
RGB = "RGB(" val "," val "," val ")"
```

Required Arguments:

Name: **Red**

Type: [vUnsignedInt](#)

An argument that specifies the intensity of red.

Name: **Green**

Type: vUnsignedInt

An argument that specifies the intensity of green.

Name: **Blue**

Type: vUnsignedInt

An argument that specifies the intensity of blue.

Return Value:

Type: [PtgColorRGB](#)

This function returns a PtgColorRGB parse token containing a color value. The byte that specifies red in the PtgColorRGB is equal to **Red**. The byte that specifies green in the PtgColorRGB is equal to **Green**. The byte that specifies blue in the PtgColorRGB is equal to **Blue**. If the value of any of the arguments is greater than 0xFF, the function sets the argument's value to the result of the bitwise AND operation between the original value and 0xFF, before performing the operation.

2.5.3.129 Right

The **Right** function returns a string containing the last character or characters in a string.

ABNF:

```
Right = "RIGHT(" val [ ",", val ] ")"
```

Required Arguments:

Name: **Text**

Type: [vString](#)

An argument that specifies a string.

Optional Arguments:

Name: **NumChars**

Type: [vSignedLong](#)

An argument that specifies the number of characters to be returned. The default value is one.

Return Value:

Type: [PtgString](#)

This function returns a PtgString parse token containing the last **NumChars** characters of **Text**.

If **NumChars** is less than zero or greater than the number of characters in **Text**, the function returns a PtgString containing **Text**.

If **NumChars** is equal to zero, the function returns a PtgString containing an empty string.

2.5.3.130 Round

The **Round** function performs a rounding calculation.

ABNF:

```
Round = "ROUND(" val ",", val ")"
```

Required Arguments:

Name: **Number**

Type: [vDouble](#)

An argument that specifies a number to round.

Name: **Digits**

Type: [vSignedInt](#)

An argument that specifies the decimal place to use for the rounding operation.

Return Value:

Type: [vNum](#)

This function returns a vNum custom token grouping containing the rounded value of **Number**, as described by the following table.

Condition	Return value
Digits > 0	The function returns Number rounded to Digits places to the right of the decimal point.
Digits = 0	The function returns Number rounded to an integer.
Digits < 0	The function returns Number rounded to negative Digits places to the left of the decimal point.

The unit of the return value is equal to the unit of **Number**. If **Digits** is less than or equal to -9 or greater than 15, the function returns **Number**.

2.5.3.131 Sat

The **Sat** function calculates the saturation component, as specified in the hue-saturation-luminance (HSL) color space, of a color value.

ABNF:

```
Sat = "SAT(" val ")"
```

Required Arguments:

Name: **Arg1**

Type: [vColor](#)

An argument that specifies the color.

Return Value:

Type: [PtgNum](#)

This function returns a [PtgNum](#) parse token containing the saturation of **Arg1**. The value is less than or equal to 240.

2.5.3.132 SatDiff

The **SatDiff** function calculates the difference in saturation, as specified in the hue-saturation-luminance (HSL) color space, between two color values.

ABNF:


```
SatDiff = "SATDIFF(" val "," val ")"
```

Required Arguments:

Name: **Arg1**

Type: [vColor](#)

An argument that specifies the first color.

Name: **Arg2**

Type: vColor

An argument that specifies the second color.

Return Value:

Type: [PtgNum](#)

This function returns a PtgNum parse token containing a value that is equal to the saturation of **Arg1** minus the saturation of **Arg2**. This value is greater than or equal to -240 and less than or equal to 240.

2.5.3.133 Second

The **Second** function returns the second component from a value representing a date and time.

ABNF:

```
Second = "SECOND(" val ["," val] ")"
```

Required Arguments:

Name: **DateTimeArg**

Type: [vAny](#)

An argument that specifies a date and time value.

Optional Arguments:

Name: **Locale**

Type: [vLanguageID](#)

An argument that specifies an LCID to use when parsing **DateTimeArg**. The default value is specified by the **Language** property, defined in [\[ISO/IEC-29500-2\]](#) section 11, from the [Core XML part](#) of a [web drawing](#).

Return Value:

Type: [PtgNum](#), [PtgErr](#)

This function attempts a conversion, as described by the [DateTime](#) function, of **DateTimeArg** to a [PtgDate](#) parse token. If the conversion is successful, the function returns a [PtgNum](#) parse token

containing the second component from **DateTimeArg**. If the conversion fails, the function returns a PtgErr parse token with an error code equal to #VALUE!.

2.5.3.134 SetAtRef

The **SetAtRef** function returns the value of a [cell](#).

ABNF:

```
SetAtRef = "SETATREF(" val ")"
```

Required Arguments:

Name: **Arg1**

Type: [CellRef](#)

An argument that specifies a reference to a cell.

Return Value:

Type: [vAny](#)

This function returns the value of the cell referenced by **Arg1**.

2.5.3.135 SetAtRefEval

The **SetAtRefEval** function returns the value of the passed argument.

ABNF:

```
SetAtRefEval = "SETATREFEVAL(" val ")"
```

Required Arguments:

Name: **Arg1**

Type: [vAny](#)

An argument to be returned.

Return Value:

Type: vAny

This function returns the value of **Arg1**.

2.5.3.136 SetAtRefExpr

The **SetAtRefExpr** function returns the value of the passed argument.

ABNF:

```
SetAtRefExpr = "SETATREFEXPR(" [ val ] ")"
```

Optional Arguments:

Name: **Arg1**

Type: [vAny](#)

An argument to be returned. The default value is a [PtgNum](#) parse token with a value of zero.

Return Value:

Type: vAny

This function returns the value of **Arg1**.

2.5.3.137 Shade

The **Shade** function decreases the luminance, as specified in the hue-saturation-luminance (HSL) color space, of a color value.

ABNF:

```
Shade = "SHADE(" val "," val ")"
```

Required Arguments:

Name: **Color**

Type: [vColor](#)

An argument that specifies a color.

Name: **Delta**

Type: [vSignedInt](#)

An argument that specifies an amount to modify the luminance of **Color**.

Return Value:

Type: [PtgColorRGB](#)

This function returns a [PtgColorRGB](#) parse token containing a color value with decreased luminance. If **Delta** is less than zero, the luminance is increased.

2.5.3.138 ShapeText

The **ShapeText** function returns the [text](#) of a specified [shape](#).

ABNF:

```
ShapeText = "SHAPETEXT"( val [ "," val ] )"
```

Required Arguments:

Name: **Arg1**

Type: [CellRef](#)

This argument references a [TheText cell](#).

Optional Arguments:

Name: **Arg2**

Type: [vUnsignedInt](#)

This argument specifies the operations to perform on the text.

The value is zero or a combination of values from this table.

Value	Meaning
0x01	Include discretionary hyphens.
0x02	Don't include expanded text from fields.
0x04	Convert tabs to a single space.
0x08	Convert tabs to spaces.
0x10	Convert CR and LF to spaces.
0x20	Convert typographer's quotes to straight quotes.
0x40	Convert contiguous whitespace into a single space.

Return Value:

Type: [PtgString](#)

The function returns a [PtgString](#) parse token. If the value of **Arg1** is a TheText cell of a [sheet](#), this function returns the text from the shape after specified operations are applied. Otherwise, this function returns an empty string.

2.5.3.139 Sign

The **Sign** function returns the sign of a number.

ABNF:

```
Sign = "SIGN(" val ["," val] ")"
```

Required Arguments:

Name: **Number**

Type: [vDouble](#)

An argument that specifies the operand of the calculation.

Optional Arguments:

Name: **FuzzValue**

Type: [vDouble](#)

An argument that specifies the tolerance. The default value is 1E-9 (0.000000001).

Return Value:

Type: [PtgInt](#)

This function returns a PtgInt parse token representing the sign of **Number**. If **Number** is greater than the absolute value of **FuzzValue**, the function returns one. If **Number** is less than the negative of the absolute value of **FuzzValue**, the function returns -1; otherwise, the function returns zero.

2.5.3.140 Sin

The **Sin** function performs a sine calculation.

ABNF:

```
Sin = "SIN(" val ")"
```

Required Arguments:

Name: **Arg1**

Type: [vDouble](#)

An argument that specifies the operand of the calculation. If **Arg1** is not a custom token grouping of the type [vAngle](#), the value of **Arg1** is assumed to have the unit of radians.

Return Value:

Type: [PtgNum](#)

This function returns a PtgNum parse token containing the sine of **Arg1**.

2.5.3.141 SinH

The **SinH** function performs a hyperbolic sine calculation.

ABNF:

```
SinH = "SINH(" val ")"
```

Required Arguments:

Name: **Arg1**

Type: [vDouble](#)

An argument that specifies the operand of the calculation. If **Arg1** is not a custom token grouping of the type [vAngle](#), the value of **Arg1** is assumed to have the unit of radians.

Return Value:

Type: [PtgNum](#)

This function returns a PtgNum parse token containing the hyperbolic sine of **Arg1**.

2.5.3.142 Sqrt

The **Sqrt** function performs a square root calculation.

ABNF:

```
Sqrt = "SQRT(" val ")"
```

Required Arguments:

Name: **Number**

Type: [vDouble](#)

An argument that specifies the operand of the calculation.

Return Value:

Type: [vNum](#), [PtgErr](#)

This function returns a vNum custom token grouping containing the square root of **Number**. The unit of the return value is equal to the unit of **Number**. If the dimension of **Number** is greater than two, the function returns a [PtgNumMultiDim](#) parse token with value equal to the square root of **Number**, unit equal to the unit of **Number**, and dimension equal to the dimension of **Number** divided by two. If **Number** is less than zero, the function returns a PtgErr parse token with an error code equal to #NUM!. If the dimension of **Number** is not divisible by two, the function returns a PtgErr with an error code equal to #DIM!.

2.5.3.143 StrSame

The StrSame function determines whether two strings are equivalent.

ABNF:

```
StrSame = "STRSAME(" val "," val "[" val "]" ")"
```

Required Arguments:

Name: **FirstString**

Type: [vString](#)

An argument that specifies the first string to be compared.

Name: **SecondString**

Type: vString

An argument that specifies the second string to be compared.

Optional Arguments:

Name: **IgnoreCase**

Type: [vBoolean](#)

An argument that specifies whether the comparison is case insensitive. A value of **TRUE** indicates that case is ignored; otherwise, the default value is **FALSE**.

Return Value:

Type: [PtgBool](#)

This function returns a PtgBool parse token with a value of **TRUE**, if the strings are equivalent; otherwise, the value of **FALSE** is returned. The comparison is performed according to .NET globalization rules based on the value specified by the **Language** property, defined in [\[ISO/IEC-29500-2\]](#) section 11, from the [Core XML part](#) of a [web drawing](#). For more information about .NET globalization rules, see [\[MSDN-ENCLOC\]](#).

2.5.3.144 StrSameEx

The **StrSameEx** function determines whether two text strings are the same.

ABNF:

```
StrSameEx = "STRSAMEEX(" val "," val "," val "," val ")"
```

Required Arguments:

Name: **FirstText**

Type: [vString](#)

An argument that specifies the first string to be compared.

Name: **SecondText**

Type: [vString](#)

An argument that specifies the second string to be compared.

Name: **Locale**

Type: [vLanguageID](#)

An argument that specifies the LCID of the culture used by the string comparison, according to .Net globalization rules. A value of zero specifies the invariant culture. For more information about .NET globalization rules, see [\[MSDN-ENCLOC\]](#).

Name: **Flag**

Type: [vSignedLong](#)

An argument that specifies additional rules to be used in the comparison. The value is a combination of values from the following table. The rules given in the following table correspond to members of the .NET CompareOptions enumeration, as described in [\[MSDN-CompareOptions\]](#).

Value	Meaning
0x00	No additional rules apply.

Value	Meaning
0x01	Ignore case.
0x02	Ignore non-spacing combining characters.
0x04	Ignore symbols and punctuation.
0x10000	Ignore differences between hiragana and katakana characters that represent the same phonetic sound.
0x20000	Ignore character width, or differences between the single-byte and double-byte representations of the same character.

Return Value:

Type: [PtgBool](#)

This function returns a PtgBool parse token containing **TRUE**, if the strings are the same. If the strings are not the same or if the **Locale** or **Flag** arguments are not valid, this function returns a PtgBool containing a value of **FALSE**.

2.5.3.145 Sub

The **Sub** function performs a subtraction calculation.

ABNF:

```
Sub = "_SUB(" val "," val ")" / val "-" val
```

Required Arguments:

Name: **Arg1**

Type: [vDoubleEx](#)

An argument that specifies the first operand of the calculation.

Name: **Arg2**

Type: vDoubleEx

An argument that specifies the second operand of the calculation.

Return Value:

Type: [vNum](#), [PtgCy](#), [PtgErr](#)

This function returns a custom token grouping of the type **vNum** (section [2.5.7.4](#)) or a **PtgCy** parse token (section [2.5.4.9](#)) containing **Arg1** minus **Arg2**. The type of the return value is calculated by the following algorithm.

```
SET returnType = PtgNum
SET returnDimension = 0
SET returnCurrencyID = 0

IF Arg1.Type = PtgCy AND Arg2.Type != PtgCy THEN
```



```

    SET returnType = PtgCy
    SET returnCurrencyID = currencyID of Arg1
ELSE IF Arg1.Type != PtgCy AND Arg2.Type = PtgCy THEN
    SET returnType = PtgCy
    SET returnCurrencyID = currencyID of Arg2
ELSE IF Arg1.Type = PtgCy AND Arg2.Type = PtgCy THEN
    SET returnType = PtgCy
    IF currencyID of Arg1 = currencyID of Arg2 OR currencyID of Arg2 = 1 THEN
        SET returnCurrencyID = currencyID of Arg1
    ELSE IF currencyID of Arg1 = 1 THEN
        SET returnCurrencyID = currencyID of Arg2
    ELSE
        SET returnType = PtgErr
    END IF
ELSE IF Arg1.Type = PtgDate AND Arg2.Type = PtgDate THEN
    SET returnType = PtgTDurDft
    SET returnDimension = 1
ELSE IF Arg1.Unit = PtgNumDft AND Arg2.Unit is a vUnitType THEN
    SET returnType = Arg2.Unit
    SET returnDimension = 1
ELSE IF Arg1.Unit is a vUnitType THEN
    SET returnType = Arg1.Unit
    IF Arg2.Dimension = 0 OR Arg2.Dimension = Arg1.Dimension THEN
        SET returnDimension = Arg1.Dimension
    ELSE
        SET returnDimension = 1
    END IF

    IF (returnType = PtgAcre OR returnType = PtgHectare) AND returnDimension != 2 THEN
        SET returnType = PtgNumDft
    END IF
ELSE IF Arg2.Unit is a vUnitType THEN
    SET returnType = Arg2.Unit
    IF Arg1.Dimension = 0 OR Arg2.Dimension = Arg1.Dimension THEN
        SET returnDimension = Arg2.Dimension
    ELSE
        SET returnDimension = 1
    END IF

    IF (returnType = PtgAcre OR returnType = PtgHectare) AND returnDimension != 2 THEN
        SET returnType = PtgNumDft
    END IF
END IF
IF returnType = PtgCy THEN
    Return type is PtgCy with currencyID = returnCurrencyID
ELSE IF returnType = PtgErr THEN
    Return type is PtgErr with error code of #VALUE!
ELSE IF returnDimension = 0 THEN
    Return type is PtgNum
ELSE IF returnDimension = 1 THEN
    Return type is returnType
ELSE
    Return type is PtgNumMultiDim with unit = returnType and dimension = returnDimension
END IF

```

2.5.3.146 Subject

The **Subject** function returns a **Subject** property of a [web drawing](#).

ABNF:

```
Subject = "SUBJECT() "
```

Return Value:

Type: [PtgString](#)

This function returns the **Subject** property, specified in [\[ISO/IEC-29500-2\]](#) section 11, from the [Core XML part](#) of a web drawing.

2.5.3.147 Substitute

The **Substitute** function returns a string where substring substitution has been performed.

ABNF:

```
Substitute = "SUBSTITUTE(" val "," val "," val [ "," [ val ] [ "," [ val ] ] ] ")"
```

Required Arguments:

Name: **SourceString**

Type: [vString](#)

An argument that specifies a string to perform substitution on.

Name: **Substring**

Type: [vString](#)

An argument that specifies a substring in **SourceString** to be replaced.

Name: **SubstituteString**

Type: [vString](#)

An argument that specifies a string to use for substitution.

Optional Arguments:

Name: **Index**

Type: [vSignedInt](#)

An argument that specifies a one based index, among multiple instances of **Substring** in **SourceString**, is to be substituted.

Name: **IgnoreCase**

Type: [vBoolean](#)

An argument that specifies whether the search for **Substring** in **SourceString** is case insensitive. A value of **TRUE** specifies that case is ignored. If missing, the default value is **FALSE**.

Return Value:

Type: [PtgString](#), [PtgErr](#)

This function returns a [PtgString](#) parse token containing **SourceString** modified with the substituted text. If **Index** is zero, the function returns a [PtgErr](#) parse token with an error code equal to #VALUE!. If **Index** is less than zero or greater than the number of **Substring** instances in **SourceString**, or if **Substring** is not found in **SourceString**, the function returns a [PtgString](#) containing **SourceString** without any substitution. If **Index** is missing, all instances of **Substring** are substituted. The search is performed according to .NET globalization rules based on the value specified by the **Language** property, defined in [\[ISO/IEC-29500-2\]](#) section 11, from the [Core XML part](#) of a [web drawing](#). For more information about .NET globalization rules, see [\[MSDN-ENCLOC\]](#).

2.5.3.148 Sum

The **Sum** function performs a sum calculation.

ABNF:

```
Sum = "SUM(" val *(", " val) ")"
```

Required Arguments:

Name: **Arg1**

Type: [vDouble](#)

An argument that specifies the first operand of the calculation.

Optional Arguments:

Zero or more subsequent operands of type [vDouble](#).

Return Value:

Type: [vNum](#)

This function returns a custom token grouping of the type [vNum](#) containing the sum of all operands. If any of the arguments is a [vUnitType](#) custom token grouping, the unit of the return value is equal to the unit of the first argument that is a [vUnitType](#); otherwise, a [PtgNum](#) parse token is returned.

2.5.3.149 Tan

The **Tan** function performs a tangent calculation.

ABNF:

```
Tan = "TAN(" val ")"
```

Required Arguments:

Name: **Angle**

Type: [vDouble](#)

An argument that specifies the operand of the calculation. If **Arg1** is not a [vAngle](#) custom token, the value of **Arg1** is assumed to have the unit of radians.

Return Value:

Type: [PtgNum](#)

This function returns a PtgNum parse token containing the tangent of the value of **Arg1**.

2.5.3.150 TanH

The **TanH** function performs a hyperbolic tangent calculation.

ABNF:

```
TanH = "TANH(" val ")"
```

Required Arguments:

Name: **Angle**

Type: [vDouble](#)

An argument that specifies the operand of the calculation. If **Arg1** is not a [vAngle](#) custom token grouping, the value of **Arg1** is assumed to have the unit of radians.

Return Value:

Type: [PtgNum](#)

This function returns a PtgNum parse token containing the hyperbolic tangent of the value of **Arg1**.

2.5.3.151 TextHeight

The **TextHeight** function returns the height of the composed [text](#) in a [shape](#).

ABNF:

```
TextHeight = "TEXTHEIGHT(" val "," val ")"
```

Required Arguments:

Name: **Shape**

Type: [CellRef](#)

An argument that specifies a reference to a [cell](#) in a shape.

Name: **MaximumWidth**

Type: [vDouble](#)

An argument that specifies the maximum allowable width of the composed text.

Return Value:

Type: [PtgNumDft](#), [PtgErr](#)

This function returns a PtgNumDft parse token containing the height of the composed text in the shape referenced by **Shape**. If **MaximumWidth** is specified, the text composition fits the longest line of composed text within **MaximumWidth**. If **Shape** is not a reference to a cell specified by a [TheText Cell Type](#) element, the function returns a PtgErr parse token with an error code equal to #VALUE!.

2.5.3.152 TextWidth

The **TextWidth** function returns the width of the composed [text](#) in a [shape](#).

ABNF:

```
TextWidth = "TEXTWIDTH(" val [ "," val ] ")"
```

Required Arguments:

Name: **Shape**

Type: [CellRef](#)

An argument that specifies a reference to a [cell](#) in a shape.

Optional Arguments:

Name: **MaximumWidth**

Type: [vDouble](#)

An argument that specifies the maximum allowable width of the composed text.

Return Value:

Type: [PtgNumDft](#), [PtgErr](#)

This function returns a PtgNumDft parse token containing the width of the composed text in the shape referenced by **Shape**. If **MaximumWidth** is specified, the text composition fits the longest line of composed text within **MaximumWidth**. If **Shape** is not a reference to a cell specified by a [TheText Cell Type](#) element, the function returns a PtgErr parse token with an error code equal to #VALUE!.

2.5.3.153 Theme

The **Theme** function returns a [fixed theme](#) property value.

ABNF:

```
Theme = "THEME(" val ")"
```

Required Arguments:

Name: **ThemeProperty**

Type: [vThemeString](#)

An argument that specifies the property to be returned.

Return Value:

Type: [vThemeColor](#), [vThemeEffect](#), [PtgErr](#)

If the **ThemeProperty** is a fixed theme color scheme property as specified by the value "Color" in the "Scheme" column in the vThemeString table and the value of the structure of the [Value Cell_Type](#) child element of the [msvThemeColors Row_Type](#) child element of a [User Section_Type](#) element is less than 254, this function returns vThemeColor. The fixed theme index is specified by the value of the structure of the Value Cell_Type child element of the msvThemeColors Row_Type element and the fixed theme property is specified by **ThemeProperty**. If the **V** attribute of the Value Cell_Type child element of the msvThemeColors Row_Type element has a value equal to 254 and the argument of the [USE function token](#) of the **F** attribute of the Value Cell_Type child element is equal to the **UniqueID** attribute of a [Master_Type](#) element associated with a [master](#), the **ThemeProperty** argument specifies a [custom fixed color scheme](#) property value specified by the Value Cell_Type child element of the User Row_Type element specified by the "User Row_Type" column in the vThemeString table.

If the **ThemeProperty** is a fixed theme effect scheme property as specified by the value "Effect" in the "Scheme" column in vThemeString table and the value of the structure of the Value Cell_Type child element of the [msvThemeEffects Row_Type](#) child element of a User Section_Type element is less than 254, this function returns vThemeEffect. The fixed theme index is specified by the value of the structure of the Value Cell_Type child element of the msvThemeEffects Row_Type element and the fixed theme property is specified by **ThemeProperty**. If the **V** attribute of the Value Cell_Type child element of the msvThemeEffects Row_Type element has a value equal to 254 and the argument of the USE function token of the **F** attribute of the Value Cell_Type child element is equal to the **UniqueID** attribute of a Master_Type element associated with a master, the **ThemeProperty** argument specifies a custom fixed effect scheme property value specified by the Value Cell_Type child element of the User Row_Type element specified by the "User Row_Type" column in the vThemeString table.

If **ThemeProperty** is not found in the table of vThemeString, this function returns a PtgErr parse token with a value equal to #VALUE!.

2.5.3.154 ThemeCBV

The **ThemeCBV** function returns a color with modified luminance and saturation, as specified in the hue-saturation-luminance (HSL) color space, using the tint ([\[ISO/IEC-29500-1\]](#) section 20.1.2.3.34) and shade ([\[ISO/IEC-29500-1\]](#) section 20.1.2.3.31) color modifiers specified by a fill gradient [stop fill property](#) of a [dynamic theme](#).

ABNF:

```
ThemeCBV = "THEMECBV(" val "," val ")"
```

Required Arguments:

Name: **Color**

Type: [vColor](#)

An argument that specifies a color.

Name: **StopNum**

Type: [PtgByte](#)

An argument that specifies the fill gradient stop number.

Return Value:

Type: [PtgColorRGB](#), [PtgErr](#)

This function returns the **Color** argument modified by the tint ([ISO/IEC-29500-1] section 20.1.2.3.34) and shade ([ISO/IEC-29500-1] section 20.1.2.3.31) color modifiers of the color of a **gs** element as specified by the **CT_GradientStop** type specified in [ISO/IEC-29500-1] section 20.1.8.36 of the one-based index position specified by the **StopNum** argument in a **gsLst** child element as specified by the **CT_GradientStopList** type specified in [ISO/IEC-29500-1] section 20.1.8.37 of a **gradFill** element as specified by the **CT_GradientFillProperties** type specified in [ISO/IEC-29500-1] section 20.1.8.33 of the [Theme XML Part](#) associated with the dynamic theme.

If the value of the structure of a [ThemeIndex](#), [ColorSchemeIndex](#), [EffectSchemeIndex](#), [ConnectorSchemeIndex](#), or [FontSchemeIndex](#) [Cell_Type](#) element in the containing [shape](#), [master](#), or [style](#) is equal to zero, this function returns a PtgColorRGB parse token with a value equal to the **Color** argument.

If the value of the **StopNum** argument is greater than 10 or less than one, this function returns a PtgErr parse token with a value equal to #VALUE!.

2.5.3.155 ThemeGuard

The **ThemeGuard** function returns the value of the passed argument.

ABNF:

```
ThemeGuard = "THEMEGUARD(" val ")"
```

Required Arguments:

Name: Arg1

Type: [vAny](#)

An argument to be returned.

Return Value:

Type: vAny

This function returns the value of **Arg1**.

2.5.3.156 ThemeProp

The **ThemeProp** function returns the [embellishment](#) and multiformat property values of a [dynamic theme](#).

ABNF:

```
ThemeProp = "THEMEPROP(" val ")"
```

Required Arguments:

Name: **Arg**

Type: [vString](#)

Return Value:

Type: [PtgByte](#), [PtgErr](#)

If the value of the **Arg** argument is equal to "embellishment", this function returns the embellishment property value from the [dynamic theme](#). If the value of the **Arg** argument is equal to "multiformat", this function returns the multiformat property value from the dynamic theme.

If the value of the structure of a [ThemeIndex](#), [ColorSchemeIndex](#), [EffectSchemeIndex](#), [ConnectorSchemeIndex](#), or [FontSchemeIndex](#) [Cell_Type](#) element in the containing [shape](#), [master](#), or style is equal to zero and if the value of the **Arg** argument is equal to "embellishment" or "multiformat", this function returns the value zero.

If the value of the **Arg** argument is not equal to "embellishment" or "multiformat", this function returns a PtgErr with a value equal to #VALUE!.

2.5.3.157 ThemeRestore

The **ThemeRestore** function returns a value of zero.

ABNF:

```
ThemeRestore = "THEMERESTORE(" val ")"
```

Required Arguments:

Name: Arg1

Type: [vAny](#)

An argument to be ignored.

Return Value:

Type: [PtgInt](#)

This function returns a PtgInt parse token with a value of zero.

2.5.3.158 ThemeVal

The **ThemeVal** function returns a [dynamic theme](#) property value.

ABNF:

```
ThemeVal = "THEMEVAL(" [ val ] "," [ val ] ")"
```

Optional Arguments:

Name: **ThemeProperty**

Type: [vDynamicThemeString](#)

An argument that specifies a property to be returned.

Name: **Arg2**

Type: [vAny](#)

An argument to be returned.

Return Value:

Type: [PtgColorRGB](#), [vFont](#), [PtgNumPct](#), [PtgNum](#), [PtgTypPt](#), [PtgNumI](#), [PtgBool](#), [vAngle](#), [PtgByte](#), [vLength](#), [PtgInt](#), [vAny](#), [PtgErr](#)

If this function is called without argument, it returns the dynamic theme property value of the [Cell_Type](#) element that it resides in directly without invoking [theme inheritance](#). If this function is called with an argument, it returns the property value from the dynamic theme specified by the **ThemeProperty** argument directly without invoking theme inheritance.

If the **V** attribute of the [ColorSchemeIndex](#) [Cell_Type](#) element of a [shape](#), [master](#), or style is equal to 65535 and the argument of the [USE function token](#) of the **F** attribute of the [ColorSchemeIndex](#) [Cell_Type](#) element is equal to the **UniqueID** attribute of a [Master_Type](#) element associated with a master, the **ThemeProperty** argument specifies a [custom dynamic theme color scheme](#) property value specified by the [Value](#) [Cell_Type](#) child element of the [User Row_Type](#) elements specified in the "User Row_Type" column in the [vDynamicThemeString](#) table for the arguments "Dark1", "Light1", "AccentColor", "AccentColor2", "AccentColor3", "AccentColor4", "AccentColor5", "AccentColor6", and "BackgroundColor".

If the value of the structure of a [ThemeIndex](#), [ColorSchemeIndex](#), or [FontSchemeIndex](#) [Cell_Type](#) element in the containing shape, master, or style is equal to zero and **Arg2** is not specified, this function returns the property value specified by the "No Theme" column in the [vDynamicThemeString](#) table. If the value of the structure of a [ThemeIndex](#), [ColorSchemeIndex](#), [EffectSchemeIndex](#), [ConnectorSchemeIndex](#), or [FontSchemeIndex](#) [Cell_Type](#) element in the containing shape, master, or style is equal to zero and **Arg2** is specified, this function returns the value of **Arg2**.

If the value of the **ThemeProperty** argument is not found in the [vDynamicThemeString](#) table, this function returns a [PtgErr](#) parse token with a value equal to #VALUE!.

2.5.3.159 Time

The **Time** function returns a time from values representing an hour, minute, and second.

ABNF:

```
Time = "TIME(" val "," val "," val ")"
```

Required Arguments:

Name: **Hour**

Type: [vUnsignedInt](#)

An argument that specifies an offset in hours from midnight.

Name: **Minute**

Type: vUnsignedInt

An argument that specifies an offset in minutes from **Hour**.

Name: **Second**

Type: vUnsignedInt

An argument that specifies an offset in seconds from **Minute**.

Return Value:

Type: [PtgDate](#)

This function returns a PtgDate parse token containing a time of day. The [date-time-value](#) component of the return value is the signed fractional value of the double precision number representing the input date-time, as specified in [\[MS-OAUT\]](#) section 2.2.25.

2.5.3.160 TimeValue

The **TimeValue** function returns a time component from a value representing a date and time.

ABNF:

```
TimeValue = "TIMEVALUE(" val ["," val] ")"
```

Required Arguments:

Name: **DateTimeArg**

Type: [vAny](#)

An argument that specifies a value representing a date and time.

Optional Arguments:

Name: **Locale**

Type: [vLanguageID](#)

An argument that specifies an LCID to use when parsing **DateTimeArg**. The default value is specified by the **Language** property, defined in [\[ISO/IEC-29500-2\]](#) section 11, from the [Core XML part](#) of a [web drawing](#).

Return Value:

Type: [PtgDate](#), [PtgErr](#)

This function attempts a conversion, as described by the [DateTime](#) function, of **DateTimeArg** to a PtgDate parse token. If the conversion is successful, the function returns a PtgDate containing the time component of **DateTimeArg**. If the conversion fails, the function returns a PtgErr parse token with an error code equal to #VALUE!.

2.5.3.161 Tint

The **Tint** function increases the luminance, as specified in the hue-saturation-luminance (HSL) color space, of a color value.

ABNF:

```
Tint = "TINT(" val "," val ")"
```

Required Arguments:

Name: **Color**

Type: [vColor](#)

An argument that specifies a color.

Name: **Delta**

Type: [vSignedInt](#)

An argument that specifies an amount to modify the luminance of **Color**.

Return Value:

Type: [PtgColorRGB](#)

This function returns a PtgColorRGB parse token containing a color value with increased luminance. If **Delta** is less than zero, the luminance is decreased.

2.5.3.162 Title

The **Title** function returns the **Title** property of a [web drawing](#).

ABNF:

```
Title = "TITLE()"
```

Return Value:

Type: [PtgString](#)

This function returns the **Title** property, specified in [\[ISO/IEC-29500-2\]](#) section 11, from the [Core XML part](#) of a web drawing.

2.5.3.163 Tone

The **Tone** function decreases the saturation, as specified in the hue-saturation-luminance (HSL) color space, of a color value.

ABNF:

```
Tone = "TONE(" val "," val ")"
```

Required Arguments:

Name: **Color**

Type: [vColor](#)

An argument that specifies a color.

Name: **Delta**

Type: [vSignedInt](#)

An argument that specifies the amount to modify the saturation of **Color**.

Return Value:

Type: [PtgColorRGB](#)

This function returns a PtgColorRGB parse token containing a color value with decreased saturation. If **Delta** is less than zero, the saturation is increased.

2.5.3.164 Trim

The **Trim** function performs the removal of all whitespace from a string except for single spaces between words.

ABNF:

```
Trim = "TRIM(" val ")"
```

Required Arguments:

Name: **Arg1**

Type: [vString](#)

An argument that specifies a string from which to remove **whitespace**.

Return Value:

Type: [PtgString](#)

This function returns a PtgString parse token containing the string with whitespace removed. The following Unicode characters are considered as whitespace.

Value	Meaning
"\u0009"	Character Tabulation
"\u000a"	Line Feed
"\u000b"	Line Tabulation
"\u000c"	Form Feed
"\u000d"	Carriage Return
"\u0020"	Space
"\u00a0"	No-Break Space
"\u0168"	Ogham Space Mark
"\u018e"	Mongolian Vowel Separator

Value	Meaning
"\u2000"	En Quad
"\u2001"	Em Quad
"\u2002"	En Space
"\u2003"	Em Space
"\u2004"	Three-Per-Em Space
"\u2005"	Four-Per-Em Space
"\u2006"	Six-Per-Em Space
"\u2007"	Figure Space
"\u2008"	Punctuation Space
"\u2009"	Thin Space
"\u200a"	Hair Space
"\u202f"	Narrow No-Break Space
"\u205f"	Medium Mathematical Space
"\u3000"	Ideographic Space

2.5.3.165 Trunc

The **Trunc** function performs a truncation operation.

ABNF:

```
Trunc = "TRUNC(" val "," val ")"
```

Required Arguments:

Name: **Number**

Type: [vDouble](#)

An argument that specifies a number to truncate.

Name: **Digits**

Type: [vSignedInt](#)

An argument that specifies the decimal place to use for the truncation operation.

Return Value:

Type: [vNum](#)

This function returns a [vNum](#) custom token grouping containing the truncated value of **Number**, as described by the following table.

Condition	Result
Digits > 0	The function returns Number truncated to Digits places to the right of the decimal point.
Digits = 0	The function returns Number truncated to an integer.
Digits < 0	The function returns Number truncated to negative Digits places to the left of the decimal point.

The unit of the return value is equal to the unit of **Number**. If **Digits** is less than -308 or greater than 15, the function returns **Number**.

2.5.3.166 UMinus

The **UMinus** function performs the negation calculation.

ABNF:

```
UMinus = "_UMINUS(" val ")" / "-" val
```

Required Arguments:

Name: **Arg1**

Type: [vDouble](#)

An argument that specifies the operand of the calculation.

Return Value:

Type: [vNum](#)

This function returns a [vNum](#) custom token grouping containing the negation of the value of **Arg1**. The unit of the return value is equal to the unit of **Arg1**.

2.5.3.167 UniChar

The **UniChar** function returns a Unicode character.

ABNF:

```
Unichar = "UNICHAR(" val ")"
```

Required Arguments:

Name: **Arg1**

Type: [vUnsignedInt](#)

An argument that specifies a number.

Return Value:

Type: [PtgString](#), [PtgErr](#)

This function returns the Unicode character of **Arg1**. If **Arg1** is less than one and greater than 65535, the function returns a PtgErr parse token with an error code equal to #VALUE!.

2.5.3.168 UPlus

The **UPlus** function performs an identity calculation.

ABNF:

```
UPlus = "_UPLUS(" val ")" / "+" val
```

Required Arguments:

Name: **Arg1**

Type: [vDouble](#)

An argument that specifies the operand of the calculation.

Return Value:

Type: [vNum](#)

This function returns a vNum custom token grouping containing the value of **Arg1**. The unit of the return value is equal to the unit of **Arg1**.

2.5.3.169 Upper

The **Upper** function performs an upper case conversion.

ABNF:

```
Upper = "UPPER(" val ")"
```

Required Arguments:

Name: **Arg1**

Type: [vString](#)

An argument that specifies a string to convert.

Return Value:

Type: [PtgString](#)

This function returns a PtgString parse token containing the string converted to upper case. The conversion is performed according to .NET globalization rules based on the value specified by the **Language** property, defined in [\[ISO/IEC-29500-2\]](#) section 11, from the [Core XML part](#) of a [web drawing](#). For more information about .NET globalization rules, see [\[MSDN-ENCLOC\]](#).

2.5.3.170 Use

The **Use** function returns a value of 254.

ABNF:

```
Use = "USE(" val ")"
```

Required Arguments:

Name: **Master**

Type: [vString](#)

An argument that specifies a name or **GUID** of a master.

Return Value:

Type: [PtgInt](#)

This function returns a PtgInt parse token with a value of 254.

2.5.3.171 Version

The **Version** function returns a **AppVersion** property of a [web drawing](#).

ABNF:

```
Version = "VERSION()"
```

Return Value:

Type: [PtgInt](#)

This function returns the integer part of the **AppVersion** property, specified in [\[ISO/IEC-29500-1\]](#) section 22.2.2.2, from the [App XML part](#) of a web drawing.

2.5.3.172 WeekDay

The **WeekDay** function returns a day of the week, according to the Gregorian calendar, from a value representing a date and time.

ABNF:

```
WeekDay = "WEEKDAY(" val ["," val] ")"
```

Required Arguments:

Name: **DateTimeArg**

Type: [vAny](#)

An argument that specifies a date and time value.

Optional Arguments:

Name: **Locale**

Type: [vLanguageID](#)

An argument that specifies an LCID to use when parsing **DateTimeArg**. The default value is specified by the **Language** property, defined in [\[ISO/IEC-29500-2\]](#) section 11, from the [Core XML part](#) of a [web drawing](#).

Return Value:

Type: [PtgNum](#), [PtgErr](#)

This function attempts a conversion, as described by the [DateTime](#) function, of **DateTimeArg** to a [PtgDate](#) parse token. If the conversion is successful, the function returns a [PtgNum](#) parse token containing the weekday component from **DateTimeArg**. If the conversion fails, the function returns a PtgErr parse token with an error code equal to #VALUE!.

2.5.3.173 Year

The **Year** function returns a year, according to the Gregorian calendar, from a value representing a date and time.

ABNF:

```
Year = "YEAR(" val ["," val] ")"
```

Required Arguments:

Name: **DateTimeArg**

Type: [vAny](#)

An argument that specifies a date and time value.

Optional Arguments:

Name: **Locale**

Type: [vLanguageID](#)

An argument that specifies an LCID to use when parsing **DateTimeArg**. The default value is specified by the **Language** property, defined in [\[ISO/IEC-29500-2\]](#) section 11, from the [Core XML part](#) of a [web drawing](#).

Return Value:

Type: [PtgNum](#), [PtgErr](#)

This function attempts a conversion, as described by the [DateTime](#) function, of **DateTimeArg** to a [PtgDate](#) parse token. If the conversion is successful, the function returns a [PtgNum](#) parse token containing the year component from **DateTimeArg**. If the conversion fails, the function returns a PtgErr parse token with an error code equal to #VALUE!.

2.5.4 Parse Token Definitions

The following parse token definition sections specify the [tokens](#) that can be part of a [formula expression](#) and that can be persisted in a [web drawing](#) in [Cell Type](#) elements.

The definition of a token specifies an ABNF [\[RFC5234\]](#) grammar and a `Cell_Type` representation. The ABNF specifies the format of the token in a formula expression. The `Cell_Type` representation specifies the properties that define the token, as described in the [operand tokens](#) section.

2.5.4.1 PtgAcre

The **PtgAcre** structure specifies a [Unit Number](#) with a unit of acres.

When found in a [formula expression](#), this structure MUST satisfy the following ABNF.

ABNF:

```
PtgAcre = double-value "ACRE"
```

double-value is a double precision floating-point number expressed as acres.

When stored in a [Cell_Type](#) element, this structure has the following attribute values.

Attribute	Value
V	MUST be the numeric value of the structure expressed as square inches
U	MUST be "AC"

2.5.4.2 PtgAngDD

The **PtgAngDD** structure specifies a [Unit Number](#) with a unit of decimal degrees.

When found in a [formula expression](#), this structure MUST satisfy the following ABNF.

ABNF:

```
PtgAngDD = double-value "DEG"
```

double-value is a double precision floating-point number expressed as decimal degrees.

When stored in a [Cell_Type](#) element, this structure has the following attribute values.

Attribute	Value
V	MUST be the numeric value of the structure expressed as an angleInternalUnitNumber
U	MUST be "DEG"

2.5.4.3 PtgAngDft

The **PtgAngDft** structure specifies a [Unit Number](#) with a unit of radians.

When found in a [formula expression](#), this structure MUST satisfy the following ABNF.

ABNF:

```
PtgAngDft = double-value "DA"
```

double-value is a double precision floating-point number expressed as radians.

When stored in a [Cell_Type](#) element, this structure has the following attribute values.

Attribute	Value
V	MUST be the numeric value of the structure expressed as an angleInternalUnitNumber
U	MUST be "DA"

2.5.4.4 PtgAngDMS

The **PtgAngDMS** structure specifies a [Unit Number](#) with a unit of degrees-minutes-seconds.

When found in a [formula expression](#), this structure MUST satisfy the following ABNF.

ABNF:

```
PtgAngDMS = unsigned-int-value %xB0 [unsigned-int-value "&apos;" [double-value %x22]]
```

The first **unsigned-int-value** is an unsigned integer expressed as degrees.

The second **unsigned-int-value** is an unsigned integer expressed as minutes.

double-value is a double precision floating-point number expressed as seconds.

When stored in a [Cell_Type](#) element, this structure has the following attribute values.

Attribute	Value
V	MUST be the numeric value of the structure expressed as an angleInternalUnitNumber
U	MUST be "AD"

2.5.4.5 PtgAngRad

The **PtgAngRad** structure specifies a [Unit Number](#) with a unit of radians.

When found in a [formula expression](#), this structure MUST satisfy the following ABNF.

ABNF:

```
PtgAngRad = double-value "RAD"
```

double-value is a double precision floating-point number expressed as radians.

When stored in a [Cell_Type](#) element, this structure has the following attribute values.

Attribute	Value
V	MUST be the numeric value of the structure expressed as an angleInternalUnitNumber
U	MUST be "RAD"

2.5.4.6 PtgBool

The **PtgBool** structure specifies a **Boolean** value.

When found in a [formula expression](#), this structure MUST satisfy the following ABNF.

ABNF:

```
PtgBool = bool-value
```

bool-value specifies a Boolean.

When stored in a [Cell Type](#) element, this structure has the following attribute values.

Attribute	Value
V	MUST be zero if the value of the structure is equal to FALSE and MUST be one if value of the structure is equal to TRUE
U	MUST not exist or MUST be "BOOL"

2.5.4.7 PtgByte

The **PtgByte** structure specifies an unsigned byte value.

When found in a [formula expression](#), this structure MUST satisfy the following ABNF.

ABNF:

```
PtgByte = unsigned-byte-value
```

unsigned-byte-value specifies an unsigned byte.

When stored in a [Cell Type](#) element, this structure has the following attribute values.

Attribute	Value
V	MUST be greater than or equal to zero, and less than 256
U	MUST not exist or MUST be "NUM"

2.5.4.8 PtgColorRGB

The **PtgColorRGB** structure specifies an RGB color value represented as a 3-byte signed integer.

ABNF:

```
PtgColorRGB = color-value
```

The most significant byte of **color-value** specifies the intensity of the color red. The second most significant byte of **color-value** specifies the intensity of the color green. The least significant byte of **color-value** specifies the intensity of the color blue.

When stored in a [Cell_Type](#) element, this structure has the following attribute values.

Attribute	Value
V	MUST be a value that satisfies the ABNF
U	MUST not exist, or MUST be "COLOR"

2.5.4.9 PtgCy

The **PtgCy** structure specifies a currency value.

When found in a [formula expression](#), this structure MUST satisfy the following ABNF.

ABNF:

```
PtgCy = double-value string-value
```

double-value specifies a double precision floating-point number expressed as a value of the currency specified by **string-value**.

string-value specifies a string that contains a currency. It MUST be a value defined by [vCurrency](#).

When stored in a [Cell_Type](#) element, this structure has the following attribute values.

Attribute	Value
V	MUST be a value that satisfies the ABNF
U	MUST be "CY"

2.5.4.10 PtgDate

The **PtgDate** structure specifies a [Unit Number](#) with a unit of time.

This structure MUST not appear in the ABNF of a [formula expression](#). It can be the result of a [formula evaluation](#).

When stored as a [Cell_Type](#), this structure has the following attribute values.

Attribute	Value
V	MUST be a date and time of day, in complete extended format, as specified in [ISO-8601] section 4.3.2
U	MUST be "DATE"

2.5.4.11 PtgEDay

The **PtgEDay** structure specifies a [Unit Number](#) with a unit of days.

When found in a [formula expression](#), this structure MUST satisfy the following ABNF.

ABNF:

PtgEDay = double-value "ED"

double-value is a double precision floating-point number expressed as days.

When stored in a [Cell_Type](#) element, this structure has the following attribute values.

Attribute	Value
V	MUST be the numeric value of the structure expressed as a durationInternalUnitNumber
U	MUST be "ED"

2.5.4.12 PtgEHour

The **PtgEHour** structure specifies a [Unit Number](#) with a unit of hours.

When found in a [formula expression](#), this structure MUST satisfy the following ABNF.

ABNF:

PtgEHour = double-value "EH"

double-value is a double precision floating-point number expressed as hours.

When stored in a [Cell_Type](#) element, this structure has the following attribute values.

Attribute	Value
V	MUST be the numeric value of the structure expressed as a durationInternalUnitNumber
U	MUST be "EH"

2.5.4.13 PtgEMin

The **PtgEMin** structure specifies a [Unit Number](#) with a unit of minutes.

When found in a [formula expression](#), this structure MUST satisfy the following ABNF.

ABNF:

PtgEMin = double-value "EM"

double-value is a double precision floating-point number expressed as minutes.

When stored in a [Cell_Type](#) element, this structure has the following attribute values.

Attribute	Value
V	MUST be the numeric value of the structure expressed as a durationInternalUnitNumber
U	MUST be "EM"

2.5.4.14 PtgErr

The **PtgErr** structure specifies an error code.

This structure MUST NOT appear in the ABNF of a [formula expression](#). It can be the result of a [formula evaluation](#).

When stored in a [Cell_Type](#) element, this structure has an **E** attribute that MUST be one of the values from the following table.

Value	Meaning
#DIM!	A dimensional value that exceeds the dimension range
#DIV/0!	Division by zero
#VALUE!	An argument or operand of the wrong type
#REF!	A reference to a cell that does not exist
#NUM!	An invalid number
#N/A	Not available value

2.5.4.15 PtgESec

The **PtgESec** structure specifies a [Unit Number](#) with a unit of seconds.

When found in a [formula expression](#), this structure MUST satisfy the following ABNF.

ABNF:

```
PtgESec = double-value "ES"
```

double-value is a double precision floating-point number expressed as seconds.

When stored in a [Cell_Type](#) element, this structure has the following attribute values.

Attribute	Value
V	MUST be the numeric value of the structure expressed as a durationInternalUnitNumber
U	MUST be "ES"

2.5.4.16 PtgEWeek

The **PtgEWeek** structure specifies a [Unit Number](#) with a unit of weeks.

When found in a [formula expression](#), this structure MUST satisfy the following ABNF.

ABNF:

```
PtgEWeek = double-value "EW"
```

double-value is a double precision floating-point number expressed as weeks.

When stored in a [Cell_Type](#) element, this structure has the following attribute values.

Attribute	Value
V	MUST be the numeric value of the structure expressed as a durationInternalUnitNumber
U	MUST be "EW"

2.5.4.17 PtgHectare

The **PtgHectare** structure is a [Unit Number](#) with a unit of hectares.

When found in a [formula expression](#), this structure MUST satisfy the following ABNF

ABNF:

```
PtgHectare = double-value "HA"
```

double-value is a double precision floating-point number expressed as hectares.

When stored in a [Cell_Type](#) element, this structure has the following attribute values.

Attribute	Value
V	MUST be the numeric value of the structure expressed as square inches
U	MUST be "HA"

2.5.4.18 PtgInt

The **PtgInt** structure specifies a signed four-byte integer value.

When found in a [formula expression](#), this structure MUST satisfy the following ABNF.

ABNF:

```
PtgInt = int-value
```

int-value specifies a signed four-byte integer.

When stored in a [Cell_Type](#) element, this structure has the following attribute values.

Attribute	Value
V	MUST be greater than or equal to -2^{31} and be less than 2^{31}
U	MUST not exist or MUST be "NUM"

2.5.4.19 PtgNum

The **PtgNum** structure specifies a double precision floating-point number.

When found in a [formula expression](#), this structure MUST satisfy the following ABNF.

ABNF:

```
PtgNum = double-value
```

double-value is a double precision floating-point number.

When stored in a [Cell_Type](#) element, this structure has the following attribute values.

Attribute	Value
V	MUST be the value of the structure expressed as a double precision floating-point number
U	MUST NOT exist

2.5.4.20 PtgNumCM

The **PtgNumCM** structure specifies a [Unit Number](#) with a unit of centimeters.

When found in a [formula expression](#), this structure MUST satisfy the following ABNF.

ABNF:

```
PtgNumCM = double-value "CM"
```

double-value is a double precision floating-point number expressed as centimeters.

When stored in a [Cell_Type](#) element, this structure has the following attribute values.

Attribute	Value
V	MUST be the numeric value of the structure expressed as a lengthInternalUnitNumber
U	MUST be "CM"

2.5.4.21 PtgNumDft

The **PtgNumDft** structure specifies a [Unit Number](#) with a unit of inches.

When found in a [formula expression](#), this structure MUST satisfy the following ABNF.

ABNF:

```
PtgNumDft = double-value "DL"
```

double-value is a double precision floating-point number expressed as inches.

When stored in a [Cell_Type](#) element, this structure has the following attribute values.

Attribute	Value
V	MUST be the numeric value of the structure expressed as a lengthInternalUnitNumber
U	MUST be "DL"

2.5.4.22 PtgNumF

The **PtgNumF** structure specifies a [Unit Number](#) with a unit of feet.

When found in a [formula expression](#), this structure MUST satisfy the following ABNF.

ABNF:

```
PtgNumF = double-value "FT"
```

double-value is a double precision floating-point number expressed as feet.

When stored in a [Cell Type](#) element, this structure has the following attribute values.

Attribute	Value
V	MUST be the numeric value of the structure expressed as a lengthInternalUnitNumber
U	MUST be "FT"

2.5.4.23 PtgNumFI

The **PtgNumFI** structure specifies a [Unit Number](#) with a unit of feet and inches.

When found in a [formula expression](#), this structure MUST satisfy the following ABNF.

ABNF:

```
PtgNumFI = unsigned-int-value "FT" [SP double-value "IN"]
```

unsigned-int-value is an unsigned integer expressed as feet.

double-value is a double precision floating-point number expressed as inches.

When stored in a [Cell Type](#) element, this structure has the following attribute values.

Attribute	Value
V	MUST be the numeric value of the structure expressed as a lengthInternalUnitNumber
U	MUST be "F_I"

2.5.4.24 PtgNumI

The **PtgNumI** structure specifies a [Unit Number](#) with a unit of inches.

When found in a [formula expression](#), this structure MUST satisfy the following ABNF.

ABNF:

```
PtgNumI = double-value "IN"
```

double-value is a double precision floating-point number expressed as inches.

When stored in a [Cell_Type](#) element, this structure has the following attribute values.

Attribute	Value
V	MUST be the numeric value of the structure expressed as a lengthInternalUnitNumber
U	MUST be "IN" or "IN_F"

2.5.4.25 PtgNumKM

The **PtgNumKM** structure specifies a [Unit Number](#) with a unit of kilometers.

When found in a [formula expression](#), this structure MUST satisfy the following ABNF.

ABNF:

```
PtgNumKM = double-value "KM"
```

double-value is a double precision floating-point number expressed as kilometers.

When stored in a [Cell_Type](#) element, this structure has the following attribute values.

Attribute	Value
V	MUST be the numeric value of the structure expressed as a lengthInternalUnitNumber
U	MUST be "KM"

2.5.4.26 PtgNumM

The **PtgNumM** structure specifies a [Unit Number](#) with a unit of meters.

When found in a [formula expression](#), this structure MUST satisfy the following ABNF.

ABNF:

```
PtgNumM = double-value "M"
```

double-value is a double precision floating-point number expressed as meters.

When stored in a [Cell_Type](#) element, this structure has the following attribute values.

Attribute	Value
V	MUST be the numeric value of the structure expressed as a lengthInternalUnitNumber
U	MUST be "M"

2.5.4.27 PtgNumMI

The **PtgNumMI** structure specifies a [Unit Number](#) with a unit of miles.

When found in a [formula expression](#), this structure MUST satisfy the following ABNF.

ABNF:

```
PtgNumMI = double-value "MI"
```

double-value is a double precision floating-point number expressed as miles.

When stored in a [Cell_Type](#) element, this structure has the following attribute values.

Attribute	Value
V	MUST be the numeric value of the structure expressed as a lengthInternalUnitNumber
U	MUST be "MI" or "MI_F"

2.5.4.28 PtgNumMM

The **PtgNumMM** structure specifies a [Unit Number](#) with a unit of millimeters.

When found in a [formula expression](#), this structure MUST satisfy the following ABNF.

ABNF:

```
PtgNumMM = double-value "MM"
```

double-value is a double precision floating-point number expressed as millimeters.

When stored in a [Cell_Type](#) element, this structure has the following attribute values.

Attribute	Value
V	MUST be the numeric value of the structure expressed as a lengthInternalUnitNumber
U	MUST be "MM"

2.5.4.29 PtgNumMultiDim

The **PtgNumMultiDim** structure specifies a [Unit Number](#) that is multidimensional.

When found in a [formula expression](#), this structure MUST satisfy the following ABNF.

ABNF:

```
PtgNumMultiDim = double-value string-value "^" dimension
```

double-value is a double precision floating-point number expressed as the unit indicated by **string-value**.

string-value is a string that specifies the unit of measurement, and MUST be a value from the following table.

Value	Unit
DEG	Degrees

Value	Unit
DA	Radians
RAD	Radians
DATE	Days
ED	Days
EH	Hours
EM	Minutes
ES	Seconds
EW	Weeks
CM	Centimeters
DL	Inches
FT	Feet
IN	Inches
KM	Kilometers
MM	Millimeters
M	Meters
MI	Miles
NM	Nautical miles
YD	Yards
DP	Inches
DE	Days
C	Ciceros
D	Didots
DT	Points
P	Picas
PT	Points

dimension is an integer that specifies the number of dimensions.

When stored in a [Cell_Type](#) element, this structure has the following attribute values.

Attribute	Value
V	MUST be a value that satisfies the ABNF

Attribute	Value
U	MUST be "MULTIDIM"

2.5.4.30 PtgNumNM

The **PtgNumNM** structure specifies a [Unit Number](#) with a unit of nautical miles.

When found in a [formula expression](#), this structure MUST satisfy the following ABNF.

ABNF:

```
PtgNumNM = double-value "NM"
```

double-value is a double precision floating-point number expressed as nautical miles.

When stored in a [Cell Type](#) element, this structure has the following attribute values.

Attribute	Value
V	MUST be the numeric value of the structure expressed as a lengthInternalUnitNumber .
U	MUST be "NM"

2.5.4.31 PtgNumPct

The **PtgNumPct** structure specifies a [Unit Number](#) expressed as a percentage.

When found in a [formula expression](#), this structure MUST satisfy the following ABNF.

ABNF:

```
PtgNumPct = double-value "%"
```

double-value is a double precision floating-point number.

Attribute	Value
V	MUST be the double precision floating-point number <code>double-value</code> . The value is normalized such that the value of 1 corresponds to 100 percent
U	MUST be "PER"

2.5.4.32 PtgNumYards

The **PtgNumYards** structure specifies a [Unit Number](#) with a unit of yards.

When found in a [formula expression](#), this structure MUST satisfy the following ABNF.

ABNF:

```
PtgNumYards = double-value "YD"
```

double-value is a double precision floating-point number expressed as yards.

When stored in a [Cell_Type](#) element, this structure has the following attribute values.

Attribute	Value
V	MUST be the numeric value of the structure expressed as a lengthInternalUnitNumber .
U	MUST be "YD"

2.5.4.33 PtgPageDft

The **PtgPageDft** structure specifies a [Unit Number](#) with a unit of inches.

When found in a [formula expression](#), this structure MUST satisfy the following ABNF.

ABNF:

```
PtgPageDft = double-value "DP"
```

double-value is a double precision floating-point number expressed as inches.

When stored in a [Cell_Type](#) element, this structure has the following attribute values.

Attribute	Value
V	MUST be the numeric value of the structure expressed as a lengthInternalUnitNumber .
U	MUST be "DP"

2.5.4.34 PtgPnt

The **PtgPnt** token specifies the coordinates of a two-dimensional point.

When found in a [formula expression](#), this structure is identical to the [Pnt](#) function token, and MUST satisfy the following ABNF.

ABNF:

```
PtgPnt = "PNT(" val "," val ")"
```

The first **val** specifies a double precision floating-point number expressed as a x-coordinate.

The second **val** specifies a double precision floating-point number expressed as a y-coordinate.

When stored in a [Cell_Type](#) element, this structure has the following attribute values.

Attribute	Value
V	MUST be a value that satisfies the following ABNF. PtgPnt = "PNT(" double-value "," double-value ")"

Attribute	Value
	The first double-value specifies a double precision floating-point number expressed as an x-coordinate. The second double-value specifies a double precision floating-point number expressed as a y-coordinate.
U	MUST be "PNT"

2.5.4.35 PtgShort

The **PtgShort** structure specifies a signed two-byte integer value.

When found in a [formula expression](#), this structure MUST satisfy the following ABNF.

ABNF:

```
PtgShort = short-value
```

short-value specifies a signed two-byte integer.

When stored in a [Cell Type](#) element, this structure has the following attribute values.

Attribute	Value
V	MUST be greater than or equal to -32768, and be less than 32768
U	MUST not exist or MUST be "NUM"

2.5.4.36 PtgString

The **PtgString** structure specifies a string.

When found in a [formula expression](#), this structure MUST satisfy the following ABNF.

ABNF:

```
PtgString = DQUOTE string-value DQUOTE
```

When stored in a [Cell Type](#) element, this structure has the following attribute values.

Attribute	Value
V	MUST be the string-value
U	MUST be "STR"

2.5.4.37 PtgTDurDft

The **PtgTDurDft** structure specifies a [Unit Number](#) with a unit of days.

When found in a [formula expression](#), this structure MUST satisfy the following ABNF.

ABNF:


```
PtgTDurDft = double-value "DE"
```

double-value specifies a double precision floating-point number expressed as days.

When stored in a [Cell_Type](#) element, this structure has the following attribute values.

Attribute	Value
V	MUST be the numeric value of the structure expressed as a durationInternalUnitNumber
U	MUST be "DE"

2.5.4.38 PtgTypCD

The **PtgTypCD** structure specifies a [Unit Number](#) with a unit of cicerós and didots.

When found in a [formula expression](#), this structure MUST satisfy the following ABNF.

ABNF:

```
PtgTypCD = unsigned-int-value "C" [double-value]
```

unsigned-int-value is an unsigned integer expressed as cicerós.

double-value is a double precision floating-point number expressed as didots.

When stored in a [Cell_Type](#) element, this structure has the following attribute values.

Attribute	Value
V	MUST be the numeric value of the structure expressed as an typographicInternalUnitNumber
U	MUST be "C_D"

2.5.4.39 PtgTypCi

The **PtgTypCi** structure specifies a [Unit Number](#) with a unit of cicerós.

When found in a [formula expression](#), this structure MUST satisfy the following ABNF.

ABNF:

```
PtgTypCi = double-value "C"
```

double-value is a double precision floating-point number expressed as cicerós.

When stored in a [Cell_Type](#) element, this structure has the following attribute values.

Attribute	Value
V	MUST be the numeric value of the structure expressed as a typographicInternalUnitNumber .
U	MUST be "C"

2.5.4.40 PtgTypDft

The **PtgTypDft** structure specifies a [Unit Number](#) with a unit of points.

When found in a [formula expression](#), this structure MUST satisfy the following ABNF.

ABNF:

```
PtgTypDft = double-value "DT"
```

double-value is a double precision floating-point number expressed as points.

When stored in a [Cell Type](#) element, this structure has the following attribute values.

Attribute	Value
V	MUST be the numeric value of the structure expressed as a typographicInternalUnitNumber
U	MUST be "DT"

2.5.4.41 PtgTypDi

The **PtgTypDi** structure specifies a [Unit Number](#) with a unit of didots.

When found in a [formula expression](#), this structure MUST satisfy the following ABNF.

ABNF:

```
PtgTypDi = double-value "D"
```

double-value is a double precision floating-point number expressed as didots.

When stored in a [Cell Type](#) element, this structure has the following attribute values.

Attribute	Value
V	MUST be the numeric value of the structure expressed as a typographicInternalUnitNumber
U	MUST be "D"

2.5.4.42 PtgTypPi

The **PtgTypPi** structure specifies a [Unit Number](#) with a unit of picas.

When found in a [formula expression](#), this structure MUST satisfy the following ABNF.

ABNF:

```
PtgTypPi = double-value "P"
```

double-value is a double precision floating-point number expressed as picas.

When stored in a [Cell Type](#) element, this structure has the following attribute values.

Attribute	Value
V	MUST be the numeric value of the structure expressed as an typographicInternalUnitNumber
U	MUST be "P"

2.5.4.43 PtgTypPP

The **PtgTypPP** structure specifies a [Unit Number](#) with a unit of picas and points.

When found in a [formula expression](#), this structure MUST satisfy the following ABNF.

ABNF:

```
PtgTypPP = unsigned-int-value "P" [double-value]
```

unsigned-int-value is an unsigned integer expressed as picas.

double-value is a double precision floating-point number expressed as points.

When stored in a [Cell Type](#) element, this structure has the following attribute values.

Attribute	Value
V	MUST be the numeric value of the structure expressed as an typographicInternalUnitNumber
U	MUST be "P_PT"

2.5.4.44 PtgTypPt

The **PtgTypPt** structure specifies a [Unit Number](#) with a unit of points.

When found in a [formula expression](#), this structure MUST satisfy the following ABNF.

ABNF:

```
PtgTypPt = double-value "PT"
```

double-value is a double precision floating-point number expressed as points.

When stored in a [Cell Type](#) element, this structure has the following attribute values.

Attribute	Value
V	MUST be the numeric value of the structure expressed as a typographicInternalUnitNumber .
U	MUST be "PT"

2.5.4.45 PtgUnsShort

The **PtgUnsShort** structure specifies a two-byte unsigned integer value.

When found in a [formula expression](#), this structure MUST satisfy the following ABNF.

ABNF:

PtgUnsShort = unsigned-int-value

unsigned-int-value specifies a two-byte unsigned integer.

When stored in a [Cell_Type](#) element, this structure has the following attribute values.

Attribute	Value
V	MUST be greater than or equal to zero, and be less than 65536
U	MUST not exist or MUST be "NUM"

2.5.4.46 PtgNurbs

The **PtgNurbs** structure specifies a non-uniform rational B-spline (NURBS).

When found in a [formula expression](#), this structure MUST satisfy the following ABNF.

ABNF:

```
Nurbs = "NURBS(" knotLast "," degree "," xType "," yType *("," xN "," yN "," knotN ","  
weightN) ")"  
  
knotLast = val  
degree = val  
xType = val  
yType = val  
xN = val  
yN = val  
knotN = val  
weightN = val
```

knotLast is a double precision floating-point number that specifies the last knot.

degree is an integer value that specifies the degree of the B-spline.

xType is an unsigned integer value that specifies how to interpret the x-coordinates. If **xType** is zero, the input **xN** is interpreted as [relative coordinates](#). Otherwise, the input **xN** is interpreted in the [coordinate system](#) of the [shape](#) containing the structure.

yType is an unsigned integer value that specifies how to interpret the y-coordinates. If **yType** is zero, the input **yN** is interpreted as relative coordinates. Otherwise, the input **yN** is interpreted in the coordinate system of the shape containing the structure.

xN is a double precision floating-point number that specifies an x-coordinate.

yN is a double precision floating-point number that specifies a y-coordinate.

knotN is a double precision floating-point number that specifies a knot on the B-spline.

weightN is a double precision floating-point number that specifies a weight on the B-spline.

When stored in a [Cell_Type](#) element, this structure has the following attribute values.

Attribute	Value
V	<p>MUST be a value that satisfies the following ABNF.</p> <pre> Nurbs = "NURBS(" knotLast "," degree "," xType "," yType *("," xN "," yN "," knotN "," weightN) ")" knotLast = double-value degree = int-value xType = unsigned-int-value yType = unsigned-int-value xN = double-value yN = double-value knotN = double-value weightN = double-value </pre> <p>Specific definition is provided above.</p>
U	MUST NOT exist

2.5.4.47 PtgPolyLine

The **PtgPolyLine** structure specifies a polyline.

When found in a [formula expression](#), this structure MUST satisfy the following ABNF.

ABNF:

```

Polyline = "POLYLINE(" xType "," yType *("," xN "," yN) ")"

xType = val
yType = val
xN = val
yN = val

```

xType is an unsigned integer value that specifies how to interpret the x-coordinates. If **xType** is zero, the input **xN** is interpreted as [relative coordinates](#). Otherwise, the input **xN** is interpreted in the [coordinate system](#) of the [shape](#) containing the structure.

yType is an unsigned integer value that specifies how to interpret the y-coordinates. If **yType** is zero, the input **yN** is interpreted as [relative coordinates](#). Otherwise, the input **yN** is interpreted in the coordinate system of the shape containing the structure.

xN is a double precision floating-point number that specifies an x-coordinate.

yN is a double precision floating-point number that specifies a y-coordinate.

When stored in a [Cell_Type](#) element, this structure has the following attribute values.

Attribute	Value
V	<p>MUST be a value that satisfies the following ABNF.</p> <pre> Polyline = "POLYLINE(" xType "," yType *("," xN "," yN) ")" xType = unsigned-int-value </pre>

Attribute	Value
	yType = unsigned-int-value xN = double-value yN = double-value Specific definition is provided above.
U	MUST be "POLYLINE"

2.5.5 Reference Token Definitions

The reference token definitions in the following sections specify the [reference tokens](#) that can be contained in a [formula expression](#).

2.5.5.1 CellRef

The **CellRef** token specifies a reference to a [cell](#) in a [reference context](#).

ABNF:

```
cellRef = [sheetref "!"] ( name / NamedCellRef / IndexedCellRef / SingleLetterNamedCellRef )

sheetref = CrossPageRef / DocSheetRef / MasterSheetRef / PageSheetRef / ShapeSheetRef /
StyleSheetRef
```

name is a name of a cell in the [web drawing](#). It MUST be equal to the **N** attribute of a [Cell Type](#) element that is a child element of the [Sheet Type](#) element in the current reference context or a reference context specified by **sheetref**.

2.5.5.2 CrossPageRef

The **CrossPageRef** token specifies a reference to the [shape sheet](#) of a [shape](#) on a [drawing page](#). It also changes the current [reference context](#) to the specified drawing page.

ABNF:

```
CrossPageRef = "pages[" string-value "]" ShapeSheetRef
```

string-value is a name of a drawing page. It MUST be equal to the **NameU** attribute of a [Page Type](#) element in the [web drawing](#).

ShapeSheetRef is a reference to a shape sheet in the drawing page specified by string-value.

2.5.5.3 DocSheetRef

The **DocSheetRef** token specifies a reference to the [document sheet](#) of a [web drawing](#). It also changes the current [reference context](#) to the document sheet.

ABNF:

```
DocSheetRef = "thedoc"
```

2.5.5.4 IndexedCellRef

The **IndexedCellRef** token specifies a reference to a [cell](#) in the current [reference context](#).

ABNF:

```
IndexedCellRef = SectionRef "." name [ "[" id "]" ]
```

name is the name of a cell in the [web drawing](#). It MUST be equal to the **N** attribute of [Cell_Type](#) element that is a child element of the [Row_Type](#) element that is specified by **id**.

id is the index of a [row](#) in the web drawing. It MUST be equal to the value of the **IX** attribute plus one of a [Row_Type](#) element that is a child element of the [Section_Type](#) element that is specified by **SectionRef**. If **id** is omitted, the value of one is used.

2.5.5.5 MasterSheetRef

The **MasterSheetRef** token specifies a reference to the [shape sheet](#) of a [shape](#) in a [master](#). It also changes the current [reference context](#) to the specified master.

ABNF:

```
MasterSheetRef = "masters[" string-value "]" ShapeSheetRef
```

string-value is the name of a master in the [web drawing](#). It MUST be equal to the **NameU** attribute of a [Master_Type](#) element in the web drawing.

ShapeSheetRef is a reference to a shape sheet in the master specified by **string-value**.

2.5.5.6 NamedCellRef

The **NamedCellRef** token specifies a reference to a [cell](#) in the current [reference context](#).

ABNF:

```
NamedCellRef = SectionRef "." RowName [ "." CellName ]
```

RowName = [name](#)

CellName = name

RowName is the name of a row in the web drawing. It MUST be equal to the **N** attribute of a [Row_Type](#) element that is a child element of the [Section_Type](#) element that is specified by [SectionRef](#).

CellName is the name of a cell in the web drawing. It MUST be equal to the **N** attribute of a [Cell_Type](#) element that is a child element of the [Row_Type](#) element that is specified by [RowName](#).

If CellName is omitted, the cell is specified in the following table based on the value of [SectionRef](#). [SectionRef](#) MUST be one of values in the following table.

SectionRef value	Default cell name
"User"	Value

SectionRef value	Default cell name
"Prop"	Value
"Actions"	Menu
"Controls"	X
"Hyperlink"	Description
"SmartTags"	X

2.5.5.7 PageSheetRef

The **PageSheetRef** token specifies a reference to the [page sheet](#) of the [drawing page](#) in the current [reference context](#). It also changes the current reference context to the page sheet.

ABNF:

```
PageSheetRef = "thepage"
```

2.5.5.8 SectionRef

The **SectionRef** token specifies a reference to a [section](#) in the current [reference context](#).

ABNF:

```
SectionRef = "Geometry" id / "Actions" / "Annotation" / "Char" / "Connections" / "Controls" /  
"Fields" / "FillGradientStops" / "Hyperlink" / "Layers" / "LineGradientStops" / "Para" /  
"Prop" / "Reviewer" / "Scratch" / "SmartTags" / "Tabs" / "User" / name
```

id is the index of a [Geometry](#) section in the [web drawing](#). It MUST be equal to the value of the **IX** attribute plus one of a [Section_Type](#) element.

name is the name of a section in the [Extension](#) part of the web drawing. It MUST be equal to **N** attribute of the one of [SectionDef_Type](#) elements.

Other **SectionRef** values specify a reference to a section according to the following table.

ABNF	Section
"Actions"	Actions
"Annotation"	Annotation
"Char"	Character
"Connections"	Connection
"Controls"	Control
"Fields"	Field
"FillGradientStops"	FillGradient
"Geometry"	Geometry

ABNF	Section
"Hyperlink"	Hyperlink
"Layers"	Layer
"LineGradientStops"	LineGradient
"Para"	Paragraph
"Prop"	Property
"Reviewer"	Reviewer
"Scratch"	Scratch
"SmartTags"	ActionTag
"Tabs"	Tabs
"User"	User

2.5.5.9 ShapeSheetRef

The **ShapeSheetRef** token specifies a reference to the [shape sheet](#) of a [shape](#) in the current [reference context](#).

ABNF:

```
ShapeSheetRef = nameid / "sheet." id
```

nameid is the identifier of a shape sheet. It MUST be equal to the **NameU** attribute of a [ShapeSheet_Type](#) element in the current reference context.

id is the identifier of a shape sheet. It MUST be equal to the **ID** attribute of a ShapeSheet_Type element in the current reference context.

2.5.5.10 SingleLetterNamedCellRef

The **SingleLetterNamedCellRef** token specifies a reference to a [cell](#) in the current [reference context](#).

ABNF:

```
SingleLetterNamedCellRef = SectionRef "." SingleLetterCellName id
```

```
SingleLetterCellName = ALPHA
```

id is the index of a row in the web drawing. It MUST be equal to the IX attribute plus one of a Row_Type element that is a child element of the Section_Type element specified by SectionRef.

SingleLetterCellName is the name of a cell in the row specified by id. It MUST be equal to the N attribute of a Cell_Type element that is a child element of the Row_Type element that is specified by id.

2.5.5.11 StyleSheetRef

The **StyleSheetRef** token specifies a reference to a [style sheet](#) in a [web drawing](#). It also changes the current [reference context](#) to the specified style sheet.

ABNF:

```
StyleSheetRef = "styles!" string-value
```

string-value is the name of a style. It MUST be equal to the **NameU** attribute of the [StyleSheet Type](#) element in the web drawing.

2.5.6 Custom Input Type Definitions

The custom input definitions in the following sections specify custom input types. Custom input types are used to specify the token types for function arguments. Functions that require a particular class of token inputs, and thus require a conversion from many possible source token types, declare arguments with custom input types and rely on the custom input type to derive a valid input argument from a source token. The definition of each custom input type specifies how the source token is derived, the computed properties of the custom input type, and under which cases the input argument is not valid.

2.5.6.1 vBoolean

The **vBoolean** custom input type specifies a [PtgBool](#) parse token that is derived from a source token that MUST be a [vNumAny](#) custom token grouping or a [PtgString](#) or [PtgCy](#) parse token. It contains the following computed property.

Value: This property specifies the **Value** of a [Boolean value](#) derived from the source token as follows.

If the source token is a [PtgBool](#), the **Value** is equal to the source token **Value**. If the source token is a [PtgString](#) that contains a formula that evaluates to **FALSE** or zero, the **Value** is **FALSE**; if the source token is a [PtgString](#) that contains a formula that evaluates to **TRUE** or a value other than zero, the **Value** is **TRUE**. Otherwise, the input argument is not valid.

If the source token is a [vNum](#) or [PtgCy](#) with a **Value** equal to zero, the **Value** is **FALSE**; otherwise, **Value** is **TRUE**.

2.5.6.2 vColor

The **vColor** custom input type specifies a [PtgColorRGB](#) parse token derived from a source token that MUST be a [vNumAny](#) custom token grouping or a [PtgColorRGB](#), [PtgString](#), or [PtgCy](#) parse token. It contains the following computed property.

Value: This property specifies the **Value** of a [color value](#) represented as a 3-byte signed integer derived from the source token **Value** as follows.

If the source token type is a [PtgColorRGB](#), the **Value** is equal to the source token **Value**.

If the source token can be interpreted as a [vSignedLong](#) custom input type, the **Value** is equal to the color in the [color table](#) that is indexed by the source token **Value** interpreted as a [vSignedLong](#); if the source token **Value** interpreted as a [vSignedLong](#) is not a valid index in the color table, the **Value** is equal to the color at index zero in the color table.

In all other cases, the input argument is not valid.

2.5.6.3 vDouble

The **vDouble** custom input type specifies a [vNum](#) custom token grouping derived from a source token that MUST be a [vNumAny](#) custom token grouping or a [PtgString](#), or [PtgCy](#) parse token. It contains the following computed properties.

Value: This property specifies the **Value** of a [numeric value](#) or [date value](#), derived from the source token **Value** as follows.

If the source token is a [PtgDate](#) parse token, the **Value** is the equal to the source token **Value**.

If the source token **Value** can be converted to a double, as described in [\[MSDN-ToDouble\]](#), the **Value** is the result of the conversion.

If the source token is a [PtgString](#) containing a numeric value, or the concatenation of a numeric value and a unit and the numeric value can be converted to a double, as described in [\[MSDN-ToDouble\]](#), the **Value** is the result of the conversion.

If the source token **Value** is equal to **TRUE** (case insensitive), the **Value** is equal to one. If the source token **Value** is equal to **FALSE** (case insensitive), the **Value** is equal to zero.

In all other cases, the input argument is not valid.

Unit: This property specifies the **Unit** of the numeric value or date value. If the source token is a [vUnitType](#), the **Unit** is equal to the **Unit** of the source token. If the source token is a [PtgString](#) containing the concatenation of a numeric value and a unit, the **Unit** is equal to the unit derived from the [PtgString](#). Otherwise, the numeric value does not have a **Unit**.

Dimension: This property specifies the **Dimension** of the numeric value or date value. If the source token type is a [PtgNumMultiDim](#) parse token, the **Dimension** is equal to the dimension of the source token. If the source token is a [PtgAcre](#) or [PtgHectare](#) parse token, the **Dimension** is equal to two. If the source token is any other [vUnitType](#) custom token grouping, the **Dimension** is equal to one. Otherwise, **Dimension** is equal to zero.

2.5.6.4 vDoubleEx

The **vDoubleEx** custom input type specifies either a [vNum](#) custom token grouping or a [PtgCy](#) parse token derived from a source token that MUST be a [vNumAny](#) custom token grouping or a [PtgString](#) or [PtgCy](#) parse token. The **vDoubleEx** is the [vDouble](#) custom input type with the following exceptions and additional computed properties.

Unit: This property specifies the **Unit** of a [numeric value](#), [date value](#), or [currency value](#). If the source token is a [PtgCy](#), the property specifies the **Unit** of a currency value, which is defined as "CY". Otherwise, **Unit** is equal to the type of the source token interpreted as a [vDouble](#).

Currency: This property specifies the **Currency** of a currency value. If the source token is a [PtgCy](#), the **Currency** is equal to the **Currency** of the source token. Otherwise, it does not have a **Currency** and the custom input type specifies a [vNum](#).

2.5.6.5 vFloat

The **vFloat** custom input type specifies a single precision floating-point number derived from a source token that MUST be a [vNumAny](#) custom token grouping or a [PtgString](#) or [PtgCy](#) parse token.

It is a [vDouble](#) custom input type with the additional restriction that the **Value** property MUST conform to the range of values specified for a single precision floating-point number, as defined in [\[IEEE754\]](#).

If the source token is a [PtgDate](#) parse token, the date format specified in [\[MS-OAUT\]](#) section 2.2.25 is used to determine whether the range of the [date value](#) conforms to a single precision floating-point number, as defined in [\[IEEE754\]](#).

If the source token is not a vDouble or the source token **Value** interpreted as a vDouble does not conform to the range of values specified for a single precision floating-point number, the input argument is not valid.

2.5.6.6 vSignedInt

The **vSignedInt** custom input type specifies a signed integer derived from a source token that MUST be a [vNumAny](#) custom token grouping or a [PtgString](#), or [PtgCy](#) parse token. It is a [vSignedLong](#) custom input type with the additional restriction that the **Value** property MUST be greater than or equal to -32768 and less than or equal to 32767.

If the source token is not a vSignedLong or the source token **Value** interpreted as a vSignedLong is less than -32768 or greater than 32767, the input argument is not valid.

2.5.6.7 vSignedLong

The **vSignedLong** custom input type specifies a signed long integer derived from a source token that MUST be a [vNumAny](#) custom token grouping or a [PtgString](#) or [PtgCy](#) parse token. It contains the following computed properties.

Value: This property specifies a signed long integer derived from the source token as follows.

If the source token **Value** can be converted to a double, as described in [\[MSDN-ToDouble\]](#) or as described in [\[MS-OAUT\]](#) section 2.2.25 for a [date value](#), the **Value** is equal to a signed long integer calculated as follows:

Use the conversion method described in [\[MSDN-ToDouble\]](#) or [\[MS-OAUT\]](#) section 2.2.25 to obtain a double value. If the double value is not an integer, round the value towards zero to the next integer. If the integer is less than -2147483648 or greater than 2147483647, the input argument is not valid.

If the source token **Value** is equal to **TRUE** (case insensitive), the **Value** is equal to one. If the source token **Value** is equal to **FALSE** (case insensitive), the **Value** is equal to zero.

In all other cases, the input argument is not valid.

Unit: This property specifies the **Unit** of the [operand token](#) and this property has no value for this custom input type.

2.5.6.8 vString

The **vString** custom input type specifies a [PtgString](#) parse token derived from a source token that MUST be a [vNumAny](#) custom token grouping or a [PtgString](#). It contains the following computed property.

Value: This property specifies a string derived from the source token **Value** as follows.

If the source token is a [PtgString](#), the **Value** is equal to the source token **Value**.

If the source token is a **vNumAny**, the **Value** is the string form of the source token.

In all other cases, the input argument is not valid.

2.5.6.9 vUnsignedInt

The **vUnsignedInt** custom input type specifies an unsigned integer derived from a source token that MUST be a [vNumAny](#) custom token grouping or a [PtgString](#) or [PtgCy](#) parse token. It is a [vUnsignedLong](#) custom input type with the additional restriction that **Value** MUST be less than 65536.

If the source token **Value** interpreted as a custom input type of [vSignedLong](#) is less than 65536, **Value** is equal to the source token **Value** interpreted as a [vSignedLong](#). Otherwise, **Value** is equal to the source token **Value** interpreted as a [vSignedLong](#) modulo 65536.

2.5.6.10 vUnsignedLong

The **vUnsignedLong** custom input type specifies an unsigned long integer derived from a source token that MUST be a [vNumAny](#) custom token grouping or a [PtgString](#) or [PtgCy](#) parse token. It contains the following computed properties.

Value: This property specifies an unsigned long integer derived from the source token **Value** as follows.

If the source token **Value** can be converted to a double, as described in [\[MSDN-ToDouble\]](#) or as described in [\[MS-OAUT\]](#) section 2.2.25 for a [date value](#), the **Value** is equal to an unsigned long integer calculated as follows.

Use the conversion method described in [\[MSDN-ToDouble\]](#) or [\[MS-OAUT\]](#) section 2.2.25 to obtain a double value. If the double value is not an integer, round the value towards zero to the next integer. If the integer is greater than or equal to zero, the **Value** is equal to the integer modulo 4294967296. Otherwise, **Value** is equal to the sum of the integer modulo 4294967296 and 4294967296.

If the source token **Value** is equal to **TRUE** (case insensitive), the **Value** is equal to one. If the source token value is equal to **FALSE** (case insensitive), the **Value** is equal to zero.

In all other cases, the input argument is not valid.

Unit: This property specifies the **Unit** of the [operand token](#) and this property has no value for this custom input type.

2.5.7 Custom Token Groupings

The custom token groupings in the following sections define groupings of tokens, referred to as custom token groupings. A custom token grouping specifies a set of tokens that represents a specific concept. Custom token groupings can contain other custom token groupings. The association of a token to a custom token grouping is not exclusive. These groupings do not exist in the format of the file. The purpose of these groupings is to improve the readability of the document by allowing tokens representing similar concepts to be referred to collectively.

2.5.7.1 vAngle

The **vAngle** custom token grouping is an aggregation of types that represent an angle. The **vAngle** contains the following tokens:

[PtgAngDD](#), [PtgAngDft](#), [PtgAngDMS](#), [PtgAngRad](#)

2.5.7.2 vAny

The **vAny** custom token grouping is an aggregation of types that represent data. The **vAny** contains the following tokens:

[vNumAny](#), [PtgString](#), [PtgColorRGB](#), [PtgCy](#), [PtgPnt](#), [PtgErr](#), [PtgNURBS](#), [PtgPolyline](#)

2.5.7.3 vLength

The **vLength** custom token grouping is an aggregation of types that can be used to represent a length, including a distance, duration, or typography measurement. The value of any type in this grouping MUST be interpreted as a [lengthInternalUnitNumber](#). The **vLength** contains the following tokens:

[PtgEDay](#), [PtgEHour](#), [PtgEMin](#), [PtgESec](#), [PtgEWeek](#), [PtgNumCM](#), [PtgNumDft](#), [PtgNumF](#), [PtgNumFI](#), [PtgNumI](#), [PtgNumKM](#), [PtgNumM](#), [PtgNumMI](#), [PtgNumMM](#), [PtgNumNM](#), [PtgNumYards](#), [PtgPageDft](#), [PtgTDurDft](#), [PtgTypCD](#), [PtgTypCi](#), [PtgTypDft](#), [PtgTypDi](#), [PtgTypPi](#), [PtgTypPP](#), [PtgTypPt](#), [vScalar](#)

2.5.7.4 vNum

The **vNum** custom token grouping is an aggregation of types that represent either a [Unit Number](#) or a number with no units. The **vNum** contains the following tokens:

[vUnitType](#), [vScalar](#)

2.5.7.5 vNumAny

The **vNumAny** custom token grouping is an aggregation of types that represent any number. The **vNumAny** contains the following tokens:

[vNum](#), [PtgBool](#)

2.5.7.6 vScalar

The **vScalar** custom token grouping is an aggregation of types that represent a number with no unit of measure. The **vScalar** contains the following tokens:

[PtgByte](#), [PtgInt](#), [PtgNum](#), [PtgShort](#), [PtgUnsShort](#)

2.5.7.7 vUnitType

The **vUnitType** custom token grouping is an aggregation of types that represent a [Unit Number](#). The **vUnitType** contains the following tokens:

[vAngle](#), [PtgAcre](#), [PtgDate](#), [PtgEDay](#), [PtgEHour](#), [PtgEMin](#), [PtgESec](#), [PtgEWeek](#), [PtgHectare](#), [PtgNumCM](#), [PtgNumDft](#), [PtgNumF](#), [PtgNumFI](#), [PtgNumI](#), [PtgNumKM](#), [PtgNumM](#), [PtgNumMI](#), [PtgNumMM](#), [PtgNumMultiDim](#), [PtgNumNM](#), [PtgNumPct](#), [PtgNumYards](#), [PtgPageDft](#), [PtgTDurDft](#), [PtgTypCD](#), [PtgTypCi](#), [PtgTypDft](#), [PtgTypDi](#), [PtgTypPi](#), [PtgTypPP](#), [PtgTypPt](#)

2.5.8 Custom Internal Unit Types

The custom internal unit types in the following sections specify internal unit types. All internal unit values MUST conform to a double precision floating-point number.

2.5.8.1 angleInternalUnitNumber

The **angleInternalUnitNumber** custom internal unit type specifies a value with a unit of radians.

2.5.8.2 durationInternalUnitNumber

The **durationInternalUnitNumber** custom internal unit type specifies a value with a unit of days.

2.5.8.3 lengthInternalUnitNumber

The **lengthInternalUnitNumber** custom internal unit type specifies a value with a unit of inches.

2.5.8.4 typographicInternalUnitNumber

The **typographicInternalUnitNumber** custom internal unit type specifies a value with a unit of inches.

2.5.9 Custom Structures

The custom structures in the following sections specify custom structures and the set of valid values for these structures.

2.5.9.1 vCalendar

The **vCalendar** custom structure is an unsigned integer that specifies the calendar system to use when formatting dates and times.

It MUST be a value from the following table.

Value	Description
0	Western
1	Arabic Hijri
2	Hebrew Lunar
3	Chinese National
4	Japanese Emperor
5	Thai Buddhist
6	Korean Danki
7	Japanese Saka Era
8	Transliterated English
9	Transliterated French
10	Gregorian US English
11	Gregorian Middle East French
12	Gregorian Arabic
13	Um-al-Qura

2.5.9.2 vCurrency

The **vCurrency** custom structure is a signed integer or a string that specifies a currency.

It MUST be a value from the following table.

ID	String	Meaning
-1		Undefined currency type
0	SYS	System
1	XXX	Omit currency symbol
10	EUR	European Union: euro
11	USD	United States: dollar
12	ATS	Austria: schilling
13	AUD	Australia: dollar
14	BEF	Belgium: franc
15	CAD	Canada: dollar
16	CHF	Switzerland: franc
17	CNY	China (Mainland): yuan
18	DEM	Germany: mark
19	DKK	Denmark: krone
20	ESP	Spain: peseta
21	FIM	Finland: markka
22	FRF	France: franc
23	GBP	United Kingdom: pound
24	GRD	Greece: drachma
25	HKD	Hong Kong SAR: dollar
26	HUF	Hungary: forint
27	IDR	Indonesia: rupiah
28	IEP	Ireland: punt
29	ILS	Israel: shekel
30	ITL	Italy: lira
31	JPY	Japan: yen
32	KRW	Korea, Republic of (South): won
33	LUF	Luxembourg: franc

ID	String	Meaning
34	MXN	Mexico: peso
35	MYR	Malaysia: ringgit
36	NLG	Netherlands: guilder
37	NOK	Norway: krone
38	NZD	New Zealand: dollar
39	PHP	Philippines: peso
40	PLZ	Poland: zloty (obsolete, use 89)
41	PTE	Portugal: escudo
42	ROL	Romania: leu
43	RUR	Russia: rouble (obsolete, use 90)
44	SEK	Sweden: kroner
45	SGD	Singapore: dollar
46	THB	Thailand: baht
47	TWD	Taiwan: dollar
48	XEU	European Currency Unit (ECU)
49	YUN	Yugoslavia: dinar (obsolete, use 91)
50	ZAR	South Africa: rand
56	ARS	Argentina: peso
57	BMD	Bermuda: dollar
58	BOB	Bolivia: boliviano
59	BRR	Brazil: cruzeiro real (obsolete, use 88)
60	BSD	Bahamas: dollar
61	CLP	Chile: peso
62	COP	Colombia: peso
63	CRC	Costa Rica: colon
64	CZK	Czech Republic: koruna
65	DOP	Dominican Republic: peso
66	ECS	Ecuador: sucre
67	EGP	Egypt: pound
68	HNL	Honduras: lempira

ID	String	Meaning
69	INR	India: rupee
70	JMD	Jamaica: dollar
71	JOD	Jordan: dinar
72	KWD	Kuwait: dinar
73	MOP	Macao SAR: pataca
74	NIO	Nicaragua: cordoba oro
75	PAB	Panama: balboa
76	PEN	Peru: nuevo sol
77	PKR	Pakistan: rupee
78	PYG	Paraguay: guarani
79	SAR	Saudi Arabia: riyal
80	SIT	Slovenia: tolar
81	SKK	Slovakia: koruna
82	SVC	El Salvador: colon
83	TRY	Turkey: new lira
84	TTD	Trinidad and Tobago: dollar
85	UYU	Uruguay: peso
86	VEB	Venezuela: bolivar
87	VND	Viet Nam: dong
88	BRL	Brazil: real
89	PLN	Poland: zloty
90	RUB	Russia: rouble
91	YUM	Serbia and Montenegro: dinar
92	BYB	Belarus: ruble
93	UAH	Ukraine: hryvnia
94	AFA	Afghanistan: afghani
95	ALL	Albania: lek
96	DZD	Algeria: dinar
97	ADP	Andorra: peseta
98	AOA	Angola: kwanza

ID	String	Meaning
99	XCD	East Caribbean Dollar
100	AMD	Armenia: dram
101	AWG	Aruba: guilder
102	AZM	Azerbaijan: manat
103	BHD	Bahrain: dinar
104	BDT	Bangladesh: taka
105	BBD	Barbados: dollar
106	BYR	Belarus: ruble
107	BZD	Belize: dollar
108	XOF	CFA Franc BCEAO
109	BTN	Bhutan: ngultrum
110	BAM	Bosnia and Herzegovina: convertible marks
111	BWP	Botswana: pula
112	BND	Brunei: dollar
113	BGL	Bulgaria: lev (historic)
114	BGN	Bulgaria: lev
115	BIF	Burundi: franc
116	KHR	Cambodia: riel
117	XAF	CFA Franc BEAC
118	CVE	Cape Verde: escudo
119	KYD	Cayman Islands: dollar
120	KMF	Comoros: franc
121	CDF	Congo (DRC): franc
122	HRK	Croatia: kuna
123	CUP	Cuba: peso
124	CYP	Cyprus: pound
125	DJF	Djibouti: franc
126	ERN	East Timor: escudo
127	TPE	Eritrea: nakfa
128	EEK	Estonia: kroon

ID	String	Meaning
129	ETB	Ethiopia: birr
130	FKP	Falkland Islands (Islas Malvinas): pound
131	FJD	Fiji Islands: dollar
132	XPF	CFP Franc
133	GMD	The Gambia: dalasi
134	GEL	Georgia: lari
135	GHC	Ghana: cedi
136	GIP	Gibraltar: pound
137	GTQ	Guatemala: quetzal
138	GNF	Guinea: franc
139	GWP	Guinea-Bissau: peso
140	GYD	Guyana: dollar
141	HTG	Haiti: gourde
142	ISK	Iceland: krona
143	IRR	Iran: rial
144	IQD	Iraq: dinar
145	KZT	Kazakhstan: tenge
146	KES	Kenya: shilling
147	KPW	North Korean: won
148	KGS	Kyrgyzstan: som
149	LAK	Laos: kip
150	LVL	Latvia: lats
151	LBP	Lebanon: pound
152	LSL	Lesotho: loti
153	LRD	Liberia: dollar
154	LYD	Libya: dinar
155	LTL	Lithuania: litas
156	MKD	Former Yugoslav Republic of Macedonia: denar
157	MGF	Madagascar: franc
158	MWK	Malawi: kwacha

ID	String	Meaning
159	MVR	Maldives: rufiyaa
160	MTL	Malta: lira
161	MRO	Mauritania: ouguiya
162	MUR	Mauritius: rupee
163	MDL	Moldova: leu
164	MNT	Mongolia: tugrik
165	MAD	Morocco: dirham
166	MZM	Mozambique: metical
167	MMK	Myanmar: kyat
168	NAD	Namibia: dollar
169	NPR	Nepal: rupee
170	ANG	Netherlands Antilles: guilder
171	NGN	Nigeria: naira
172	OMR	Oman: rial
173	PGK	Papua New Guinea: kina
174	QAR	Qatar: rial
175	RWF	Rwanda: franc
176	SHP	Saint Helena: pound
177	WST	Samoa: tala
178	STD	Sao Tome and Principe: dobra
179	SCR	Seychelles: rupee
180	SLL	Seirra Leone: leone
181	SBD	Solomon Islands: dollar
182	SOS	Somalia: shilling
183	LKR	Sri Lanka: rupee
184	SDD	Sudan: dinar
185	SRG	Suriname: guilder
186	SZL	Swaziland: lilangeni
187	SYP	Syria: pound
188	TJR	Tajikistan: ruble

ID	String	Meaning
189	TJS	Tajikistan: somoni
190	TZS	Tanzania: shilling
191	TOP	Tonga: pa'anga
192	TND	Tunisia: dinar
193	TMM	Turkmenistan: manat
194	UGX	Uganda: shilling
195	AED	United Arab Emirates: dirham
196	UZS	Uzbekistan: sum
197	VUV	Vanuatu: vatu
198	YER	Yemen: rial
199	ZMK	Zambia: kwacha
200	ZWD	Zimbabwe: dollar
201	VEF	Venezuela: bolivar fuerte
202	MGA	Madagascar: ariary
203	RSD	Serbia: dinar
204	CSD	Serbia: dinar (Former Serbia and Montenegro)

2.5.9.3 vDataType

The **vDataType** custom structure is an unsigned integer that specifies a data type.

It MUST be a value from the following table.

Value	Meaning
0	Specifies that the data is formatted as a string.
1	Specifies that the data is formatted as a string.
2	Specifies that the data is formatted as a number.
3	Specifies that the data is formatted as a Boolean.
4	Specifies that the data is formatted as a string.
5	Specifies that the data is formatted as a date and time value.
6	Specifies that the data is formatted as a duration value.
7	Specifies that the data is formatted as a currency value.

2.5.9.4 vFieldPicture

The **vFieldPicture** custom structure is an unsigned integer that specifies a predefined format picture string.

It MUST be a value from the following table.

Value	Format string
0	0.####
1	0.#### u
2	0
3	0 u
4	0.0
5	0.0 u
6	0.00
7	0.00 u
8	0.000
9	0.000 u
10	<,FEET/INCH>0.000 u
11	<,rad>0.#### u
12	<,deg>0.# u
13	<,FEET/INCH># #/# u
14	<,FEET/INCH># #/## u
15	0 #/#
16	0 #/# u
17	0 #/##
18	0 #/## u
20	dddd
21	dddddd
22	M/d/y
23	MM/dd/yy
24	MMM d, yyyy
25	MMMM d, yyyy
26	d/M/YY

Value	Format string
27	dd/MM/yy
28	d MMM, yyyy
29	d MMMM, yyyy
30	T
31	h:mm
32	hh:mm
33	H:mm
34	HH:mm
35	h:mm tt
36	Hh:mm tt
37	@
38	@-
39	@+
40 ~ 81	M/d/yyyy
200	M/d/yyyy
201	dddd, MMMM dd, yyyy
202	MMMM d, yyyy
203	M/d/yy
204	yyyy-MM-dd
205	d-MMM-yy
206	M.d.yyyy
207	MMM. d, yy
208	D MMMM yyyy
209	MMMM yy
210	MMM-yy
211	M/d/yyyy h:mm am/pm
212	M/d/yyyy h:mm:ss am/pm
213	H:mm am/pm
214	H:m:ss am/pm
215	HH:mm

Value	Format string
216	HH:mm:ss
217	M/d/yyyy
218	M/d/yyyy
219	M/d/yyyy

2.5.9.5 vFont

The **vFont** custom structure is a string that specifies the name of a system font. If the value is "0" or "", the structure does not specify a font.

2.5.9.6 vFormatString

The **vFormatString** custom structure is a string that specifies the formatting information to determine how a value is displayed. If **vFormatString** is an empty string, the result string is an empty string.

A **vFormatString** is composed of casting notation, field pictures, and format strings.

Casting notation: The casting notation specifies the unit of the value to be formatted and the display unit of the value. If present it MUST appear at the beginning of the **vFormatString**. If the casting notation is present, the notation is stripped from the format string before the formatting is performed. It MUST satisfy the following ABNF.

ABNF:

```
CastingNotation = "<" [ SourceUnit ] "," [ DisplayUnit ] ">"
SourceUnit = string-value
DisplayUnit = string-value
```

The first **string-value** specifies a unit of the value to be formatted. It MUST be a [vUnitString](#) or a value equal to "\$".

The second **string-value** specifies a unit displayed in the resulting string. It MUST be a [vUnitString](#) or a value equal to "\$".

The value to be formatted is converted as follows. If the value to be formatted is a [vScalar](#) and **SourceUnit** is a [vUnitString](#), the value is multiplied by a factor that converts the unit of **SourceUnit** into the [custom internal unit type](#) associated with the type of the unit of **SourceUnit**. If the value to be formatted is a [vScalar](#) and **SourceUnit** is equal to "\$", the value is converted to [PtgCy](#). If **DisplayUnit** is a [vUnitString](#), the resulting value is multiplied by a factor that converts the custom internal unit type associated with the type of the unit of **DisplayUnit** into the unit of **DisplayUnit**. If **DisplayUnit** is "\$", the resulting value is converted to [PtgCy](#).

Field picture: A field picture is a predefined index that specifies format strings. If the format string contains a field picture, it is replaced by the corresponding format string as specified in [vFieldPicture](#) before the formatting is performed. It MUST satisfy the following ABNF.

ABNF:

Field-picture = "{< unsigned-int-value ">}" / "esc(unsigned-int-value ")"

The first **unsigned-int-value** specifies a field picture index. It MUST be a vFieldPicture. If it is not found in the table of vFieldPicture, the default value is following. If the value that is formatted is a PtgCy or vNumAny (except PtgDate, PtgEDay, PtgEHour, PtgEMin, PtgESec, or PtgEWeek), the default value is zero. If the value that is formatted is a PtgDate, PtgEDay, PtgEHour, PtgEMin, PtgESec, or PtgEWeek, the default value is 200. Otherwise, the formatting returns an empty string.

The second **unsigned-int-value** specifies a field picture index. It MUST be a vFieldPicture. If it is greater than 18, the default value is zero.

String format strings: If the format string contains the character "@", the value string is formatted into the result string as specified by the following table. The result strings produced by these format strings are influenced by the language specified for the formatting. The default value for the language is specified by the **Language** property, defined in [ISO/IEC-29500-2](#) section 11, from the [Core XML part](#) of a [web drawing](#).

Format Character	Name	Description
\	Escape character	The next character is inserted into the result string and is not interpreted as a format character. For example, to display the backslash character, "\\" is used.
"text" 'text'	Literal string	The text enclosed in quotation marks is inserted into the result string and the characters are not interpreted as format characters.
@	Text placeholder	The value string is inserted into the result string.
@+	Uppercase text placeholder	The value string is converted to uppercase and inserted into the result string.
@-	Lowercase text placeholder	The value string is converted to lowercase and inserted into the result string. For example, FORMAT("Hello", "@ @+ @-") displays "Hello HELLO hello".

Date/Time format strings: If the format string does not contain the characters "@", "#", or "0", and does contain the characters "h", "H", "m", "M", "s", "S", "d", "D", "y", "Y", "t", "T", "g", "G", "n", "N", "e", "E", "w", "W", "c", or "C", the value is formatted as specified by the following table. The result strings produced by these format strings are influenced by the language and calendar that are specified for the formatting. The default value for the language is specified by the **Language** property, defined in [ISO/IEC-29500-2](#) section 11, from the Core XML part of a web drawing.

In the following table, the format character values listed on multiple lines in the same table row are equivalent.

Format Character	Name	Description
d	Day placeholder	The day of the month as a number is inserted into the result string.

Format Character	Name	Description
dd	Day placeholder	The day of the month as a two-digit number, with a leading zero if necessary, is inserted into the result string.
ddd w	Short day of week placeholder	The day as an abbreviation is inserted into the result string.
dddd ww	Long day of week placeholder	The day as a full name is inserted into the result string.
M	Month placeholder	The month as a number is inserted into the result string.
MM	Month placeholder	The month as a two-digit number, with a leading zero if necessary, is inserted into the result string.
MMM	Month placeholder	The name of the month in abbreviated form is inserted into the result string.
MMMM	Month placeholder	The full name of the month is inserted into the result string.
yy	Year placeholder	The year as a two-digit number is inserted into the result string.
yyyy	Year placeholder	The year as a four-digit number is inserted into the result string.
h	Hour placeholder	The hour in 12-hour form is inserted into the result string.
hh	Hour placeholder	The hour as a two-digit number, with a leading zero if necessary, in 12-hour form is inserted into the result string.
H	Hour placeholder	The hour in 24-hour form is inserted into the result string.
HH	Hour placeholder	The hour as a two-digit number, with a leading zero if necessary, in 24-hour form is inserted into the result string.
m	Minute placeholder	The minute is inserted into the result string.
mm	Minute placeholder	The minute as a two-digit number, with a leading zero if necessary, is inserted into the result string.
s	Second placeholder	The second is inserted into the result string.
ss	Second placeholder	The seconds as a two-digit number, with a leading zero if necessary, is inserted into the result string.
t	AM/PM abbreviation	The first character of the AM/PM designator for the value is inserted into the result string.
tt am/pm	AM/PM designator	The AM/PM designator for the value is inserted into the result string.

Format Character	Name	Description
dddd	Short date placeholder	The value is formatted using a format string "M/d/yyyy" and inserted to the result string. For example, <code>FORMAT(DATETIME("6/25/07 12:05"), "dddd")</code> displays 6/25/2007.
dddddd	Long date placeholder	The value is formatted using a format string "dddd, MMMM dd, yyyy" and inserted to the result string. For example, <code>FORMAT(DATETIME("6/25/07 12:05"), "dddddd")</code> displays Monday, June 25, 2007.
c	Short date/time placeholder	The value is formatted using a format string "M/d/yyyy h:mm:ss tt" and inserted to the result string. If the time value is zero, the value is formatted using a format string "M/d/yyyy" and inserted to the result string. For example, <code>FORMAT(DATETIME("6/25/07 12:05"), "c")</code> displays 6/25/2007 12:05:00 PM.
C	Long date/time placeholder	The value is formatted using a format string "dddd, MMMM dd, yyyy h:mm:ss tt" and inserted to the result string. For example, <code>FORMAT(DATETIME("6/25/07 12:05"), "C")</code> displays Monday, June 25, 2007 12:05:00 PM.
T	Long time placeholder	The value is formatted using a format string "h:mm:ss tt" and inserted to the result string. For example, <code>FORMAT(DATETIME("6/25/07 12:05"), "T")</code> displays 12:05:00 PM.
/	Date separator	The date separator is inserted into the result string.
:	Time separator	The time separator is inserted into the result string.
[y] [Y]	Elapsed years placeholder	The elapsed year value is inserted into the result string.
[yy] [YY]	Elapsed years placeholder	The elapsed year value, as a two-digit number with a leading zero if necessary, is inserted into the result string.
[w] [W]	Elapsed weeks placeholder	The elapsed week value is inserted into the result string.
[ww] [WW]	Elapsed weeks placeholder	The elapsed week value, as a two-digit number with a leading zero if necessary, with a leading zero is inserted into the result string.
[d] [D]	Elapsed days placeholder	The elapsed day value is inserted into the result string.
[dd] [DD]	Elapsed days placeholder	The elapsed day value, as a two-digit number with a leading zero if necessary, is inserted into the result string.
[h] [H]	Elapsed hours placeholder	The elapsed hour value is inserted into the result string.
[hh]	Elapsed hours placeholder	The elapsed hour value, as a two-digit number with a leading zero if necessary, is inserted into the result string.

Format Character	Name	Description
[HH]		
[m]	Elapsed minutes placeholder	The elapsed minute value is inserted into the result string.
[mm]	Elapsed minutes placeholder	The elapsed minute value, as a two-digit number with a leading zero if necessary, is inserted into the result string.
[s]	Elapsed seconds placeholder	The elapsed second value is inserted into the result string.
[ss]	Elapsed seconds placeholder	The elapsed second value, as a two-digit number with a leading zero if necessary, is inserted into the result string.

Numeric format strings: If the format string does not contain the characters "@", and does contain the characters "#" or "0", the value is formatted as specified by the following table. The result strings produced by some of these format strings are influenced by the language that is specified for the formatting. The default value for the language is specified by the **Language** property, defined in [ISO/IEC-29500-2](#) Section 11, from the Core XML part of a web drawing.

Format Character	Name	Description
#	Digit placeholder	If the value being formatted has a digit in the position where the '#' appears in the format string, that digit is inserted into the result string. If the value has more digits than there are placeholders to the left of the decimal, all digits are inserted into the result string. If the value has more digits than there are placeholders to the right of the decimal, the fraction is rounded to the number of placeholders. For example, <code>FORMAT(0.0239, "#.###")</code> displays as <code>.024</code> .
0	Zero placeholder	The digit in the position where the '0' appears in the format string is inserted into the result string. If the value has more digits than there are placeholders to the left of the decimal, all digits are inserted into the result string. If the value has more digits than there are placeholders to the right of the decimal, the fraction is rounded to the number of placeholders. For example, <code>FORMAT(0.0239, "0.00000")</code> displays as <code>0.02390</code> .
.	Decimal separator	The first '.' character in the format string determines the location of the decimal separator in the formatted value. Any additional '.' characters are ignored.
,	Thousands separator	If the format string contains a ',' character between two digit placeholders (0 or #) and if one is present to the left of the decimal point, the result string has a thousands separator inserted between each group of three digits to the left of the decimal separator.
E+	Scientific notation	If the format string contains at least one digit placeholder to the right of this character, the number is formatted using scientific

Format Character	Name	Description
		notation with an 'E' inserted between the mantissa and the exponent. The number of digit placeholders following the scientific notation indicator determines the minimum number of digits to output for the exponent. A sign character '+' always precedes the exponent. For example, <code>FORMAT(12345.67,"###.##E+0")</code> displays as 123.5E+2.
e+	Scientific notation	If the format string contains at least one digit placeholder to the right of this character, the number is formatted using scientific notation with an 'e' inserted between the mantissa and the exponent. The number of digit placeholders following the scientific notation indicator determines the minimum number of digits to output for the exponent. A sign character '+' always precedes the exponent.
E-	Scientific notation	If the format string contains at least one digit placeholder to the right of this character, the number is formatted using scientific notation with an 'E' inserted between the mantissa and the exponent. The number of digit placeholders following the scientific notation indicator determines the minimum number of digits to output for the exponent. A sign character '-' only precedes negative exponents.
e-	Scientific notation	If the format string contains at least one digit placeholder to the right of this character, the number is formatted using scientific notation with an 'e' inserted between the mantissa and the exponent. The number of digit placeholders following the scientific notation indicator determines the minimum number of digits to output for the exponent. A sign character '-' only precedes negative exponents.
/	Fraction placeholder	The value is formatted as a whole number and fraction, and inserted into the result string. The number of digits of the denominator is determined by the number of digit placeholders following the fraction placeholder. The maximum number of digits of a denominator is 5. The value is rounded to the nearest fraction and the simplest form of the fraction is inserted into the result string. For example, <code>FORMAT(12.43, "# #/#")</code> displays as 12 3/7.
{space}	Space placeholder	A space character is inserted into the result string.
u	Lower case, Short label placeholder	A unit measurement of the numeric value in lower case, and an abbreviated form is inserted into the result string. For example, <code>FORMAT(12.43in, "### u")</code> displays as 12.43 in.
U	Upper case, Short label placeholder	A unit measurement of the numeric value in upper case, and an abbreviated form is inserted into the result string. For example, <code>FORMAT(12.43in, "### U")</code> displays as 12.43 IN.
uu	Lower case, Long label placeholder	A unit measurement of the numeric value in lower case is inserted into the result string. For example, <code>FORMAT(12.43in, "### uu")</code> displays as 12.43 inches.

Format Character	Name	Description
UU	Upper case, Long label placeholder	A unit measurement of the numeric value in upper case is inserted into the result string. For example, <code>FORMAT(12.43in, "#.## UU")</code> displays as 12.43 INCHES.
uuu	Lower case, Universal label placeholder	A unit measurement of the numeric value in lower case, and a universal form is inserted into the result string. For example, <code>FORMAT(12.43in, "#.## uuu")</code> displays as 12.43 in.
UUU	Upper case, Universal label placeholder	A unit measurement of the numeric value in upper case, and a universal form is inserted into the result string. For example, <code>FORMAT(12.43in, "#.## UUU")</code> displays as 12.43 IN.

2.5.9.7 vLanguage

The **vLanguage** custom structure is either a [vLanguageID](#) or [vLanguageString](#).

2.5.9.8 vLanguageID

The **vLanguageID** custom structure is an unsigned integer that specifies an LCID that MUST be from the [vLanguageString](#) table.

2.5.9.9 vLanguageString

The **vLanguageString** custom structure is a string that specifies a culture name that MUST be from the following table.

LCID	Culture Name	Language
0x0036	af	Afrikaans
0x0436	af-ZA	Afrikaans (South Africa)
0x001C	sq	Albanian
0x041C	sq-AL	Albanian (Albania)
0x0084	gsw	Alsatian
0x0484	gsw-FR	Alsatian (France)
0x005E	am	Amharic
0x045E	am-ET	Amharic (Ethiopia)
0x0001	ar	Arabic
0x1401	ar-DZ	Arabic (Algeria)
0x3C01	ar-BH	Arabic (Bahrain)
0x0C01	ar-EG	Arabic (Egypt)

LCID	Culture Name	Language
0x0801	ar-IQ	Arabic (Iraq)
0x2C01	ar-JO	Arabic (Jordan)
0x3401	ar-KW	Arabic (Kuwait)
0x3001	ar-LB	Arabic (Lebanon)
0x1001	ar-LY	Arabic (Libya)
0x1801	ar-MA	Arabic (Morocco)
0x2001	ar-OM	Arabic (Oman)
0x4001	ar-QA	Arabic (Qatar)
0x0401	ar-SA	Arabic (Saudi Arabia)
0x2801	ar-SY	Arabic (Syria)
0x1C01	ar-TN	Arabic (Tunisia)
0x3801	ar-AE	Arabic (U.A.E.)
0x2401	ar-YE	Arabic (Yemen)
0x002B	hy	Armenian
0x042B	hy-AM	Armenian (Armenia)
0x004D	as	Assamese
0x044D	as-IN	Assamese (India)
0x002C	az	Azeri
0x742C	az-Cyrl	Azeri (Cyrillic)
0x082C	az-Cyrl-AZ	Azeri (Cyrillic, Azerbaijan)
0x782C	az-Latn	Azeri (Latin)
0x042C	az-Latn-AZ	Azeri (Latin, Azerbaijan)
0x006D	ba	Bashkir
0x046D	ba-RU	Bashkir (Russia)
0x002D	eu	Basque
0x042D	eu-ES	Basque (Basque)
0x0023	be	Belarusian
0x0423	be-BY	Belarusian (Belarus)
0x0045	bn	Bengali
0x0845	bn-BD	Bengali (Bangladesh)

LCID	Culture Name	Language
0x0445	bn-IN	Bengali (India)
0x781A	bs	Bosnian
0x641A	bs-Cyrl	Bosnian (Cyrillic)
0x201A	bs-Cyrl-BA	Bosnian (Cyrillic, Bosnia and Herzegovina)
0x681A	bs-Latn	Bosnian (Latin)
0x141A	bs-Latn-BA	Bosnian (Latin, Bosnia and Herzegovina)
0x007E	br	Breton
0x047E	br-FR	Breton (France)
0x0002	bg	Bulgarian
0x0402	bg-BG	Bulgarian (Bulgaria)
0x0003	ca	Catalan
0x0403	ca-ES	Catalan (Catalan)
0x7804	zh	Chinese
0x0004	zh-Hans	Chinese (Simplified)
0x0804	zh-CN	Chinese (Simplified, PRC)
0x1004	zh-SG	Chinese (Simplified, Singapore)
0x7C04	zh-Hant	Chinese (Traditional)
0x0C04	zh-HK	Chinese (Traditional, Hong Kong S.A.R.)
0x1404	zh-MO	Chinese (Traditional, Macao S.A.R.)
0x0404	zh-TW	Chinese (Traditional, Taiwan)
0x0083	co	Corsican
0x0483	co-FR	Corsican (France)
0x001A	hr	Croatian
0x041A	hr-HR	Croatian (Croatia)
0x101A	hr-BA	Croatian (Latin, Bosnia and Herzegovina)
0x0005	cs	Czech
0x0405	cs-CZ	Czech (Czech Republic)
0x0006	da	Danish
0x0406	da-DK	Danish (Denmark)
0x008C	prs	Dari

LCID	Culture Name	Language
0x048C	prs-AF	Dari (Afghanistan)
0x0065	dv	Divehi
0x0465	dv-MV	Divehi (Maldives)
0x0013	nl	Dutch
0x0813	nl-BE	Dutch (Belgium)
0x0413	nl-NL	Dutch (Netherlands)
0x0009	en	English
0x0C09	en-AU	English (Australia)
0x2809	en-BZ	English (Belize)
0x1009	en-CA	English (Canada)
0x2409	en-029	English (Caribbean)
0x4009	en-IN	English (India)
0x1809	en-IE	English (Ireland)
0x2009	en-JM	English (Jamaica)
0x4409	en-MY	English (Malaysia)
0x1409	en-NZ	English (New Zealand)
0x3409	en-PH	English (Republic of the Philippines)
0x4809	en-SG	English (Singapore)
0x1C09	en-ZA	English (South Africa)
0x2C09	en-TT	English (Trinidad and Tobago)
0x0809	en-GB	English (United Kingdom)
0x0409	en-US	English (United States)
0x3009	en-ZW	English (Zimbabwe)
0x0025	et	Estonian
0x0425	et-EE	Estonian (Estonia)
0x0038	fo	Faroese
0x0438	fo-FO	Faroese (Faroe Islands)
0x0064	fil	Filipino
0x0464	fil-PH	Filipino (Philippines)
0x000B	fi	Finnish

LCID	Culture Name	Language
0x040B	fi-FI	Finnish (Finland)
0x000C	fr	French
0x080C	fr-BE	French (Belgium)
0x0C0C	fr-CA	French (Canada)
0x040C	fr-FR	French (France)
0x140C	fr-LU	French (Luxembourg)
0x180C	fr-MC	French (Monaco)
0x100C	fr-CH	French (Switzerland)
0x0062	fy	Frisian
0x0462	fy-NL	Frisian (Netherlands)
0x0056	gl	Galician
0x0456	gl-ES	Galician (Galician)
0x0037	ka	Georgian
0x0437	ka-GE	Georgian (Georgia)
0x0007	de	German
0x0C07	de-AT	German (Austria)
0x0407	de-DE	German (Germany)
0x1407	de-LI	German (Liechtenstein)
0x1007	de-LU	German (Luxembourg)
0x0807	de-CH	German (Switzerland)
0x0008	el	Greek
0x0408	el-GR	Greek (Greece)
0x006F	kl	Greenlandic
0x046F	kl-GL	Greenlandic (Greenland)
0x0047	gu	Gujarati
0x0447	gu-IN	Gujarati (India)
0x0068	ha	Hausa
0x7C68	ha-Latn	Hausa (Latin)
0x0468	ha-Latn-NG	Hausa (Latin, Nigeria)
0x000D	he	Hebrew

LCID	Culture Name	Language
0x040D	he-IL	Hebrew (Israel)
0x0039	hi	Hindi
0x0439	hi-IN	Hindi (India)
0x000E	hu	Hungarian
0x040E	hu-HU	Hungarian (Hungary)
0x000F	is	Icelandic
0x040F	is-IS	Icelandic (Iceland)
0x0070	ig	Igbo
0x0470	ig-NG	Igbo (Nigeria)
0x0021	id	Indonesian
0x0421	id-ID	Indonesian (Indonesia)
0x005D	iu	Inuktitut
0x7C5D	iu-Latn	Inuktitut (Latin)
0x085D	iu-Latn-CA	Inuktitut (Latin, Canada)
0x785D	iu-Cans	Inuktitut (Syllabics)
0x045D	iu-Cans-CA	Inuktitut (Syllabics, Canada)
0x003C	ga	Irish
0x083C	ga-IE	Irish (Ireland)
0x0034	xh	isiXhosa
0x0434	xh-ZA	isiXhosa (South Africa)
0x0035	zu	isiZulu
0x0435	zu-ZA	isiZulu (South Africa)
0x0010	it	Italian
0x0410	it-IT	Italian (Italy)
0x0810	it-CH	Italian (Switzerland)
0x0011	ja	Japanese
0x0411	ja-JP	Japanese (Japan)
0x004B	kn	Kannada
0x044B	kn-IN	Kannada (India)
0x003F	kk	Kazakh

LCID	Culture Name	Language
0x043F	kk-KZ	Kazakh (Kazakhstan)
0x0053	km	Khmer
0x0453	km-KH	Khmer (Cambodia)
0x0086	qut	K'iche
0x0486	qut-GT	K'iche (Guatemala)
0x0087	rw	Kinyarwanda
0x0487	rw-RW	Kinyarwanda (Rwanda)
0x0041	sw	Kiswahili
0x0441	sw-KE	Kiswahili (Kenya)
0x0057	kok	Konkani
0x0457	kok-IN	Konkani (India)
0x0012	ko	Korean
0x0412	ko-KR	Korean (Korea)
0x0040	ky	Kyrgyz
0x0440	ky-KG	Kyrgyz (Kyrgyzstan)
0x0054	lo	Lao
0x0454	lo-LA	Lao (Lao P.D.R.)
0x0026	lv	Latvian
0x0426	lv-LV	Latvian (Latvia)
0x0027	lt	Lithuanian
0x0427	lt-LT	Lithuanian (Lithuania)
0x7C2E	dsb	Lower Sorbian
0x082E	dsb-DE	Lower Sorbian (Germany)
0x006E	lb	Luxembourgish
0x046E	lb-LU	Luxembourgish (Luxembourg)
0x042F	mk-MK	Macedonian (Former Yugoslav Republic of Macedonia)
0x002F	mk	Macedonian (FYROM)
0x003E	ms	Malay
0x083E	ms-BN	Malay (Brunei Darussalam)
0x043E	ms-MY	Malay (Malaysia)

LCID	Culture Name	Language
0x004C	ml	Malayalam
0x044C	ml-IN	Malayalam (India)
0x003A	mt	Maltese
0x043A	mt-MT	Maltese (Malta)
0x0081	mi	Maori
0x0481	mi-NZ	Maori (New Zealand)
0x007A	arn	Mapudungun
0x047A	arn-CL	Mapudungun (Chile)
0x004E	mr	Marathi
0x044E	mr-IN	Marathi (India)
0x007C	moh	Mohawk
0x047C	moh-CA	Mohawk (Mohawk)
0x0050	mn	Mongolian (Cyrillic)
0x7850	mn-Cyrl	Mongolian (Cyrillic)
0x0450	mn-MN	Mongolian (Cyrillic, Mongolia)
0x7C50	mn-Mong	Mongolian (Traditional Mongolian)
0x0850	mn-Mong-CN	Mongolian (Traditional Mongolian, PRC)
0x0061	ne	Nepali
0x0461	ne-NP	Nepali (Nepal)
0x0014	no	Norwegian
0x7C14	nb	Norwegian (Bokmål)
0x7814	nn	Norwegian (Nynorsk)
0x0414	nb-NO	Norwegian, Bokmål (Norway)
0x0814	nn-NO	Norwegian, Nynorsk (Norway)
0x0082	oc	Occitan
0x0482	oc-FR	Occitan (France)
0x0048	or	Oriya
0x0448	or-IN	Oriya (India)
0x0063	ps	Pashto
0x0463	ps-AF	Pashto (Afghanistan)

LCID	Culture Name	Language
0x0029	fa	Persian
0x0429	fa-IR	Persian
0x0015	pl	Polish
0x0415	pl-PL	Polish (Poland)
0x0016	pt	Portuguese
0x0416	pt-BR	Portuguese (Brazil)
0x0816	pt-PT	Portuguese (Portugal)
0x0046	pa	Punjabi
0x0446	pa-IN	Punjabi (India)
0x006B	quz	Quechua
0x046B	quz-BO	Quechua (Bolivia)
0x086B	quz-EC	Quechua (Ecuador)
0x0C6B	quz-PE	Quechua (Peru)
0x0018	ro	Romanian
0x0418	ro-RO	Romanian (Romania)
0x0017	rm	Romansh
0x0417	rm-CH	Romansh (Switzerland)
0x0019	ru	Russian
0x0419	ru-RU	Russian (Russia)
0x703B	smn	Sami (Inari)
0x7C3B	smj	Sami (Lule)
0x003B	se	Sami (Northern)
0x743B	sms	Sami (Skolt)
0x783B	sma	Sami (Southern)
0x243B	smn-FI	Sami, Inari (Finland)
0x103B	smj-NO	Sami, Lule (Norway)
0x143B	smj-SE	Sami, Lule (Sweden)
0x0C3B	se-FI	Sami, Northern (Finland)
0x043B	se-NO	Sami, Northern (Norway)
0x083B	se-SE	Sami, Northern (Sweden)

LCID	Culture Name	Language
0x203B	sms-FI	Sami, Skolt (Finland)
0x183B	sma-NO	Sami, Southern (Norway)
0x1C3B	sma-SE	Sami, Southern (Sweden)
0x004F	sa	Sanskrit
0x044F	sa-IN	Sanskrit (India)
0x0091	gd	Scottish Gaelic
0x0491	gd-GB	Scottish Gaelic (United Kingdom)
0x7C1A	sr	Serbian
0x6C1A	sr-Cyrl	Serbian (Cyrillic)
0x1C1A	sr-Cyrl-BA	Serbian (Cyrillic, Bosnia and Herzegovina)
0x301A	sr-Cyrl-ME	Serbian (Cyrillic, Montenegro)
0x0C1A	sr-Cyrl-CS	Serbian (Cyrillic, Serbia and Montenegro (Former))
0x281A	sr-Cyrl-RS	Serbian (Cyrillic, Serbia)
0x701A	sr-Latn	Serbian (Latin)
0x181A	sr-Latn-BA	Serbian (Latin, Bosnia and Herzegovina)
0x2C1A	sr-Latn-ME	Serbian (Latin, Montenegro)
0x081A	sr-Latn-CS	Serbian (Latin, Serbia and Montenegro (Former))
0x241A	sr-Latn-RS	Serbian (Latin, Serbia)
0x006C	nso	Sesotho sa Leboa
0x046C	nso-ZA	Sesotho sa Leboa (South Africa)
0x0032	tn	Setswana
0x0432	tn-ZA	Setswana (South Africa)
0x005B	si	Sinhala
0x045B	si-LK	Sinhala (Sri Lanka)
0x001B	sk	Slovak
0x041B	sk-SK	Slovak (Slovakia)
0x0024	sl	Slovenian
0x0424	sl-SI	Slovenian (Slovenia)
0x000A	es	Spanish
0x2C0A	es-AR	Spanish (Argentina)

LCID	Culture Name	Language
0x400A	es-BO	Spanish (Bolivia)
0x340A	es-CL	Spanish (Chile)
0x240A	es-CO	Spanish (Colombia)
0x140A	es-CR	Spanish (Costa Rica)
0x1C0A	es-DO	Spanish (Dominican Republic)
0x300A	es-EC	Spanish (Ecuador)
0x440A	es-SV	Spanish (El Salvador)
0x100A	es-GT	Spanish (Guatemala)
0x480A	es-HN	Spanish (Honduras)
0x080A	es-MX	Spanish (Mexico)
0x4C0A	es-NI	Spanish (Nicaragua)
0x180A	es-PA	Spanish (Panama)
0x3C0A	es-PY	Spanish (Paraguay)
0x280A	es-PE	Spanish (Peru)
0x500A	es-PR	Spanish (Puerto Rico)
0x0C0A	es-ES	Spanish (Spain, International Sort)
0x540A	es-US	Spanish (United States)
0x380A	es-UY	Spanish (Uruguay)
0x200A	es-VE	Spanish (Venezuela)
0x001D	sv	Swedish
0x081D	sv-FI	Swedish (Finland)
0x041D	sv-SE	Swedish (Sweden)
0x005A	syr	Syriac
0x045A	syr-SY	Syriac (Syria)
0x0028	tg	Tajik (Cyrillic)
0x7C28	tg-Cyrl	Tajik (Cyrillic)
0x0428	tg-Cyrl-TJ	Tajik (Cyrillic, Tajikistan)
0x005F	tzm	Tamazight
0x7C5F	tzm-Latn	Tamazight (Latin)
0x085F	tzm-Latn-DZ	Tamazight (Latin, Algeria)

LCID	Culture Name	Language
0x0049	ta	Tamil
0x0449	ta-IN	Tamil (India)
0x0044	tt	Tatar
0x0444	tt-RU	Tatar (Russia)
0x004A	te	Telugu
0x044A	te-IN	Telugu (India)
0x001E	th	Thai
0x041E	th-TH	Thai (Thailand)
0x0051	bo	Tibetan
0x0451	bo-CN	Tibetan (PRC)
0x001F	tr	Turkish
0x041F	tr-TR	Turkish (Turkey)
0x0042	tk	Turkmen
0x0442	tk-TM	Turkmen (Turkmenistan)
0x0022	uk	Ukrainian
0x0422	uk-UA	Ukrainian (Ukraine)
0x002E	hsb	Upper Sorbian
0x042E	hsb-DE	Upper Sorbian (Germany)
0x0020	ur	Urdu
0x0420	ur-PK	Urdu (Islamic Republic of Pakistan)
0x0080	ug	Uyghur
0x0480	ug-CN	Uyghur (PRC)
0x7843	uz-Cyrl	Uzbek (Cyrillic)
0x0843	uz-Cyrl-UZ	Uzbek (Cyrillic, Uzbekistan)
0x0043	uz	Uzbek (Latin)
0x7C43	uz-Latn	Uzbek (Latin)
0x0443	uz-Latn-UZ	Uzbek (Latin, Uzbekistan)
0x002A	vi	Vietnamese
0x042A	vi-VN	Vietnamese (Vietnam)
0x0052	cy	Welsh

LCID	Culture Name	Language
0x0452	cy-GB	Welsh (United Kingdom)
0x0088	wo	Wolof
0x0488	wo-SN	Wolof (Senegal)
0x0085	sah	Yakut
0x0485	sah-RU	Yakut (Russia)
0x0078	ii	Yi
0x0478	ii-CN	Yi (PRC)
0x006A	yo	Yoruba
0x046A	yo-NG	Yoruba (Nigeria)

2.5.9.10 vPanose

The **vPanose** custom structure specifies a string that contains ten integers separated by space. Those integers are used to specify the typefaces of a font.

The meaning of each integer is specified in the following table.

Index	Meaning
0	Family Type
1	Serif Style
2	Weight
3	Proportion
4	Contrast
5	Stroke Variation
6	Arm Style
7	Letterform
8	Midline
9	X-height

2.5.9.11 vThemeString

The **vThemeString** custom structure is a string that specifies a [fixed theme](#) property.

It MUST be a value from the following table.

Fixed Theme Property	User Row_Type	Scheme	Value Type
TextColor	msvThemeTextColor	Color	PtgColorRGB

Fixed Theme Property	User Row_Type	Scheme	Value Type
FillColor	msvThemeFillColor	Color	PtgColorRGB
FillColor2	msvThemeFillColor2	Color	PtgColorRGB
LineColor	msvThemeLineColor	Color	PtgColorRGB
ConnectorColor	msvThemeConnectorColor	Color	PtgColorRGB
ShadowColor	msvThemeShadowColor	Color	PtgColorRGB
AccentColor	msvThemeAccentColor	Color	PtgColorRGB
AccentColor2	msvThemeAccentColor2	Color	PtgColorRGB
AccentColor3	msvThemeAccentColor3	Color	PtgColorRGB
AccentColor4	msvThemeAccentColor4	Color	PtgColorRGB
AccentColor5	msvThemeAccentColor5	Color	PtgColorRGB
BackgroundColor	msvThemeBackgroundColor	Color	PtgColorRGB
LatinFont	msvThemeLatinFont	Effect	vFont
AsianFont	msvThemeAsianFont	Effect	vFont
ComplexFont	msvThemeComplexFont	Effect	vFont
LineTransparency	msvThemeLineTransparency	Effect	PtgNumPct
LinePattern	msvThemeLinePattern	Effect	PtgNum
LineWeight	msvThemeLineWeight	Effect	PtgTypPt
LineRounding	msvThemeLineRounding	Effect	PtgNumI
ConnectorTransparency	msvThemeConnectorTransparency	Effect	PtgNumPct
ConnectorPattern	msvThemeConnectorPattern	Effect	PtgNum
ConnectorWeight	msvThemeConnectorWeight	Effect	PtgTypPt
ConnectorRounding	msvThemeConnectorRounding	Effect	PtgNumI
ConnectorBegin	msvThemeConnectorBegin	Effect	PtgNum
ConnectorEnd	msvThemeConnectorEnd	Effect	PtgNum
ConnectorEnd2	msvThemeConnectorEnd2	Effect	PtgNum
ConnectorBeginSize	msvThemeConnectorBeginSize	Effect	PtgNum
ConnectorEndSize	msvThemeConnectorEndSize	Effect	PtgNum
FillTransparency	msvThemeFillTransparency	Effect	PtgNumPct
FillPattern	msvThemeFillPattern	Effect	PtgNum
ShadowTransparency	msvThemeShadowTransparency	Effect	PtgNumPct

Fixed Theme Property	User Row_Type	Scheme	Value Type
ShadowPattern	msvThemeShadowPattern	Effect	PtgNum
ShadowStyle	msvThemeShadowStyle	Effect	PtgNum
ShadowXOffset	msvThemeShadowXOffset	Effect	PtgNumI
ShadowYOffset	msvThemeShadowYOffset	Effect	PtgNumI
ShadowMagnification	msvThemeShadowMagnification	Effect	PtgNumPct
ShadowDirection	msvThemeShadowDirection	Effect	PtgAngDD

2.5.9.12 vDynamicThemeString

The **vDynamicThemeString** custom structure is a string that specifies a [dynamic theme](#) property.

It MUST be a value from the following table.

Dynamic Theme Property	Description	Value	User Row_Type	No Theme
0	Specifies the value of the dk1 element as specified by the CT_Color type specified in [ISO/IEC-29500-1] section 20.1.4.1.9 in a dynamic theme, or the value of the structure of the Value Cell_Type child element of a msvThemeDarkColor Row_Type element.	PtgColorRGB	msvThemeDarkColor	#000000
1	Specifies the value of the lt1 element as specified by the CT_Color type specified in [ISO/IEC-29500-1] section 20.1.4.1.22 in a dynamic theme, or the value of the structure of the Value Cell_Type child element of a msvThemeLightColor Row_Type element.	PtgColorRGB	msvThemeLightColor	#FFFFFF
2	Specifies the value of the accent1 element as specified by the CT_Color type specified in [ISO/IEC-29500-1]	PtgColorRGB	msvThemeAccentColor	#C05046

Dynamic Theme Property	Description	Value	User Row_Type	No Theme
	section 20.1.4.1.1 in a dynamic theme, or the value of the structure of the Value Cell_Type child element of a msvThemeAccentColor Row_Type element.			
3	Specifies the value of the accent2 element as specified by the CT_Color type specified in [ISO/IEC-29500-1] section 20.1.4.12 in a dynamic theme, or the value of the structure of the Value Cell_Type child element of a msvThemeAccentColor2 Row_Type element.	PtgColorRGB	msvThemeAccentColor2	#9DBB61
4	Specifies the value of the accent3 element as specified by the CT_Color type specified in [ISO/IEC-29500-1] section 20.1.4.12 in a dynamic theme, or the value of the structure of the Value Cell_Type child element of a msvThemeAccentColor3 Row_Type element.	PtgColorRGB	msvThemeAccentColor3	#AB9AC0
5	Specifies the value of the accent4 element as specified by the CT_Color type specified in [ISO/IEC-29500-1] section 20.1.4.12 in a dynamic theme, or the value of the structure of the Value Cell_Type child element of a msvThemeAccentColor4 Row_Type element.	PtgColorRGB	msvThemeAccentColor4	#4BACC6
6	Specifies the value of	PtgColorR	msvThemeAccentColor	#F59D56

Dynamic Theme Property	Description	Value	User Row_Type	No Theme
	the accent5 element as specified by the CT_Color type specified in [ISO/IEC-29500-1] section 20.1.4.12 in a dynamic theme, or the value of the structure of the Value Cell_Type child element of a msvThemeAccentColor5 Row_Type element.	GB	r5	
7	Specifies the value of the accent6 element as specified by the CT_Color type specified in [ISO/IEC-29500-1] section 20.1.4.12 in a dynamic theme, or the value of the structure of the Value Cell_Type child element of an msvThemeAccentColor6 Row_Type element.	PtgColorR GB	msvThemeAccentColor6	#FFC000
8	Specifies the value of the bkgnd element as specified by the CT_Color type specified in [ISO/IEC-29500-1] section §A.4.1 in a dynamic theme, or the value of the structure of the Value Cell_Type child element of an msvThemeBackgrounddColor Row_Type element.	PtgColorR GB	msvThemeBackgrounddColor	#FFFFFF
"TextColor"	Specifies the value of the structure of a Color Cell_Type child element of a Row_Type element that has a Character Section_Type parent element in a dynamic theme.	PtgColorR GB	Not applicable	#000000
"FillColor"	Specifies the value of	PtgColorR	Not applicable	#96AFCF

Dynamic Theme Property	Description	Value	User Row_Type	No Theme
	the structure of a FillForegnd Cell_Type element in a dynamic theme.	GB		
"FillColor2"	Specifies the value of the structure of a FillBkgnd Cell_Type element in a dynamic theme.	PtgColorR GB	Not applicable	#BFCEE1
"LineColor"	Specifies the value of the structure of a LineColor Cell_Type element in a dynamic theme.	PtgColorR GB	Not applicable	#1F477D
"ConnectorColor"	Specifies the value of the structure of a LineColor Cell_Type element in a dynamic theme.	PtgColorR GB	Not applicable	#1F477D
"ShadowColor"	Specifies the value of the structure of a ShdwForegnd Cell_Type element in a dynamic theme.	PtgColorR GB	Not applicable	#464646
"Dark"	Specifies the value of the dk1 element as specified by the CT_Color type specified in [ISO/IEC-29500-1] section 20.1.4.1.9 in a dynamic theme, or the value of the structure of the Value Cell_Type child element of an msvThemeDarkColor Row_Type element.	PtgColorR GB	msvThemeDarkColor	#000000
"Light"	Specifies the value of the lt1 element as specified by the CT_Color type specified in [ISO/IEC-29500-1] section 20.1.4.1.22 in a dynamic theme, or the value of the structure of the Value Cell_Type child element of an msvThemeLightColor Row_Type element.	PtgColorR GB	msvThemeLightColor	#FFFFFF

Dynamic Theme Property	Description	Value	User Row_Type	No Theme
"AccentColor"	Specifies the value of the accent1 element as specified by the CT_Color type specified in [ISO/IEC-29500-1] section 20.1.4.1.1 in a dynamic theme, or the value of the structure of the Value Cell_Type child element of a msvThemeAccentColor Row_Type element.	PtgColorRGB	msvThemeAccentColor	#C05046
"AccentColor2"	Specifies the value of the accent2 element as specified by the CT_Color type specified in [ISO/IEC-29500-1] section 20.1.4.12 in a dynamic theme, or the value of the structure of the Value Cell_Type child element of an msvThemeAccentColor2 Row_Type element.	PtgColorRGB	msvThemeAccentColor2	#9DBB61
"AccentColor3"	Specifies the value of the accent3 element as specified by the CT_Color type specified in [ISO/IEC-29500-1] section 20.1.4.12 in a dynamic theme, or the value of the structure of the Value Cell_Type child element of an msvThemeAccentColor3 Row_Type element.	PtgColorRGB	msvThemeAccentColor3	#AB9AC0
"AccentColor4"	Specifies the value of the accent4 element as specified by the CT_Color type specified in [ISO/IEC-29500-1] section 20.1.4.12 in a dynamic theme, or the value of the structure of the Value Cell_Type child	PtgColorRGB	msvThemeAccentColor4	#4BACC6

Dynamic Theme Property	Description	Value	User Row_Type	No Theme
	element of an msvThemeAccentColor4 Row_Type element.			
"AccentColor5"	Specifies the value of the accent5 element as specified by the CT_Color type specified in [ISO/IEC-29500-1] section 20.1.4.12 in a dynamic theme, or the value of the structure of the Value Cell_Type child element of an msvThemeAccentColor5 Row_Type element.	PtgColorRGB	msvThemeAccentColor5	#F59D56
"AccentColor6"	Specifies the value of the accent6 element as specified by the CT_Color type specified in [ISO/IEC-29500-1] section 20.1.4.12 in a dynamic theme, or the value of the structure of the Value Cell_Type child element of an msvThemeAccentColor6 Row_Type element.	PtgColorRGB	msvThemeAccentColor6	#FFC000
"BackgroundColor"	Specifies the value of the bkgnd element as specified by the CT_Color type specified in [ISO/IEC-29500-1] section §A.4.1 in a dynamic theme, or the value of the structure of the Value Cell_Type child element of an msvThemeBackgrounddColor Row_Type element.	PtgColorRGB	msvThemeBackgrounddColor	#FFFFFF
"LatinFont"	Specifies the value of the structure of a Font Cell_Type element in a dynamic theme.	vFont	Not applicable	Specified by a Font Cell_Type element in the root style sheet .

Dynamic Theme Property	Description	Value	User Row_Type	No Theme
"AsianFont"	Specifies the value of the structure of an AsianFont Cell_Type element in a dynamic theme.	vFont	Not applicable	Specified by an AsianFont Cell_Type element in the root style sheet.
"ComplexFont"	Specifies the value of the structure of a ComplexScriptFont Cell_Type element in a dynamic theme.	vFont	Not applicable	Specified by a ComplexScriptFont Cell_Type element in the root style sheet.
"LineTransparency"	Specifies the value of the structure of a LineColorTrans Cell_Type element in a dynamic theme.	PtgNumPct	Not applicable	Specified by a LineColorTrans Cell_Type element in the root style sheet.
"LinePattern"	Specifies the value of the structure of a LinePattern Cell_Type element in a dynamic theme.	PtgNum	Not applicable	Specified by a LinePattern Cell_Type element in the root style sheet.
"LineWeight"	Specifies the value of the structure of a LineWeight Cell_Type element in a dynamic theme.	PtgTypPt	Not applicable	Specified by a LineWeight Cell_Type element in the root style sheet.
"LineRounding"	Specifies the value of the structure of a Rounding Cell_Type element in a dynamic theme.	PtgNumI	Not applicable	Specified by a Rounding Cell_Type element in the root style sheet.
"LineCap"	Specifies the value of the structure of a LineCap Cell_Type element in a dynamic theme.	PtgNum	Not applicable	Specified by a LineCap Cell_Type element in the root style sheet.
"LineCompoundType"	Specifies the value of the structure of a CompoundType Cell_Type element in a dynamic theme.	PtgNum	Not applicable	Specified by a CompoundType Cell_Type element in the root style sheet.
"LineGradientEnabled"	Specifies the value of the structure of a LineGradientEnabled Cell_Type element in a dynamic theme.	PtgBool	Not applicable	Specified by a LineGradientEnabled Cell_Type element in the root style sheet.
"LineGradientDir"	Specifies the value of the structure of a LineGradientDir Cell_Type element in	PtgNum	Not applicable	Specified by a LineGradientDir Cell_Type element in the root style

Dynamic Theme Property	Description	Value	User Row_Type	No Theme
	a dynamic theme.			sheet.
"LineGradientAngle"	Specifies the value of the structure of a LineGradientAngle Cell_Type element in a dynamic theme.	vAngle	Not applicable	Specified by a LineGradientAngle Cell_Type element in the root style sheet.
"ConnectorTransparency"	Specifies the value of the structure of a LineColorTrans Cell_Type element in a dynamic theme.	PtgNumPct	Not applicable	Specified by a LineColorTrans Cell_Type element in the root style sheet.
"ConnectorPattern"	Specifies the value of the structure of a LinePattern Cell_Type element in a dynamic theme.	PtgNum	Not applicable	Specified by a LinePattern Cell_Type element in the root style sheet.
"ConnectorWeight"	Specifies the value of the structure of a LineWeight Cell_Type element in a dynamic theme.	PtgTypPt	Not applicable	Specified by a LineWeight Cell_Type element in the root style sheet.
"ConnectorRounding"	Specifies the value of the structure of a Rounding Cell_Type element in a dynamic theme.	PtgNumI	Not applicable	Specified by a Rounding Cell_Type element in the root style sheet.
"ConnectorBegin"	Specifies the value of the structure of a BeginArrow Cell_Type element in a dynamic theme.	PtgNum	Not applicable	Specified by a BeginArrow Cell_Type element in the root style sheet.
"ConnectorEnd"	Specifies the value of the structure of a EndArrow Cell_Type element in a dynamic theme.	PtgNum	Not applicable	Specified by an EndArrow Cell_Type element in the root style sheet.
"ConnectorBeginSize"	Specifies the value of the structure of a BeginArrowSize Cell_Type element in a dynamic theme.	PtgNum	Not applicable	Specified by a BeginArrowSize Cell_Type element in the root style sheet.
"ConnectorEndSize"	Specifies the value of the structure of a EndArrowSize Cell_Type element in a dynamic theme.	PtgNum	Not applicable	Specified by an EndArrowSize Cell_Type element in the root style sheet.
"FillTransparency"	Specifies the value of the structure of a	PtgNumPct	Not applicable	Specified by a FillForegndTrans

Dynamic Theme Property	Description	Value	User Row_Type	No Theme
	FillForegndTrans Cell_Type element in a dynamic theme.			Cell_Type element in the root style sheet.
"FillTransparencyBkgnd"	Specifies the value of the structure of a FillBkgndTrans Cell_Type element in a dynamic theme.	PtgNumPct	Not applicable	Specified by a FillBkgndTrans Cell_Type element in the root style sheet.
"FillPattern"	Specifies the value of the structure of a FillPattern Cell_Type element in a dynamic theme.	PtgNum	Not applicable	Specified by a FillPattern Cell_Type element in the root style sheet.
"FillGradientEnabled"	Specifies the value of the structure of a FillGradientEnabled Cell_Type element in a dynamic theme.	PtgBool	Not applicable	Specified by a FillGradientEnabled Cell_Type element in the root style sheet.
"FillGradientDir"	Specifies the value of the structure of a FillGradientDir Cell_Type element in a dynamic theme.	PtgNum	Not applicable	Specified by a FillGradientDir Cell_Type element in the root style sheet.
"FillGradientAngle"	Specifies the value of the structure of a FillGradientAngle Cell_Type element in a dynamic theme.	vAngle	Not applicable	Specified by a FillGradientAngle Cell_Type element in the root style sheet.
"RotateGradientWithShape"	Specifies the value of the structure of a RotateGradientWithShape Cell_Type element in a dynamic theme.	PtgBool	Not applicable	Specified by a RotateGradientWithShape Cell_Type element in the root style sheet.
"UseGroupGradient"	Specifies the value of the structure of a UseGroupGradient Cell_Type element in a dynamic theme.	PtgBool	Not applicable	Specified by a UseGroupGradient Cell_Type element in the root style sheet.
"ShadowTransparency"	Specifies the value of the structure of a ShdwForegndTrans Cell_Type element in a dynamic theme.	PtgNumPct	Not applicable	Specified by a ShdwForegndTrans Cell_Type element in the root style sheet.
"ShadowPattern"	Specifies the value of the structure of a ShdwPattern Cell_Type element in a dynamic theme.	PtgNum	Not applicable	Specified by a ShdwPattern Cell_Type element in the root style sheet.

Dynamic Theme Property	Description	Value	User Row_Type	No Theme
"ShadowStyle"	Specifies the value of the structure of a ShapeShdwType Cell_Type element in a dynamic theme.	PtgByte	Not applicable	Specified by a ShapeShdwType Cell_Type element in the root style sheet.
"ShadowXOffset"	Specifies the value of the structure of a ShapeShdwOffsetX Cell_Type element in a dynamic theme.	vLength	Not applicable	Specified by a ShapeShdwOffsetX Cell_Type element in the root style sheet.
"ShadowYOffset"	Specifies the value of the structure of a ShapeShdwOffsetY Cell_Type element in a dynamic theme.	vLength	Not applicable	Specified by a ShapeShdwOffsetY Cell_Type element in the root style sheet.
"ShadowMagnification"	Specifies the value of the structure of a ShapeShdwScaleFactor Cell_Type element in a dynamic theme.	PtgNum	Not applicable	Specified by a ShapeShdwScaleFactor Cell_Type element in the root style sheet.
"ShadowDirection"	Specifies the value of the structure of a ShapeShdwObliqueAngle Cell_Type element in a dynamic theme.	vAngle	Not applicable	Specified by a ShapeShdwObliqueAngle Cell_Type element in the root style sheet.
"ShadowBlur"	Specifies the value of the structure of a ShapeShdwBlur Cell_Type element in a dynamic theme.	PtgTypPt	Not applicable	Specified by a ShapeShdwBlur Cell_Type element in the root style sheet.
"BevelTopType"	Specifies the value of the structure of a BevelTopType Cell_Type element in a dynamic theme.	PtgNum	Not applicable	Specified by a BevelTopType Cell_Type element in the root style sheet.
"BevelTopWidth"	Specifies the value of the structure of a BevelTopWidth Cell_Type element in a dynamic theme.	vLength	Not applicable	Specified by a BevelTopWidth Cell_Type element in the root style sheet.
"BevelTopHeight"	Specifies the value of the structure of a BevelTopHeight Cell_Type element in a dynamic theme.	vLength	Not applicable	Specified by a BevelTopHeight Cell_Type element in the root style sheet.
"BevelContourColor"	Specifies the value of the structure of a BevelContourColor Cell_Type element in	PtgColorRGB	Not applicable	Specified by a BevelContourColor Cell_Type element in the root style

Dynamic Theme Property	Description	Value	User Row_Type	No Theme
	a dynamic theme.			sheet.
"BevelContourSize"	Specifies the value of the structure of a BevelContourSize Cell_Type element in a dynamic theme.	vLength	Not applicable	Specified by a BevelContourSize Cell_Type element in the root style sheet.
"BevelMaterial"	Specifies the value of the structure of a BevelMaterialType Cell_Type element in a dynamic theme.	PtgByte	Not applicable	Specified by a BevelMaterialType Cell_Type element in the root style sheet.
"BevelLightingType"	Specifies the value of the structure of a BevelLightingType Cell_Type element in a dynamic theme.	PtgByte	Not applicable	Specified by a BevelLightingType Cell_Type element in the root style sheet.
"BevelLightingAngle"	Specifies the value of the structure of a BevelLightingAngle Cell_Type element in a dynamic theme.	PtgNum	Not applicable	Specified by a BevelLightingAngle Cell_Type element in the root style sheet.
"GlowSize"	Specifies the value of the structure of a GlowSize Cell_Type element in a dynamic theme.	vLength	Not applicable	Specified by a GlowSize Cell_Type element in the root style sheet.
"GlowColor"	Specifies the value of the structure of a GlowColor Cell_Type element in a dynamic theme.	PtgColorRGB	Not applicable	Specified by a GlowColor Cell_Type element in the root style sheet.
"GlowColorTrans"	Specifies the value of the structure of a GlowColorTrans Cell_Type element in a dynamic theme.	PtgNum	Not applicable	Specified by a GlowColorTrans Cell_Type element in the root style sheet.
"ReflectionBlur"	Specifies the value of the structure of a ReflectionBlur Cell_Type element in a dynamic theme.	vLength	Not applicable	Specified by a ReflectionBlur Cell_Type element in the root style sheet.
"ReflectionDist"	Specifies the value of the structure of a ReflectionDist Cell_Type element in a dynamic theme.	vLength	Not applicable	Specified by a ReflectionDist Cell_Type element in the root style sheet.
"ReflectionSize"	Specifies the value of the structure of a	PtgNum	Not applicable	Specified by a ReflectionSize

Dynamic Theme Property	Description	Value	User Row_Type	No Theme
	ReflectionSize Cell_Type element in a dynamic theme.			Cell_Type element in the root style sheet.
"ReflectionTrans"	Specifies the value of the structure of a ReflectionTrans Cell_Type element in a dynamic theme.	PtgNum	Not applicable	Specified by a ReflectionTrans Cell_Type element in the root style sheet.
"SoftEdgesSize"	Specifies the value of the structure of a SoftEdgesSize Cell_Type element in a dynamic theme.	vLength	Not applicable	Specified by a SoftEdgesSize Cell_Type element in the root style sheet.
"SketchAmount"	Specifies the value of the structure of a SketchAmount Cell_Type element in a dynamic theme.	PtgInt	Not applicable	Specified by a SketchAmount Cell_Type element in the root style sheet.
"SketchEnabled"	Specifies the value of the structure of a SketchEnabled Cell_Type element in a dynamic theme.	PtgBool	Not applicable	Specified by a SketchEnabled Cell_Type element in the root style sheet.
"SketchFillChange"	Specifies the value of the structure of a SketchFillChange Cell_Type element in a dynamic theme.	PtgNum	Not applicable	Specified by a SketchFillChange Cell_Type element in the root style sheet.
"SketchLineChange"	Specifies the value of the structure of a SketchLineChange Cell_Type element in a dynamic theme.	PtgNum	Not applicable	Specified by a SketchLineChange Cell_Type element in the root style sheet.
"SketchLineWeight"	Specifies the value of the structure of a SketchLineWeight Cell_Type element in a dynamic theme.	vLength	Not applicable	Specified by a SketchLineWeight Cell_Type element in the root style sheet.
"LineStop1Color"	Specifies the value of the structure of a GradientStopColor Cell_Type child element of a Row_Type element whose IX attribute value is equal to zero that has a LineGradient Section_Type parent element in a dynamic	PtgColorR GB	Not applicable	Specified by a GradientStopColor Cell_Type child element of a Row_Type element whose IX attribute value is equal to zero that has a LineGradient Section_Type parent element in the root style sheet.

Dynamic Theme Property	Description	Value	User Row_Type	No Theme
	theme.			
"LineStop1Transparency"	Specifies the value of the structure of a GradientStopColorTrans Cell_Type child element of a Row_Type element whose IX attribute value is equal to zero that has a LineGradient Section_Type parent element in a dynamic theme.	PtgNum	Not applicable	Specified by a GradientStopColorTrans Cell_Type child element of a Row_Type element whose IX attribute value is equal to zero that has a LineGradient Section_Type parent element in the root style sheet.
"LineStop1Position"	Specifies the value of the structure of a GradientStopPosition Cell_Type child element of a Row_Type element whose IX attribute value is equal to zero that has a LineGradient Section_Type parent element in a dynamic theme.	vLength	Not applicable	Specified by a GradientStopPosition Cell_Type child element of a Row_Type element whose IX attribute value is equal to zero that has a LineGradient Section_Type parent element in the root style sheet.
"LineStop2Color"	Specifies the value of the structure of a GradientStopColor Cell_Type child element of a Row_Type element whose IX attribute value is equal to one that has a LineGradient Section_Type parent element in a dynamic theme.	PtgColorRGB	Not applicable	Specified by a GradientStopColor Cell_Type child element of a Row_Type element whose IX attribute value is equal to one that has a LineGradient Section_Type parent element in the root style sheet.
"LineStop2Transparency"	Specifies the value of the structure of a GradientStopColorTrans Cell_Type child element of a Row_Type element whose IX attribute value is equal to one that has a LineGradient Section_Type parent element in a dynamic theme.	PtgNum	Not applicable	Specified by a GradientStopColorTrans Cell_Type child element of a Row_Type element whose IX attribute value is equal to one that has a LineGradient Section_Type parent element in the root style sheet.

Dynamic Theme Property	Description	Value	User Row_Type	No Theme
"LineStop2Position"	Specifies the value of the structure of a GradientStopPosition Cell_Type child element of a Row_Type element whose IX attribute value is equal to one that has a LineGradient Section_Type parent element in a dynamic theme.	vLength	Not applicable	Specified by a GradientStopPosition Cell_Type child element of a Row_Type element whose IX attribute value is equal to one that has a LineGradient Section_Type parent element in the root style sheet.
"LineStop3Color"	Specifies the value of the structure of a GradientStopColor Cell_Type child element of a Row_Type element whose IX attribute value is equal to 2 that has a LineGradient Section_Type parent element in a dynamic theme.	PtgColorRGB	Not applicable	Specified by a GradientStopColor Cell_Type child element of a Row_Type element whose IX attribute value is equal to 2 that has a LineGradient Section_Type parent element in the root style sheet.
"LineStop3Transparency"	Specifies the value of the structure of a GradientStopColorTrans Cell_Type child element of a Row_Type element whose IX attribute value is equal to 2 that has a LineGradient Section_Type parent element in a dynamic theme.	PtgNum	Not applicable	Specified by a GradientStopColorTrans Cell_Type child element of a Row_Type element whose IX attribute value is equal to 2 that has a LineGradient Section_Type parent element in the root style sheet.
"LineStop3Position"	Specifies the value of the structure of a GradientStopPosition Cell_Type child element of a Row_Type element whose IX attribute value is equal to 2 that has a LineGradient Section_Type parent element in a dynamic theme.	vLength	Not applicable	Specified by a GradientStopPosition Cell_Type child element of a Row_Type element whose IX attribute value is equal to 2 that has a LineGradient Section_Type parent element in the root style sheet.
"LineStop4Color"	Specifies the value of the structure of a	PtgColorRGB	Not applicable	Specified by a GradientStopColor

Dynamic Theme Property	Description	Value	User Row_Type	No Theme
	GradientStopColor Cell_Type child element of a Row_Type element whose IX attribute value is equal to 3 that has a LinearGradient Section_Type parent element in a dynamic theme.			Cell_Type child element of a Row_Type element whose IX attribute value is equal to 3 that has a LinearGradient Section_Type parent element in the root style sheet.
"LineStop4Transparency"	Specifies the value of the structure of a GradientStopColorTrans Cell_Type child element of a Row_Type element whose IX attribute value is equal to 3 that has a LinearGradient Section_Type parent element in a dynamic theme.	PtgNum	Not applicable	Specified by a GradientStopColorTrans Cell_Type child element of a Row_Type element whose IX attribute value is equal to 3 that has a LinearGradient Section_Type parent element in the root style sheet.
"LineStop4Position"	Specifies the value of the structure of a GradientStopPosition Cell_Type child element of a Row_Type element whose IX attribute value is equal to 3 that has a LinearGradient Section_Type parent element in a dynamic theme.	vLength	Not applicable	Specified by a GradientStopPosition Cell_Type child element of a Row_Type element whose IX attribute value is equal to 3 that has a LinearGradient Section_Type parent element in the root style sheet.
"LineStop5Color"	Specifies the value of the structure of a GradientStopColor Cell_Type child element of a Row_Type element whose IX attribute value is equal to 4 that has a LinearGradient Section_Type parent element in a dynamic theme.	PtgColorRGB	Not applicable	Specified by a GradientStopColor Cell_Type child element of a Row_Type element whose IX attribute value is equal to 4 that has a LinearGradient Section_Type parent element in the root style sheet.
"LineStop5Transparency"	Specifies the value of the structure of a GradientStopColorTrans Cell_Type child	PtgNum	Not applicable	Specified by a GradientStopColorTrans Cell_Type child element of a

Dynamic Theme Property	Description	Value	User Row_Type	No Theme
	element of a Row_Type element whose IX attribute value is equal to 4 that has a LinearGradient Section_Type parent element in a dynamic theme.			Row_Type element whose IX attribute value is equal to 4 that has a LinearGradient Section_Type parent element in the root style sheet.
"LineStop5Position"	Specifies the value of the structure of a GradientStopPosition Cell_Type child element of a Row_Type element whose IX attribute value is equal to 4 that has a LinearGradient Section_Type parent element in a dynamic theme.	vLength	Not applicable	Specified by a GradientStopPosition Cell_Type child element of a Row_Type element whose IX attribute value is equal to 4 that has a LinearGradient Section_Type parent element in the root style sheet.
"LineStop6Color"	Specifies the value of the structure of a GradientStopColor Cell_Type child element of a Row_Type element whose IX attribute value is equal to 5 that has a LinearGradient Section_Type parent element in a dynamic theme.	PtgColorRGB	Not applicable	Specified by a GradientStopColor Cell_Type child element of a Row_Type element whose IX attribute value is equal to 5 that has a LinearGradient Section_Type parent element in the root style sheet.
"LineStop6Transparency"	Specifies the value of the structure of a GradientStopColorTrans Cell_Type child element of a Row_Type element whose IX attribute value is equal to 5 that has a LinearGradient Section_Type parent element in a dynamic theme.	PtgNum	Not applicable	Specified by a GradientStopColorTrans Cell_Type child element of a Row_Type element whose IX attribute value is equal to 5 that has a LinearGradient Section_Type parent element in the root style sheet.
"LineStop6Position"	Specifies the value of the structure of a GradientStopPosition Cell_Type child element of a Row_Type element	vLength	Not applicable	Specified by a GradientStopPosition Cell_Type child element of a Row_Type element whose IX attribute

Dynamic Theme Property	Description	Value	User Row_Type	No Theme
	whose IX attribute value is equal to 5 that has a LineGradient Section_Type parent element in a dynamic theme.			value is equal to 5 that has a LineGradient Section_Type parent element in the root style sheet.
"LineStop7Color"	Specifies the value of the structure of a GradientStopColor Cell_Type child element of a Row_Type element whose IX attribute value is equal to 6 that has a LineGradient Section_Type parent element in a dynamic theme.	PtgColorRGB	Not applicable	Specified by a GradientStopColor Cell_Type child element of a Row_Type element whose IX attribute value is equal to 6 that has a LineGradient Section_Type parent element in the root style sheet.
"LineStop7Transparency"	Specifies the value of the structure of a GradientStopColorTrans Cell_Type child element of a Row_Type element whose IX attribute value is equal to 6 that has a LineGradient Section_Type parent element in a dynamic theme.	PtgNum	Not applicable	Specified by a GradientStopColorTrans Cell_Type child element of a Row_Type element whose IX attribute value is equal to 6 that has a LineGradient Section_Type parent element in the root style sheet.
"LineStop7Position"	Specifies the value of the structure of a GradientStopPosition Cell_Type child element of a Row_Type element whose IX attribute value is equal to 6 that has a LineGradient Section_Type parent element in a dynamic theme.	vLength	Not applicable	Specified by a GradientStopPosition Cell_Type child element of a Row_Type element whose IX attribute value is equal to 6 that has a LineGradient Section_Type parent element in the root style sheet.
"LineStop8Color"	Specifies the value of the structure of a GradientStopColor Cell_Type child element of a Row_Type element whose IX attribute value is equal to 7	PtgColorRGB	Not applicable	Specified by a GradientStopColor Cell_Type child element of a Row_Type element whose IX attribute value is equal to 7 that has a

Dynamic Theme Property	Description	Value	User Row_Type	No Theme
	that has a LineGradient Section_Type parent element in a dynamic theme.			LineGradient Section_Type parent element in the root style sheet.
"LineStop8Transparency"	Specifies the value of the structure of a GradientStopColorTrans Cell_Type child element of a Row_Type element whose IX attribute value is equal to 7 that has a LineGradient Section_Type parent element in a dynamic theme.	PtgNum	Not applicable	Specified by a GradientStopColorTrans Cell_Type child element of a Row_Type element whose IX attribute value is equal to 7 that has a LineGradient Section_Type parent element in the root style sheet.
"LineStop8Position"	Specifies the value of the structure of a GradientStopPosition Cell_Type child element of a Row_Type element whose IX attribute value is equal to 7 that has a LineGradient Section_Type parent element in a dynamic theme.	vLength	Not applicable	Specified by a GradientStopPosition Cell_Type child element of a Row_Type element whose IX attribute value is equal to 7 that has a LineGradient Section_Type parent element in the root style sheet.
"LineStop9Color"	Specifies the value of the structure of a GradientStopColor Cell_Type child element of a Row_Type element whose IX attribute value is equal to 8 that has a LineGradient Section_Type parent element in a dynamic theme.	PtgColorRGB	Not applicable	Specified by a GradientStopColor Cell_Type child element of a Row_Type element whose IX attribute value is equal to 8 that has a LineGradient Section_Type parent element in the root style sheet.
"LineStop9Transparency"	Specifies the value of the structure of a GradientStopColorTrans Cell_Type child element of a Row_Type element whose IX attribute value is equal to 8 that has a LineGradient	PtgNum	Not applicable	Specified by a GradientStopColorTrans Cell_Type child element of a Row_Type element whose IX attribute value is equal to 8 that has a LineGradient Section_Type parent

Dynamic Theme Property	Description	Value	User Row_Type	No Theme
	Section_Type parent element in a dynamic theme.			element in the root style sheet.
"LineStop9Position"	Specifies the value of the structure of a GradientStopPosition Cell_Type child element of a Row_Type element whose IX attribute value is equal to 8 that has a LineGradient Section_Type parent element in a dynamic theme.	vLength	Not applicable	Specified by a GradientStopPosition Cell_Type child element of a Row_Type element whose IX attribute value is equal to 8 that has a LineGradient Section_Type parent element in the root style sheet.
"LineStop10Color"	Specifies the value of the structure of a GradientStopColor Cell_Type child element of a Row_Type element whose IX attribute value is equal to 9 that has a LineGradient Section_Type parent element in a dynamic theme.	PtgColorRGB	Not applicable	Specified by a GradientStopColor Cell_Type child element of a Row_Type element whose IX attribute value is equal to 9 that has a LineGradient Section_Type parent element in the root style sheet.
"LineStop10Transparency"	Specifies the value of the structure of a GradientStopColorTrans Cell_Type child element of a Row_Type element whose IX attribute value is equal to 9 that has a LineGradient Section_Type parent element in a dynamic theme.	PtgNum	Not applicable	Specified by a GradientStopColorTrans Cell_Type child element of a Row_Type element whose IX attribute value is equal to 9 that has a LineGradient Section_Type parent element in the root style sheet.
"LineStop10Position"	Specifies the value of the structure of a GradientStopPosition Cell_Type child element of a Row_Type element whose IX attribute value is equal to 9 that has a LineGradient Section_Type parent element in a dynamic theme.	vLength	Not applicable	Specified by a GradientStopPosition Cell_Type child element of a Row_Type element whose IX attribute value is equal to 10 that has a LineGradient Section_Type parent element in the root style sheet.

Dynamic Theme Property	Description	Value	User Row_Type	No Theme
	theme.			
"FillStop1Color"	Specifies the value of the structure of a GradientStopColor Cell_Type child element of a Row_Type element whose IX attribute value is equal to zero that has a FillGradient Section_Type parent element in a dynamic theme.	PtgColorRGB	Not applicable	Specified by a GradientStopColor Cell_Type child element of a Row_Type element whose IX attribute value is equal to zero that has a FillGradient Section_Type parent element in the root style sheet.
"FillStop1Transparency"	Specifies the value of the structure of a GradientStopColorTrans Cell_Type child element of a Row_Type element whose IX attribute value is equal to zero that has a FillGradient Section_Type parent element in a dynamic theme.	PtgNum	Not applicable	Specified by a GradientStopColorTrans Cell_Type child element of a Row_Type element whose IX attribute value is equal to zero that has a FillGradient Section_Type parent element in the root style sheet.
"FillStop1Position"	Specifies the value of the structure of a GradientStopPosition Cell_Type child element of a Row_Type element whose IX attribute value is equal to zero that has a FillGradient Section_Type parent element in a dynamic theme.	vLength	Not applicable	Specified by a GradientStopPosition Cell_Type child element of a Row_Type element whose IX attribute value is equal to zero that has a FillGradient Section_Type parent element in the root style sheet.
"FillStop2Color"	Specifies the value of the structure of a GradientStopColor Cell_Type child element of a Row_Type element whose IX attribute value is equal to one that has a FillGradient Section_Type parent element in a dynamic theme.	PtgColorRGB	Not applicable	Specified by a GradientStopColor Cell_Type child element of a Row_Type element whose IX attribute value is equal to one that has a FillGradient Section_Type parent element in the root style sheet.
"FillStop2Transparency"	Specifies the value of the structure of a GradientStopColorTrans Cell_Type child	PtgNum	Not applicable	Specified by a GradientStopColorTrans Cell_Type child element of a

Dynamic Theme Property	Description	Value	User Row_Type	No Theme
	element of a Row_Type element whose IX attribute value is equal to one that has a FillGradient Section_Type parent element in a dynamic theme.			Row_Type element whose IX attribute value is equal to one that has a FillGradient Section_Type parent element in the root style sheet.
"FillStop2Position"	Specifies the value of the structure of a GradientStopPosition Cell_Type child element of a Row_Type element whose IX attribute value is equal to one that has a FillGradient Section_Type parent element in a dynamic theme.	vLength	Not applicable	Specified by a GradientStopPosition Cell_Type child element of a Row_Type element whose IX attribute value is equal to one that has a FillGradient Section_Type parent element in the root style sheet.
"FillStop3Color"	Specifies the value of the structure of a GradientStopColor Cell_Type child element of a Row_Type element whose IX attribute value is equal to 2 that has a FillGradient Section_Type parent element in a dynamic theme.	PtgColorRGB	Not applicable	Specified by a GradientStopColor Cell_Type child element of a Row_Type element whose IX attribute value is equal to two that has a FillGradient Section_Type parent element in the root style sheet.
"FillStop3Transparency"	Specifies the value of the structure of a GradientStopColorTrans Cell_Type child element of a Row_Type element whose IX attribute value is equal to 2 that has a FillGradient Section_Type parent element in a dynamic theme.	PtgNum	Not applicable	Specified by a GradientStopColorTrans Cell_Type child element of a Row_Type element whose IX attribute value is equal to 2 that has a FillGradient Section_Type parent element in the root style sheet.
"FillStop3Position"	Specifies the value of the structure of a GradientStopPosition Cell_Type child element of a Row_Type element whose IX attribute value is equal to 2 that has a FillGradient Section_Type parent	vLength	Not applicable	Specified by a GradientStopPosition Cell_Type child element of a Row_Type element whose IX attribute value is equal to 2 that has a FillGradient Section_Type parent

Dynamic Theme Property	Description	Value	User Row_Type	No Theme
	element in a dynamic theme.			element in the root style sheet.
"FillStop4Color"	Specifies the value of the structure of a GradientStopColor Cell_Type child element of a Row_Type element whose IX attribute value is equal to 3 that has a FillGradient Section_Type parent element in a dynamic theme.	PtgColorRGB	Not applicable	Specified by a GradientStopColor Cell_Type child element of a Row_Type element whose IX attribute value is equal to 3 that has a FillGradient Section_Type parent element in the root style sheet.
"FillStop4Transparency"	Specifies the value of the structure of a GradientStopColorTrans Cell_Type child element of a Row_Type element whose IX attribute value is equal to 3 that has a FillGradient Section_Type parent element in a dynamic theme.	PtgNum	Not applicable	Specified by a GradientStopColorTrans Cell_Type child element of a Row_Type element whose IX attribute value is equal to 3 that has a FillGradient Section_Type parent element in the root style sheet.
"FillStop4Position"	Specifies the value of the structure of a GradientStopPosition Cell_Type child element of a Row_Type element whose IX attribute value is equal to 3 that has a FillGradient Section_Type parent element in a dynamic theme.	vLength	Not applicable	Specified by a GradientStopPosition Cell_Type child element of a Row_Type element whose IX attribute value is equal to 3 that has a FillGradient Section_Type parent element in the root style sheet.
"FillStop5Color"	Specifies the value of the structure of a GradientStopColor Cell_Type child element of a Row_Type element whose IX attribute value is equal to 4 that has a FillGradient Section_Type parent element in a dynamic theme.	PtgColorRGB	Not applicable	Specified by a GradientStopColor Cell_Type child element of a Row_Type element whose IX attribute value is equal to 4 that has a FillGradient Section_Type parent element in the root style sheet.
"FillStop5Transparency"	Specifies the value of the structure of a GradientStopColorTrans	PtgNum	Not applicable	Specified by a GradientStopColorTrans Cell_Type child

Dynamic Theme Property	Description	Value	User Row_Type	No Theme
	ns Cell_Type child element of a Row_Type element whose IX attribute value is equal to 4 that has a FillGradient Section_Type parent element in a dynamic theme.			element of a Row_Type element whose IX attribute value is equal to 4 that has a FillGradient Section_Type parent element in the root style sheet.
"FillStop5Position"	Specifies the value of the structure of a GradientStopPosition Cell_Type child element of a Row_Type element whose IX attribute value is equal to 4 that has a FillGradient Section_Type parent element in a dynamic theme.	vLength	Not applicable	Specified by a GradientStopPosition Cell_Type child element of a Row_Type element whose IX attribute value is equal to 4 that has a FillGradient Section_Type parent element in the root style sheet.
"FillStop6Color"	Specifies the value of the structure of a GradientStopColor Cell_Type child element of a Row_Type element whose IX attribute value is equal to 5 that has a FillGradient Section_Type parent element in a dynamic theme.	PtgColorRGB	Not applicable	Specified by a GradientStopColor Cell_Type child element of a Row_Type element whose IX attribute value is equal to 5 that has a FillGradient Section_Type parent element in the root style sheet.
"FillStop6Transparency"	Specifies the value of the structure of a GradientStopColorTrans Cell_Type child element of a Row_Type element whose IX attribute value is equal to 5 that has a FillGradient Section_Type parent element in a dynamic theme.	PtgNum	Not applicable	Specified by a GradientStopColorTrans Cell_Type child element of a Row_Type element whose IX attribute value is equal to 5 that has a FillGradient Section_Type parent element in the root style sheet.
"FillStop6Position"	Specifies the value of the structure of a GradientStopPosition Cell_Type child element of a Row_Type element whose IX attribute value is equal to 5 that has a FillGradient	vLength	Not applicable	Specified by a GradientStopPosition Cell_Type child element of a Row_Type element whose IX attribute value is equal to 5 that has a FillGradient

Dynamic Theme Property	Description	Value	User Row_Type	No Theme
	Section_Type parent element in a dynamic theme.			Section_Type parent element in the root style sheet.
"FillStop7Color"	Specifies the value of the structure of a GradientStopColor Cell_Type child element of a Row_Type element whose IX attribute value is equal to 6 that has a FillGradient Section_Type parent element in a dynamic theme.	PtgColorRGB	Not applicable	Specified by a GradientStopColor Cell_Type child element of a Row_Type element whose IX attribute value is equal to 6 that has a FillGradient Section_Type parent element in the root style sheet.
"FillStop7Transparency"	Specifies the value of the structure of a GradientStopColorTrans Cell_Type child element of a Row_Type element whose IX attribute value is equal to 6 that has a FillGradient Section_Type parent element in a dynamic theme.	PtgNum	Not applicable	Specified by a GradientStopColorTrans Cell_Type child element of a Row_Type element whose IX attribute value is equal to 6 that has a FillGradient Section_Type parent element in the root style sheet.
"FillStop7Position"	Specifies the value of the structure of a GradientStopPosition Cell_Type child element of a Row_Type element whose IX attribute value is equal to 6 that has a FillGradient Section_Type parent element in a dynamic theme.	vLength	Not applicable	Specified by a GradientStopPosition Cell_Type child element of a Row_Type element whose IX attribute value is equal to 6 that has a FillGradient Section_Type parent element in the root style sheet.
"FillStop8Color"	Specifies the value of the structure of a GradientStopColor Cell_Type child element of a Row_Type element whose IX attribute value is equal to 7 that has a FillGradient Section_Type parent element in a dynamic theme.	PtgColorRGB	Not applicable	Specified by a GradientStopColor Cell_Type child element of a Row_Type element whose IX attribute value is equal to 7 that has a FillGradient Section_Type parent element in the root style sheet.
"FillStop8Transparency"	Specifies the value of the structure of a	PtgNum	Not applicable	Specified by a GradientStopColorTr

Dynamic Theme Property	Description	Value	User Row_Type	No Theme
	GradientStopColorTrans Cell_Type child element of a Row_Type element whose IX attribute value is equal to 7 that has a FillGradientSection_Type parent element in a dynamic theme.			ans Cell_Type child element of a Row_Type element whose IX attribute value is equal to 7 that has a FillGradientSection_Type parent element in the root style sheet.
"FillStop8Position"	Specifies the value of the structure of a GradientStopPosition Cell_Type child element of a Row_Type element whose IX attribute value is equal to 7 that has a FillGradientSection_Type parent element in a dynamic theme.	vLength	Not applicable	Specified by a GradientStopPosition Cell_Type child element of a Row_Type element whose IX attribute value is equal to 7 that has a FillGradientSection_Type parent element in the root style sheet.
"FillStop9Color"	Specifies the value of the structure of a GradientStopColor Cell_Type child element of a Row_Type element whose IX attribute value is equal to 8 that has a FillGradientSection_Type parent element in a dynamic theme.	PtgColorRGB	Not applicable	Specified by a GradientStopColor Cell_Type child element of a Row_Type element whose IX attribute value is equal to 8 that has a FillGradientSection_Type parent element in the root style sheet.
"FillStop9Transparency"	Specifies the value of the structure of a GradientStopColorTrans Cell_Type child element of a Row_Type element whose IX attribute value is equal to 8 that has a FillGradientSection_Type parent element in a dynamic theme.	PtgNum	Not applicable	Specified by a GradientStopColorTrans Cell_Type child element of a Row_Type element whose IX attribute value is equal to 8 that has a FillGradientSection_Type parent element in the root style sheet.
"FillStop9Position"	Specifies the value of the structure of a GradientStopPosition Cell_Type child element of a Row_Type element whose IX attribute value is equal to 8	vLength	Not applicable	Specified by a GradientStopPosition Cell_Type child element of a Row_Type element whose IX attribute value is equal to 8 that has a

Dynamic Theme Property	Description	Value	User Row_Type	No Theme
	that has a FillGradientSection_Type parent element in a dynamic theme.			FillGradientSection_Type parent element in the root style sheet.
"FillStop10Color"	Specifies the value of the structure of a GradientStopColorCell_Type child element of a Row_Type element whose IX attribute value is equal to 9 that has a FillGradientSection_Type parent element in a dynamic theme.	PtgColorRGB	Not applicable	Specified by a GradientStopColorCell_Type child element of a Row_Type element whose IX attribute value is equal to 9 that has a FillGradientSection_Type parent element in the root style sheet.
"FillStop10Transparency"	Specifies the value of the structure of a GradientStopColorTrans Cell_Type child element of a Row_Type element whose IX attribute value is equal to 9 that has a FillGradientSection_Type parent element in a dynamic theme.	PtgNum	Not applicable	Specified by a GradientStopColorTrans Cell_Type child element of a Row_Type element whose IX attribute value is equal to 9 that has a FillGradientSection_Type parent element in the root style sheet.
"FillStop10Position"	Specifies the value of the structure of a GradientStopPosition Cell_Type child element of a Row_Type element whose IX attribute value is equal to 9 that has a FillGradientSection_Type parent element in a dynamic theme.	vLength	Not applicable	Specified by a GradientStopPosition Cell_Type child element of a Row_Type element whose IX attribute value is equal to 9 that has a FillGradientSection_Type parent element in the root style sheet.

2.5.9.13 vThemeColor

The **vThemeColor** custom structure is a [PtgColorRGB](#) that specifies a [fixed theme](#) fixed color scheme.

Fixed theme property values for each of the fixed color schemes are specified in the following table.

Fixed Theme Index	Text Color	Fill Color	Fill Color 2	Line Color	Connector Color	Shadow Color
0	#000000	#96AFCF	#BFCCE1	#1F477D	#1F477D	#464646

Fixed Theme Index	Text Color	Fill Color	Fill Color 2	Line Color	Connector Color	Shadow Color
1	#000000	#FFFFFF	#EAEAEA	#000000	#000000	#C0C0C0
2	#000000	#9AB3D1	#C4D2E3	#1F497D	#1F497D	#464646
3	#000000	#A0BFD8	#BBD0E1	#69544B	#775F55	#827068
4	#000000	#6AC5DB	#8CD2E3	#464646	#464646	#464646
5	#000000	#6FBBCE	#A0D1DE	#4F271C	#4F271C	#7E6C67
6	#000000	#8FB6C2	#A8C7D0	#3B3B3B	#3B3B3B	#ABABAD
7	#000000	#A5B592	#C0CBB4	#444D26	#444D26	#444D26
8	#000000	#95B998	#ADC9AF	#676A55	#676A55	#868A6F
9	#000000	#CAB86F	#DCCD92	#525056	#5C5A61	#7D7B82
10	#000000	#EEAF51	#F2C179	#4E3B30	#4E3B30	#745847
11	#000000	#F0AD00	#FFC733	#5A6378	#5A6378	#5A6378
12	#000000	#FB944F	#FFAD77	#575F6D	#575F6D	#7A838F
13	#000000	#F89430	#FAB067	#323232	#323232	#626262
14	#000000	#ED744B	#F19272	#696464	#696464	#696464
15	#000000	#D16349	#E19A88	#646B86	#646B86	#464646
16	#000000	#BF8096	#D1A5B5	#653445	#3C1C31	#202020
17	#000000	#FDA4CA	#FFCEE3	#620027	#790031	#606060
18	#000000	#A3ABCD	#B5BACE	#46465D	#46465D	#6F6F84
19	#000000	#9C9DC7	#BCBDDA	#444444	#444444	#444444
20	#000000	#82B4E1	#91C6F7	#000000	#000000	#1C4E5B
21	#000000	#7FD13B	#6DBD2D	#000000	#4E5B6F	#5E646F
22	#000000	#9AB3D1	#C6D3E3	#1F497D	#1F497D	#576980
23	#FFFFFF	#4F81BD	#4172AD	#EEEECE1	#EEEECE1	#000000
24	#000000	#A0BFD8	#BBD0E1	#69544B	#775F55	#827068
25	#FFFFFF	#94B6D2	#77A2C4	#EBDDC3	#EBDDC3	#1F497D
26	#000000	#6AC5DB	#8CD2E3	#464646	#464646	#464646
27	#FFFFFF	#2DA2BF	#25869E	#DEF5FA	#DEF5FA	#000000
28	#000000	#A5B592	#C0CBB4	#444D26	#444D26	#444D26
29	#FFFFFF	#A5B592	#B9C5AB	#FEFAC9	#FEFAC9	#000000

Fixed Theme Index	Text Color	Fill Color	Fill Color 2	Line Color	Connector Color	Shadow Color
30	#000000	#95B998	#ADC9AF	#676A55	#676A55	#868A6F
31	#FFFFFF	#72A376	#6C886F	#EAEBDE	#EAEBDE	#000000
32	#000000	#ED744B	#F19272	#696464	#696464	#696464
33	#FFFFFF	#D34817	#B6421B	#E9E5DC	#E9E5DC	#000000
34	#000000	#FDA4CA	#FFCEE3	#620027	#790031	#606060
35	#FFFFFF	#FF388C	#FF599F	#D2D2D2	#D2D2D2	#000000
36	#000000	#FFFFFF	#F0F0F0	#404040	#404040	#CDCDCD
37	#000000	#A9A57C	#C2C0A3	#7B7859	#7B7859	#7B7859
38	#FFFFFF	#797B7E	#9B9D9F	#CDD7D9	#CDD7D9	#000000
39	#000000	#93A299	#B3BDB7	#6B766F	#6B766F	#6B766F
40	#000000	#94C600	#C0FF02	#6B9100	#6B9100	#6B9100
41	#000000	#7A7A7A	#A7A7A7	#585858	#585858	#585858
42	#FFFFFF	#6F6F74	#A7A7A7	#E3DCCF	#E3DCCF	#A7A7A7
43	#000000	#98C723	#BBE155	#6E9217	#6E9217	#6E9217
44	#000000	#93A299	#ADB8B1	#6B766F	#6B766F	#6B766F
45	#FFFFFF	#629DD1	#98BEE0	#ACCBF9	#ACCBF9	#000000
46	#FFFFFF	#6076B4	#8A9AC8	#E4E9EF	#E4E9EF	#000000
47	#000000	#C66951	#D89685	#914B39	#914B39	#914B39
48	#FFFFFF	#873624	#CC5840	#ECE9C6	#ECE9C6	#000000
49	#000000	#7E97AD	#9FB1C1	#5B6E7E	#5B6E7E	#5B6E7E
50	#FFFFFF	#AD0101	#FE0707	#DEDEE0	#DEDEE0	#000000
51	#000000	#9E8E5C	#B4A77E	#736741	#736741	#736741
52	#FFFFFF	#838D9B	#A6ADB7	#5F6671	#5F6671	#000000
53	#000000	#FDA023	#FEB858	#975E11	#975E11	#975E11
54	#FFFFFF	#4E67C8	#8091D7	#B4DCFA	#B4DCFA	#000000
55	#FFFFFF	#759AA5	#92AFB8	#DFE6D0	#DFE6D0	#000000
56	#000000	#31B6FD	#68C9FD	#165D83	#165D83	#165D83

Fixed Theme Index	Accent Color	Accent Color 2	Accent Color 3	Accent Color 4	Accent Color 5	Background Color
0	#C05046	#9DBB61	#AB9AC0	#4BACC6	#F59D56	#FFFFFF
1	#DDDDDD	#C0C0C0	#B2B2B2	#969696	#808080	#FFFFFF
2	#CE7977	#A5C06B	#AB9AC0	#69BBCF	#F89C52	#FFFFFF
3	#DD8047	#A5AB81	#D8B25C	#7BA79D	#968C8C	#FFFFFF
4	#EB747A	#F08E59	#729CD6	#8A9ECE	#B96F80	#FFFFFF
5	#FDC022	#DD6868	#9FBD62	#D07837	#768AB8	#FFFFFF
6	#EDCB0C	#9F9CB1	#9DAC8A	#ABA085	#979CA4	#FFFFFF
7	#F3A447	#E7BC29	#D092A7	#9C85C0	#809EC2	#FFFFFF
8	#B0CCB0	#A8CDD7	#C0BEAF	#CEC597	#E8B7B7	#FFFFFF
9	#A0B489	#74B7CD	#7592D5	#8573CC	#B78AC4	#FFFFFF
10	#BB846F	#B99288	#C3986D	#A99E81	#D39556	#FFFFFF
11	#60B5CC	#E66C7D	#6BB76D	#E88651	#C64847	#FFFFFF
12	#8CA9DF	#E9725C	#F3D14B	#B5BFD9	#8A8E95	#FFFFFF
13	#CE5977	#73A6C4	#7DAE73	#8D76A5	#BD975E	#FFFFFF
14	#DD6453	#A79C9D	#AF7E6D	#986D6D	#AB9978	#FFFFFF
15	#CCB400	#8CADA E	#8C7B70	#8FB08C	#D19049	#FFFFFF
16	#B678C2	#DE6C36	#F9C18A	#D195C0	#FA9970	#FFFFFF
17	#FF4A93	#E659D5	#C586E3	#69A6F8	#89A4DC	#FFFFFF
18	#9FB8CD	#D2DA7A	#FADA7A	#B88472	#A28A82	#FFFFFF
19	#97C7CC	#BE78C0	#D28759	#B57C57	#7EA9C5	#FFFFFF
20	#09B0F0	#0ED6E0	#12DEA6	#7CC97A	#ABC55F	#FFFFFF
21	#F059A0	#FEB80A	#52C9BA	#37BEE6	#8EA2D2	#FFFFFF
22	#CF7A78	#A6C269	#AB9AC0	#69BBCF	#F89C52	#EEEECE1
23	#C0504D	#9BBB59	#8064A2	#4BACC6	#F79646	#1F497D
24	#DD8047	#A5AB81	#D8B25C	#7BA79D	#968C8C	#EBDDC3
25	#DD8047	#A5AB81	#D8B25C	#7BA79D	#968C8C	#775F55
26	#EB747A	#F08E59	#729CD6	#8A9ECE	#B96F80	#DEF5FA
27	#DA1F28	#EB641B	#39639D	#474B78	#7D3C4A	#464646
28	#F3A447	#E7BC29	#D092A7	#9C85C0	#809EC2	#FEFAC9

Fixed Theme Index	Accent Color	Accent Color 2	Accent Color 3	Accent Color 4	Accent Color 5	Background Color
29	#F3A447	#E7BC29	#D092A7	#9C85C0	#809EC2	#444D26
30	#B0CCB0	#A8CDD7	#C0BEAF	#CEC597	#E8B7B7	#EAEBDE
31	#B0CCB0	#A8CDD7	#C0BEAF	#CEC597	#E8B7B7	#676A55
32	#DD6453	#A79C9D	#AF7E6D	#986D6D	#AB9978	#E9E5DC
33	#9B2D1F	#918485	#956251	#855D5D	#A28E6A	#696464
34	#FF4A93	#E659D5	#C586E3	#69A6F8	#89A4DC	#D2D2D2
35	#E40059	#9C007F	#68007F	#005BD3	#00349E	#666666
36	#EA9651	#B3C283	#6B9BC7	#4E66B2	#8976AC	#FFFFFF
37	#9CBEBD	#D2CB6C	#95A39D	#C89F5D	#B1A089	#FFFFFF
38	#F96A1B	#08A1D9	#7C984A	#C2AD8D	#506E94	#434342
39	#CF543F	#B5AE53	#848058	#E8B54D	#786C71	#FFFFFF
40	#71685A	#FF6700	#909465	#956B43	#FEA022	#FFFFFF
41	#F5C201	#526DB0	#989AAC	#DC5924	#B4B392	#FFFFFF
42	#A7B789	#BEAE98	#92A9B9	#9C8265	#8D6974	#000000
43	#59B0B9	#DEAE00	#B77BB4	#E0773C	#A98D63	#FFFFFF
44	#AD8F67	#726056	#4C5A6A	#808DA0	#79463D	#FFFFFF
45	#297FD5	#7F8FA9	#4A66AC	#5AA2AE	#9D90A0	#242852
46	#9C5252	#E68422	#846648	#63891F	#758085	#2F5897
47	#BF974D	#928B70	#87706B	#94734E	#6F777D	#FFFFFF
48	#D6862D	#D0BE40	#877F6C	#972109	#AEB795	#895D1D
49	#CC8E60	#7A6A60	#B4936D	#67787B	#9D936F	#FFFFFF
50	#726056	#AC956E	#808DA9	#424E5B	#730E00	#303030
51	#A09781	#85776D	#AEAFA9	#8D878B	#6B6149	#FFFFFF
52	#D2610C	#80716A	#94147C	#5D5AD2	#6F6C7D	#283138
53	#AA2B1E	#71685C	#64A73B	#EB5605	#B9CA1A	#FFFFFF
54	#5ECCF3	#A7EA52	#5DCEAF	#FF8021	#F14124	#212745
55	#CFC60D	#99987F	#90AC97	#FFAD1C	#B9AB6F	#1D3641
56	#4584D3	#5BD078	#A5D028	#F5C040	#05E0DB	#FFFFFF

2.5.9.14 vThemeEffect

The **vThemeEffect** custom structure is a [vNum](#) or [vFont](#) that specifies a [fixed theme](#) fixed effect scheme.

Fixed theme property values for each of the fixed effect schemes are specified in the following table. Asian Font and Complex Script Font property values vary based on the **Language** property of the [web drawing](#), specified in [\[ISO/IEC-29500-2\]](#) section 11, from the [Core XML Part](#), and are specified in the [Asian and Complex Font Properties](#) section.

Fixed Theme Index	0	1	2	3	4
Latin Font	Calibri	Arial	Calibri	Arial	Arial
Asian Font	Asian and Complex Font Properties				
Complex Font					
Line Transparency	0	0.35	0	0	0
Line Pattern	1	1	1	1	1
Line Weight	0.003472222	0.000694444	0.003472222	0.016666667	0.006944444
Line Rounding	0	0	0	0.0625	0
Connector Transparency	0	0.25	0	0	0
Connector Pattern	1	1	1	1	1
Connector Weight	0.003472222	0.010416667	0.013888889	0.013888889	0.003472222
Connector Rounding	0	0	0	0.0625	0
Connector Begin	0	0	0	0	0
Connector End	4	4	5	5	4
Connector End 2	4	4	5	5	4
Connector Begin Size	2	1	2	2	2
Connector End Size	2	1	2	4	2
Fill Transparency	0	0.15	0	0	0
Fill Pattern	1	1	28	36	30
Shadow Transparency	0	0	0.5	0.6	0.5
Shadow Pattern	0	0	1	1	1
Shadow Style	0	0	1	1	13
Shadow Offset X	0	0.125	0.02	0.025	0
Shadow Offset Y	0	-0.125	-0.02	-0.025	-0.03
Shadow Magnification	1	1	1	1	1

Fixed Theme Index	0	1	2	3	4
Shadow Direction	0	0	0	0	0

Fixed Theme Index	5	6	7	8	9
Latin Font	Cambria	Arial Rounded MT Bold	Corbel	Trebuchet MS	Trebuchet MS
Asian Font	Asian and Complex Font Properties				
Complex Font					
Line Transparency	0.25	0	0	0	0.8
Line Pattern	1	1	1	1	1
Line Weight	0.013888889	0.022916667	0.010416667	0.03125	0.041666667
Line Rounding	0.0875	0.0173	0.0925	0	0.0625
Connector Transparency	0.25	0	0	0	0
Connector Pattern	1	1	1	1	1
Connector Weight	0.013888889	0.016666667	0.010416667	0.020833333	0.016666667
Connector Rounding	0.0875	0.0173	0.0925	0	0
Connector Begin	0	0	0	0	0
Connector End	5	2	8	4	4
Connector End 2	5	2	8	4	4
Connector Begin Size	0	3	2	2	2
Connector End Size	0	3	2	2	2
Fill Transparency	0	0.35	0.35	0	0
Fill Pattern	29	39	39	37	8
Shadow Transparency	0	0.75	0.7	0.35	0.35
Shadow Pattern	0	1	1	0	1
Shadow Style	0	1	1	0	1
Shadow Offset X	0.125	0.0425	0.03	0.125	0.012
Shadow Offset Y	-0.125	-0.0425	-0.03	-0.125	-0.012

Fixed Theme Index	5	6	7	8	9
Shadow Magnification	1	0.98	0.99	1	1
Shadow Direction	0	0	0	0	0

Fixed Theme Index	10	11	12	13	14
Latin Font	Arial	Franklin Gothic Demi	Constantia	Arial	Verdana
Asian Font	Asian and Complex Font Properties				
Complex Font					
Line Transparency	0.4	0	0	0.3	0
Line Pattern	1	1	1	1	1
Line Weight	0.024305556	0.013888889	0.010416667	0.016666667	0.020833333
Line Rounding	0	0.0625	0	0.0625	0.035
Connector Transparency	0.3	0	0	0	0.15
Connector Pattern	1	23	1	10	1
Connector Weight	0.010416667	0.003472222	0.003472222	0.016666667	0.020833333
Connector Rounding	0	0.0625	0.0625	0.0625	0.035
Connector Begin	0	0	11	0	0
Connector End	13	5	4	11	4
Connector End 2	13	5	4	11	4
Connector Begin Size	0	3	1	0	0
Connector End Size	0	3	2	0	0
Fill Transparency	0.25	0.15	0	0.2	0
Fill Pattern	8	24	20	19	1
Shadow Transparency	0.65	0.5	0.5	0.7	0.65
Shadow Pattern	1	0	0	0	1
Shadow Style	1	1	0	1	2

Fixed Theme Index	10	11	12	13	14
Shadow Offset X	0.02	0.0625	0.0625	0.0625	0
Shadow Offset Y	-0.02	-0.0625	-0.0625	-0.0625	0
Shadow Magnification	1	1	1	1	0.35
Shadow Direction	0	0	0	0	1.308996939

Fixed Theme Index	15	16
Latin Font	Arial Rounded MT Bold	Calibri
Asian Font	Asian and Complex Font Properties	
Complex Font		
Line Transparency	0	0
Line Pattern	1	1
Line Weight	0.003472222	0.003472222
Line Rounding	0.125	0
Connector Transparency	0	0
Connector Pattern	1	1
Connector Weight	0.010416667	0.013888889
Connector Rounding	0.3125	0
Connector Begin	10	0
Connector End	10	5
Connector End 2	10	5
Connector Begin Size	1	2
Connector End Size	3	2
Fill Transparency	0	0
Fill Pattern	28	30
Shadow Transparency	0	0.5
Shadow Pattern	0	1
Shadow Style	1	1
Shadow Offset X	0.0625	0.02

Fixed Theme Index	15	16
Shadow Offset Y	-0.0625	-0.02
Shadow Magnification	1	1
Shadow Direction	0	0

2.5.9.14.1 Asian and Complex Font Properties

The Asian Font and Complex Script Font property values are determined based on the [\[ISO-15924\]](#) script tag of the **Language** property, specified in [\[ISO/IEC-29500-2\]](#) section 11, from the [Core XML Part](#) of a [web drawing](#).

To lookup which font is used for a fixed effect scheme, map the script tag from the first column to the fixed theme index in the first row. The values of the cells in this table correspond to font indexes in the following table.

Script Tag	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
HANS	0	0	1	0	0	1	0	2	1	1	0	0	3	0	1	0	1
HANT	0	4	4	4	4	5	4	5	4	4	4	4	5	4	4	4	4
JPAN	0	6	6	6	6	7	8	9	12	12	6	11	10	6	6	8	6
HANG	0	14	15	14	14	15	14	16	18	18	14	16	17	14	14	14	15
ARAB	0	25	21	25	25	21	24	25	24	24	25	24	21	25	24	24	21
HEBR	0	25	26	25	25	21	25	26	30	30	25	29	28	25	31	29	26
THAI	0	33	34	33	33	35	33	37	40	40	33	39	38	33	40	33	34
ETHI	0	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41
BENG	0	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42
GUJR	0	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43
KHMR	0	45	45	45	44	45	44	44	45	44	45	45	45	44	44	45	45
KNDA	0	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46
GURU	0	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47
CANS	0	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48
CHER	0	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49
YIII	0	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50
TIBT	0	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51
THAA	0	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52
DEVA	0	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53

Script Tag	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
TELU	0	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13
TAML	0	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36
SYRC	0	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19
ORYA	0	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20
MLYM	0	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22
LAOO	0	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23
SINH	0	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27
MONG	0	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32
VIET	0	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21
UIGH	0	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54
GEOR	0	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55

Font Index	Font
0	黑体
1	宋体
2	KaiTi_GB2312
3	FangSong_GB2312
4	Microsoft JhengHei
5	PMingLiU
6	MS PGothic
7	MS PMincho
8	HGMaruGothicMPRO
9	HGSoeiKakupoptai
10	HGMinchoE
11	HGSoeiKakugothicUB
12	HGGothicM
13	Gautami
14	Gulim
15	Malgun Gothic

Font Index	Font
16	Dotum
17	Batang
18	HYGothic-Extra
19	Estrangelo Edessa
20	Kalinga
21	Times New Roman
22	Kartika
23	DokChampa
24	Tahoma
25	Arial
26	Levenim MT
27	Iskoola Pota
28	David
29	Aharoni
30	Miriam
31	Courier New
32	Mongolian Baiti
33	Cordia New
34	Browallia New
35	Angsana New
36	Latha
37	DilleniaUPC
38	EucrosiaUPC
39	JasmineUPC
40	FreesiaUPC
41	Nyala
42	Vrinda
43	Shruti
44	MoolBoran
45	DaunPenh

Font Index	Font
46	Tunga
47	Raavi
48	Euphemia
49	Plantagenet Cherokee
50	Microsoft Yi Baiti
51	Microsoft Himalaya
52	MV Boli
53	Mangal
54	Microsoft Uighur
55	Sylfaen

2.5.9.15 vUnitString

The **vUnitString** custom structure is a string that specifies the unit of measure for a numeric value. It MUST be a value from the following table.

Value	Unit of measure
IN	Inches
FT	Feet
YD	Yards
MI	Miles
NM	Nautical miles
MM	Millimeters
CM	Centimeters
M	Meters
KM	Kilometers
P	Picas
PT	Points
C	Ciceros
D	Didots
RAD	Radians
DEG	Degrees

Value	Unit of measure
°	Degrees, minutes, and seconds
'	Minutes
"	Seconds
DATE	Date and time
%	Percent
IN_F	Fractional inches
MI_F	Fractional miles
FEET/INCH	Feet and inches
PICAPPOINTS	Picas and points
CICERO/DIDOT	Ciceros and didots
SQ IN	Square inches
SQ FT	Square feet
SQ MI	Square miles
ACRE	Acres
HA	Hectares
SQ MM	Square millimeters
SQ CM	Square centimeters
SQ M	Square meters
SQ KM	Square kilometers
EW	Elapsed weeks
ED	Elapsed days
EH	Elapsed hours
EM	Elapsed minutes
ES	Elapsed seconds
DE	Elapsed days
DFT	Points
DT	Points
DFA	Degrees
DA	Degrees
DFL	Inches

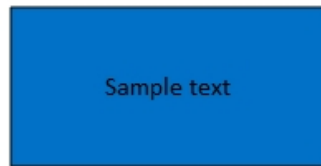
Value	Unit of measure
DL	Inches
DFP	The unit of DrawingScale in drawing_page
DP	The unit of DrawingScale in drawing page

3 Structure Examples

This section provides examples describing some of the [parts](#) in two simple [web drawings](#).

3.1 Document with a Shape on a Page

This section describes some of the contents of the [Document XML Part](#), [Pages XML Part](#), and [Page XML Part](#) for a [web drawing](#) consisting of one [drawing page](#) with a rectangle with blue fill color and the text "Sample Text" on it:



3.1.1 Document XML Part

The following is an example of a Document XML part.

```
<?xml version="1.0"?>

<VisioDocument xmlns="http://schemas.microsoft.com/office/visio/2011/1/core"
xmlns:r="http://schemas.openxmlformats.org/officeDocument/2006/relationships"
xml:space="preserve">

  <FaceNames>

    <FaceName NameU="Calibri"/>

  </FaceNames>

  <StyleSheets>

    <StyleSheet ID="0" NameU="No Style" Name="No Style">
```

```

<Cell N="EnableLineProps" V="1"/>
<Cell N="EnableFillProps" V="1"/>
<Cell N="EnableTextProps" V="1"/>
<Cell N="LineWeight" V="0.010416666666666667"/>
<Cell N="LineColor" V="0"/>
<Cell N="LinePattern" V="1"/>
<Cell N="FillForegnd" V="1"/>
<Cell N="FillPattern" V="1"/>
<Cell N="VerticalAlign" V="1"/>
<Section N="Character">
<Row IX="0">
<Cell N="Font" V="Calibri"/>
<Cell N="Color" V="0"/>
<Cell N="FontScale" V="1"/>
<Cell N="Size" V="0.16666666666666667"/>
</Row>
</Section>
<Section N="Paragraph">
<Row IX="0">
<Cell N="IndFirst" V="0"/>
<Cell N="IndLeft" V="0"/>
<Cell N="IndRight" V="0"/>
<Cell N="SpLine" V="-1.2"/>
<Cell N="HorzAlign" V="1"/>
<Cell N="Bullet" V="0"/>
<Cell N="BulletStr" V=""/>
<Cell N="BulletFont" V="0"/>
<Cell N="BulletFontSize" V="-1"/>
<Cell N="TextPosAfterBullet" V="0"/>
<Cell N="Flags" V="0"/>
</Row>

```

```

</Section>

<Section N="Tabs">

<Row IX="0"/>

</Section>

</StyleSheet>

</StyleSheets>

<DocumentSheet NameU="TheDoc" Name="TheDoc" LineStyle="0" FillStyle="0"
TextStyle="0">

<Cell N="DocLangID" V="en-US"/>

</DocumentSheet>

</VisioDocument>

```

The following table provides more information about element and attribute values found in the preceding sample **Document XML**.

Element	Attributes	Notes
FaceName	NameU="Calibri"	The name of the font is "Calibri".
StyleSheet	ID="0" NameU="No Style" Name="No Style"	The ID attribute of the style sheet is zero. The language-dependent name of the style sheet is "No Style". The language-independent name of the style sheet is "No Style"
Cell	N=" EnableLineProps " V="1"	The line property of this style sheet will be inherited by shapes using this style sheet.
Cell	N=" EnableFillProps " V="1"	The fill property of this style sheet will be inherited by shapes using this style sheet.
Cell	N=" EnableTextProps " V="1"	The text properties of this style sheet will be inherited by shapes using this style sheet.
Cell	N=" LineWeight " V="0.0104166666666667"	Unless overridden, the line thickness of shapes using this style sheet is 0.0104166666666667 inches (3/4 pt).
Cell	N=" LineColor " V="0"	Unless overridden, the color of the line of shapes using this style sheet is the color at index zero in the color table (black).
Cell	N=" FillForegnd " V="1"	Unless overridden, the color of the fill of shapes using this style sheet is the color at index one in the color table (white).
Cell	N=" FillPattern " V="1"	Unless overridden, fills of shapes using this style sheet will have a solid fill color.
Cell	N=" VerticalAlign " V="1"	Unless overridden, the text of shapes using this style sheet will have a center vertical alignment.

Element	Attributes	Notes
Section	N="Character"	Cells under this tag relate to character properties .
Row	IX="0"	This row describes character properties starting at index zero.
Cell	N="Font" V="Calibri"	Unless overridden, characters in text runs of shapes using this style sheet use the font named "Calibri".
Cell	N="Color" V="0"	Unless overridden, characters in text runs of shapes using this style sheet have the color at index zero in the color table (black).
Cell	N="FontScale" V="1"	Unless overridden, characters in text runs of shapes using this style sheet do not have altered font width.
Cell	N="Size" V="0.1666666666666667"	Unless overridden, characters in text runs of shapes using this style sheet have a font size of 0.1666666666666667 inches (12 pt).
Section	N="Paragraph"	Cells under this tag relate to paragraph properties .
Row	IX="0"	These properties apply to the paragraph with index zero.
Cell	N="IndFirst" V="0"	Unless overridden, paragraphs on shapes using this style sheet have no indentation on their first lines.
Cell	N="IndLeft" V="0"	Unless overridden, paragraphs on shapes using this style sheet have no left indentation.
Cell	N="IndRight" V="0"	Unless overridden, paragraphs on shapes using this style sheet have no right indentation.
Cell	N="SpLine" V="-1.2"	Unless overridden, each line in paragraphs on shapes using this style sheet has a height equal to 1.2 times the maximum font size of characters in the line.
Cell	N="HorzAlign" V="1"	Unless overridden, paragraphs on shapes using this style sheet have a centered horizontal alignment.
Cell	N="Bullet" V="0"	Unless overridden, paragraphs on shapes using this style sheet have no bullet.
Cell	N="BulletStr" V=""	Unless overridden, paragraphs on shapes using this style sheet do not have a custom bullet string.
Cell	N="BulletFont" V="0"	Unless overridden, paragraphs on shapes using this style sheet use the default bullet font.
Cell	N="BulletFontSize" V="0"	Unless overridden, bullets for paragraphs on shapes using this style sheet have the same font size as the first character in the paragraph's text.
Cell	N="TextPosAfterBullet" V="0"	Unless overridden, no distance will be added between any bullets for paragraphs on shapes using this style sheet and the text after it.
Cell	N="Flags"	Unless overridden, paragraphs on shapes using this style

Element	Attributes	Notes
	V="0"	sheet have left to right text.
Section	N="Tabs"	Rows and cells under this tag define tabs properties .
Row	IX="0"	Unless overridden, shapes using this style sheet have a single tab stop at the default position.
DocumentSheet	NameU="TheDoc" Name="TheDoc" LineStyle="0" FillStyle="0" TextStyle="0"	The language-dependent and language-independent names of the web drawing are each 'TheDoc'. Unless overridden, shapes in the web drawing inherit the line property, fill property, and text properties of the style sheet with an ID attribute of zero.
Cell	N="DocLangID" V="en-US"	Unless overridden, text in this web drawing is U.S. English.

3.1.2 Pages XML Part

The following is an example of a Pages XML part.

```
<?xml version="1.0"?>

<Pages xmlns="http://schemas.microsoft.com/office/visio/2011/1/core"
xmlns:r="http://schemas.openxmlformats.org/officeDocument/2006/relationships"
xml:space="preserve">

  <Page ID="0" NameU="Page-1" Name="Page-1">

    <PageSheet LineStyle="0" FillStyle="0" TextStyle="0">

      <Cell N="PageWidth" V="8.5"/>

      <Cell N="PageHeight" V="11"/>

      <Cell N="PageScale" V="1"/>

      <Cell N="DrawingScale" V="1"/>

    </PageSheet>

    <Rel r:id="rId1"/>

  </Page>

</Pages>
```

The following table provides more information about element and attribute values found in the preceding sample **Pages XML**.

Element	Attributes	Notes
Page	ID="0" NameU="Page-1" Name="Page-1"	The ID attribute of the drawing page is zero. The language-dependent and language-independent name of the drawing page are both "Page-1".
PageSheet	LineStyle="0"	Unless overridden, shapes on this drawing page inherit the line

Element	Attributes	Notes
	FillStyle="0" TextStyle="0"	property , fill property , and text properties of the style sheet with an ID attribute of zero.
Cell	N=" PageWidth " V="8.5"	The width of the drawing page is 8.5 inches.
Cell	N=" PageHeight " V="11"	The height of the drawing page is 11 inches.
Cell	N=" PageScale " V="1"	The page scale of the drawing page is one inch.
Cell	N=" DrawingScale " V="1"	The drawing scale of the drawing page is one inch.

3.1.3 Page XML Part

The following is an example of a Page XML part.

```
<?xml version="1.0"?>

<PageContents xmlns="http://schemas.microsoft.com/office/visio/2011/1/core"
xmlns:r="http://schemas.openxmlformats.org/officeDocument/2006/relationships"
xml:space="preserve">

  <Shapes>

    <Shape ID="1" Type="Shape" LineStyle="0" FillStyle="0" TextStyle="0">

      <Cell N="PinX" V="4"/>

      <Cell N="PinY" V="5.5"/>

      <Cell N="Width" V="2"/>

      <Cell N="Height" V="1"/>

      <Cell N="LocPinX" V="1"/>

      <Cell N="LocPinY" V="0.5"/>

      <Cell N="Angle" V="0"/>

      <Cell N="FillForegnd" V="#0070c0"/>

      <Section N="Geometry" IX="0">

        <Row T="RelMoveTo" IX="1">

          <Cell N="X" V="0"/>

          <Cell N="Y" V="0"/>

        </Row>

        <Row T="RelLineTo" IX="2">

          <Cell N="X" V="1"/>


```

```

<Cell N="Y" V="0"/>

</Row>

<Row T="RelLineTo" IX="3">

<Cell N="X" V="1"/>

<Cell N="Y" V="1"/>

</Row>

<Row T="RelLineTo" IX="4">

<Cell N="X" V="0"/>

<Cell N="Y" V="1"/>

</Row>

<Row T="RelLineTo" IX="5">

<Cell N="X" V="0"/>

<Cell N="Y" V="0"/>

</Row>

</Section>

<Text>Sample text</Text>

</Shape>

</Shapes>

</PageContents>

```

The following table provides more information about element and attribute values and element contents found in the preceding sample **Page XML**.

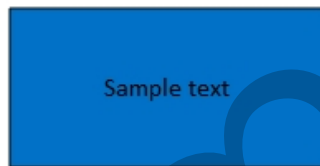
Element	Attributes/contents	Notes
Shape	ID="1" Type="Shape" LineStyle="0" FillStyle="0" TextStyle="0"	The ID attribute of the shape is one. The shape will be displayed and has no subshapes or foreign data. The shape inherits the line property , fill property , and text properties of the style sheet with an ID attribute of zero.
Cell	N="PinX" V="4"	The center of rotation of the shape is 4 inches right from the left edge of the drawing page .
Cell	N="PinY" V="5.5"	The center of rotation of the shape is 5.5 inches up from the bottom edge of the drawing page.
Cell	N="Width" V="2"	The shape is two inches wide.
Cell	N="Height"	The shape is one inch tall.

Element	Attributes/contents	Notes
	V="1"	
Cell	N="LocPinX" V="1"	The center of rotation of the shape is one inch right from the left edge of the shape.
Cell	N="LocPinY" V="0.5"	The center of rotation of the shape is .5 inches up from the bottom edge of the shape.
Cell	N="Angle" V="0"	The shape has no rotation.
Cell	N="FillForegnd" V="#0070c0"	The color of the fill of the shape is equivalent to RGB(0, 112, 192). Note that this overrides the definition of this cell inherited from the style sheet.
Section	N="Geometry" IX="0"	Rows and cells under this element define geometry properties of the shape. This geometry section has an index of zero.
Row	T="RelMoveTo" IX="1"	This row defines the starting point of the geometry path in relative coordinates . This row has an index of one.
Cell	N="X" V="0"	The x-coordinate of the starting point of the geometry path is the same as that of the left edge of the shape.
Cell	N="Y" V="0"	The y-coordinate of the starting point of the geometry path is the same as that of the bottom edge of the shape.
Row	T="RelLineTo" IX="2"	This row defines a line segment in the geometry path from the point defined in the previous row to the point defined in this row's cells in relative coordinates. This row has an index of 2.
Cell	N="X" V="1"	The x-coordinate of the endpoint of the line segment defined by this row is the same as that of the right edge of the shape.
Cell	N="Y" V="0"	The y-coordinate of the endpoint of the line segment defined by this row is the same as that of the bottom edge of the shape.
Row	T="RelLineTo" IX="3"	This row defines a line segment in the geometry path from the point defined in the previous row to the point defined in this row's cells in relative coordinates. This row has an index of 3.
Cell	N="X" V="1"	The x-coordinate of the endpoint of the line segment defined by this row is the same as that of the right edge of the shape.
Cell	N="Y" V="1"	The y-coordinate of the endpoint of the line segment defined by this row is the same as that of the top edge of the shape.
Row	T="RelLineTo" IX="4"	This row defines a line segment in the geometry path from the point defined in the previous row to the point defined in this row's cells in relative coordinates. This row has an index of 4.
Cell	N="X" V="0"	The x-coordinate of the endpoint of the line segment defined by this row is the same as that of the left edge of the shape.
Cell	N="Y" V="1"	The y-coordinate of the endpoint of the line segment defined by this row is the same as that of the top edge of the shape.

Element	Attributes/contents	Notes
Row	T="RelLineTo" IX="5"	This row defines a line segment in the geometry path from the point defined in the previous row to the point defined in this row's cells in relative coordinates. This row has an index of 5.
Cell	N="X" V="0"	The x-coordinate of the endpoint of the line segment defined by this row is the same as that of the left edge of the shape.
Cell	N="Y" V="0"	The y-coordinate of the endpoint of the line segment defined by this row is the same as that of the bottom edge of the shape.
Text	Sample text	The shape has text reading 'Sample text'.

3.2 Document with Master Inheritance

This section describes some of the contents of the [Masters XML Part](#), Master XML Part, and [Page XML Part](#) for a [web drawing](#) consisting of one [master](#) containing a rectangle with blue fill color and the text "Sample Text" on it, and one [shape inheriting](#) from that master via [master-to-shape inheritance](#):



Note that the document displayed is identical to that in the [Document with a Shape on a Page](#) example. Only the location of the data has changed.

3.2.1 Masters XML Part

The following is an example of a Masters XML part.

```
<?xml version="1.0" encoding="utf-8"?>
```

```

<Masters xmlns="http://schemas.microsoft.com/office/visio/2011/1/core"
xmlns:r="http://schemas.openxmlformats.org/officeDocument/2006/relationships"
xml:space="preserve">

<Master ID="2" UniqueID="{0020640D-0002-0000-8E40-00608CF305B2}" BaseID="{8FEBAF3E-
100E-46A7-AFB4-6F1C4D75A7A7}" PatternFlags="0">

  <PageSheet LineStyle="0" FillStyle="0" TextStyle="0"

  <Cell N="PageWidth" V="2"/>

  <Cell N="PageHeight" V="1"/>

  <Cell N="PageScale" V="1"/>

  <Cell N="DrawingScale" V="1"/>

  </PageSheet>

  <Rel r:id="rId1"/>

</Master>

</Masters>

```

The following table provides more information about element and attribute values and element contents found in the preceding sample **Masters XML**.

Element	Attributes	Notes
Master	ID="2" UniqueID="{0020640D-0002-0000-8E40-00608CF305B2}" BaseID="{8FEBAF3E-100E-46A7-AFB4-6F1C4D75A7A7}" PatternFlags="0"	The ID attribute of the master is two. The UniqueID of the master is the GUID {0020640D-0002-0000-8E40-00608CF305B2}. The BaseID of the master is the GUID {8FEBAF3E-100E-46A7-AFB4-6F1C4D75A7A7}. The master is not used as a custom pattern master.
Cell	N="PageWidth" V="2"	The width of the drawing page of the master is two inches.
Cell	N="PageHeight" V="1"	The height of the drawing page of the master is one inch.
Cell	N="PageScale" V="1"	The page scale of the drawing page of the master is one inch.
Cell	N="DrawingScale" V="1"	The drawing scale of the drawing page of the master is one inch.
Rel	r:id="rId1"	The shapes on this master are located in the XML part referenced by rId1 in the master.xml.rels XML part.

3.2.2 Master XML Part

The following is an example of a Master XML part.

```
<?xml version="1.0" encoding="utf-8"?>
```

```
<MasterContents xmlns="http://schemas.microsoft.com/office/visio/2011/1/core"
xmlns:r="http://schemas.openxmlformats.org/officeDocument/2006/relationships"
xml:space="preserve">
```

```
<Shapes>
```

```
<Shape ID="5" Type="Shape" LineStyle="3" FillStyle="3" TextStyle="3">
```

```
<Cell N="PinX" V="1"/>
```

```
<Cell N="PinY" V="0.5"/>
```

```
<Cell N="Width" V="2"/>
```

```
<Cell N="Height" V="1"/>
```

```
<Cell N="LocPinX" V="1"/>
```

```
<Cell N="LocPinY" V="0.5"/>
```

```
<Cell N="Angle" V="0"/>
```

```
<Cell N="FillForegnd" V="#0070c0"/>
```

```
<Cell N="FillBkgnd" V="#000000"/>
```

```
<Section N="Geometry" IX="0">
```

```
<Cell N="NoFill" V="0"/>
```

```
<Cell N="NoLine" V="0"/>
```

```
<Cell N="NoShow" V="0"/>
```

```
<Row T="RelMoveTo" IX="1">
```

```
<Cell N="X" V="0"/>
```

```
<Cell N="Y" V="0"/>
```

```
</Row>
```

```
<Row T="RelLineTo" IX="2">
```

```
<Cell N="X" V="1"/>
```

```
<Cell N="Y" V="0"/>
```

```
</Row>
```

```
<Row T="RelLineTo" IX="3">
```

```
<Cell N="X" V="1"/>
```

```
<Cell N="Y" V="1"/>
```

```
</Row>
```

```
<Row T="RelLineTo" IX="4">
```

```
<Cell N="X" V="0"/>
```

```

<Cell N="Y" V="1"/>

</Row>

<Row T="RelLineTo" IX="5">

<Cell N="X" V="0"/>

<Cell N="Y" V="0"/>

</Row>

</Section>

<Text>Sample text</Text>

</Shape>

</Shapes>

</MasterContents>

```

The following table provides more information about element and attribute values and element contents found in the preceding sample **Master XML**.

Element	Attributes/contents	Notes
Shape	ID="1" Type="Shape" LineStyle="3" FillStyle="3" TextStyle="3">	The ID attribute of the shape on the master is one. The shape inherits the line property , fill property , and text properties of the style sheet with an ID attribute of three.
Cell	N="PinX" V="1"	The center of rotation of the shape on the master is one inch right from the left edge of the drawing page of the master.
Cell	N="PinY" V="0.5"	The center of rotation of the shape on the master is 0.5 inches up from the bottom edge of the drawing page of the master.
Cell	N="Width" V="2"	The shape on the master is two inches wide.
Cell	N="Height" V="1"	The shape on the master is one inch tall.
Cell	N="LocPinX" V="1"	The center of rotation of the shape on the master is one inch right from the left edge of the shape.
Cell	N="LocPinY" V="0.5"	The center of rotation of the shape on the master is .5 inches up from the bottom edge of the shape.
Cell	N="Angle" V="0"	The shape on the master has no rotation.
Cell	N="FillForegnd" V="#0070c0"	The color of the fill of the shape on the master is equivalent to RGB(0, 112, 192).
Section	N="Geometry"	Rows and cells under this element define geometry

Element	Attributes/contents	Notes
	IX="0"	properties of the shape on the master. This geometry section has an index of zero.
Row	T="RelMoveTo" IX="1"	This row defines the starting point of the geometry path in relative coordinates . This row has an index of one.
Cell	N="X" V="0"	The x-coordinate of the starting point of the geometry path is the same as that of the left edge of the shape.
Cell	N="Y" V="0"	The y-coordinate of the starting point of the geometry path is the same as that of the bottom edge of the shape.
Row	T="RelLineTo" IX="2"	This row defines a line segment in the geometry path from the point defined in the previous row to the point defined in this row's cells in relative coordinates. This row has an index of 2.
Cell	N="X" V="1"	The x-coordinate of the endpoint of the line segment defined by this row is the same as that of the right edge of the shape.
Cell	N="Y" V="0"	The y-coordinate of the endpoint of the line segment defined by this row is the same as that of the bottom edge of the shape.
Row	T="RelLineTo" IX="3"	This row defines a line segment in the geometry path from the point defined in the previous row to the point defined in this row's cells in relative coordinates. This row has an index of 3.
Cell	N="X" V="1"	The x-coordinate of the endpoint of the line segment defined by this row is the same as that of the right edge of the shape.
Cell	N="Y" V="1"	The y-coordinate of the endpoint of the line segment defined by this row is the same as that of the top edge of the shape.
Row	T="RelLineTo" IX="4"	This row defines a line segment in the geometry path from the point defined in the previous row to the point defined in this row's cells in relative coordinates. This row has an index of 4.
Cell	N="X" V="0"	The x-coordinate of the endpoint of the line segment defined by this row is the same as that of the left edge of the shape.
Cell	N="Y" V="1"	The y-coordinate of the endpoint of the line segment defined by this row is the same as that of the top edge of the shape.
Row	T="RelLineTo" IX="5"	This row defines a line segment in the geometry path from the point defined in the previous row to the point defined in this row's cells in relative coordinates. This row has an index of 5.
Cell	N="X"	The x-coordinate of the endpoint of the line segment defined by this row is the same as that of the left edge

Element	Attributes/contents	Notes
	V="0"	of the shape.
Cell	N="Y" V="0"	The y-coordinate of the endpoint of the line segment defined by this row is the same as that of the bottom edge of the shape.
Text	Sample text	The shape on the master has text reading 'Sample text'.

3.2.3 Page XML Part

The following is an example of a Page XML part.

```
<?xml version="1.0" encoding="utf-8"?>

<PageContents xmlns="http://schemas.microsoft.com/office/visio/2011/1/core"
xmlns:r="http://schemas.openxmlformats.org/officeDocument/2006/relationships"
xml:space="preserve">

  <Shapes>

    <Shape ID="1" Type="Shape" Master="2">

      <Cell N="PinX" V="4"/>

      <Cell N="PinY" V="5.5"/>

    </Shape>

  </Shapes>

</PageContents>
```

The following table provides more information about element and attribute values found in the preceding sample **Page XML**.

Element	Attributes	Notes
Shape	ID="1" Type="Shape" Master="2"	The ID attribute of the shape is one. The shape will be displayed and has no subshapes or foreign data. The shape inherits the values of the master with an ID attribute of two via master-to-shape inheritance .
Cell	N=" PinX " V="4"	The center of rotation of the shape is 4 inches right from the left edge of the drawing page . Note that this overrides the PinX value in the Master XML Part .
Cell	N=" PinY " V="5.5"	The center of rotation of the shape is 5.5 inches up from the bottom edge of the drawing page. Note that this overrides the PinY value in the Master XML Part.

4 Security

4.1 Security Considerations for Implementers

None.

4.2 Index Of Security Fields

None.

5 Appendix A: Full XML Schemas

For ease of implementation, the following is the full XML schema for this protocol.

```
<!--
  XML for Visio Schema
  http://schemas.microsoft.com/office/visio/2011/1/core
  Copyright (C) 2000-2002 Microsoft Corporation. All rights reserved.
-->
<xsd:schema xmlns:xsd="http://www.w3.org/2001/XMLSchema"
  targetNamespace="http://schemas.microsoft.com/office/visio/2011/1/core"
  xmlns="http://schemas.microsoft.com/office/visio/2011/1/core"
  xmlns:r="http://oRelSchemasUri"
  elementFormDefault="qualified" attributeFormDefault="unqualified">

  <xsd:import namespace="http://oRelSchemasUri" schemaLocation="oRel.xsd"/>

  <xsd:annotation>
    <xsd:documentation>
      Permission to copy, display and distribute the contents of this document (the
      "Specification"), in any medium for any purpose without fee or royalty is
      hereby granted, provided that you include the following notice on ALL copies of
      the Specification, or portions thereof, that you make:
      Copyright (c) Microsoft Corporation. All rights reserved. Permission to copy,
      display and distribute this document is available at:
      http://msdn.microsoft.com/library/en-
      us/odcXMLRef/html/odcXMLRefLegalNotice.asp?frame=true.
      No right to create modifications or derivatives of this Specification is
      granted herein. There is a separate patent license available to parties
      interested in implementing software programs that can read and write files that
      conform to the Specification. This patent license is available at this
      location: http://www.microsoft.com/mscorp/ip/format/xmlpatentlicense.asp.
      THE SPECIFICATION IS PROVIDED "AS IS" AND MICROSOFT MAKES NO REPRESENTATIONS OR
      WARRANTIES, EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, WARRANTIES OF
      MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, NON-INFRINGEMENT, OR TITLE;
      THAT THE CONTENTS OF THE SPECIFICATION ARE SUITABLE FOR ANY PURPOSE; NOR THAT
      THE IMPLEMENTATION OF SUCH CONTENTS WILL NOT INFRINGE ANY THIRD PARTY PATENTS,
      COPYRIGHTS, TRADEMARKS OR OTHER RIGHTS. MICROSOFT WILL NOT BE LIABLE FOR ANY
      DIRECT, INDIRECT, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF
      OR RELATING TO ANY USE OR DISTRIBUTION OF THE SPECIFICATION.
      The name and trademarks of Microsoft may NOT be used in any manner, including
      advertising or publicity pertaining to the Specification or its contents
      without specific, written prior permission. Title to copyright in the
      Specification will at all times remain with Microsoft. No other rights are
      granted by implication, estoppel or otherwise.
    </xsd:documentation>
  </xsd:annotation>

  <!--
    Root-level elements for different parts
  -->
  <!--document.xml-->
  <xsd:element name="VisioDocument" type="VisioDocument_Type" />
  <!--masters/masters.xml-->
  <xsd:element name="Masters" type="Masters_Type" />
  <!--masters/master#.xml-->
  <xsd:element name="MasterContents" type="PageContents_Type" />
  <!--pages/pages.xml-->
  <xsd:element name="Pages" type="Pages_Type" />
```

```

<!--pages/page#.xml-->
<xsd:element name="PageContents" type="PageContents_Type" />
<!--data/connections.xml-->
<xsd:element name="DataConnections" type="DataConnections_Type" />
<!--data/recordsets.xml-->
<xsd:element name="DataRecordSets" type="DataRecordSets_Type" />
<!--comments.xml-->
<xsd:element name="Comments" type="Comments_Type" />
<!--extensions.xml-->
<xsd:element name="Extensions" type="Extensions_Type" />
<!--
    Complex types
-->
<xsd:complexType name="VisioDocument_Type">
  <xsd:sequence>
    <xsd:element name="DocumentSettings" type="DocumentSettings_Type" minOccurs="0"
      maxOccurs="1" />
    <xsd:element name="Colors" type="Colors_Type" minOccurs="0" maxOccurs="1" />
    <xsd:element name="FaceNames" type="FaceNames_Type" minOccurs="0"
      maxOccurs="1" />
    <xsd:element name="StyleSheets" type="StyleSheets_Type" minOccurs="0"
      maxOccurs="1" />
    <xsd:element name="DocumentSheet" type="DocumentSheet_Type" minOccurs="0"
      maxOccurs="1" />
    <xsd:element name="EventList" type="EventList_Type" minOccurs="0"
      maxOccurs="1" />
    <xsd:element name="HeaderFooter" type="HeaderFooter_Type" minOccurs="0"
      maxOccurs="1" />
    <xsd:element name="PublishSettings" type="PublishSettings_Type" minOccurs="0"
      maxOccurs="1" />
    <xsd:any minOccurs="0" maxOccurs="unbounded" namespace="##other"
      processContents="lax" />
  </xsd:sequence>
  <xsd:anyAttribute namespace="##other" processContents="lax" />
</xsd:complexType>

<!--Sheet abstract base class-->
<xsd:complexType name="Sheet_Type" abstract="true">
  <xsd:sequence minOccurs="0" maxOccurs="unbounded">
    <xsd:element name="Cell" type="Cell_Type" minOccurs="0"
      maxOccurs="unbounded" />
    <xsd:element name="Section" type="Section_Type" minOccurs="0"
      maxOccurs="unbounded" />

    <!--Sheets can hold and roundtrip arbitrary, unknown sub-XML-->
    <xsd:any minOccurs="0" maxOccurs="unbounded" namespace="##other"
      processContents="lax" />
  </xsd:sequence>

  <!--Style sheet IDs for inheritance-->
  <xsd:attribute name="LineStyle" type="xsd:unsignedInt" />
  <xsd:attribute name="FillStyle" type="xsd:unsignedInt" />
  <xsd:attribute name="TextStyle" type="xsd:unsignedInt" />

  <!--Sheets can hold and roundtrip arbitrary, unknown attributes-->
  <xsd:anyAttribute namespace="##other" processContents="lax" />
</xsd:complexType>

<!--Section base types-->

```

```

<xsd:complexType name="Section_Type">
  <xsd:sequence>
    <!--Cells only show up directly under the Geometry section-->
    <xsd:element name="Cell" type="Cell_Type" minOccurs="0"
      maxOccurs="unbounded" />

    <!--All Sections have child rows-->
    <xsd:element name="Row" type="Row_Type" minOccurs="0" maxOccurs="unbounded" />
  </xsd:sequence>

  <xsd:attribute name="N" type="xsd:string" use="required" />
  <xsd:attribute name="Del" type="xsd:boolean" />

  <!--Only Geometry sections have indexes as there can be several in a Sheet-->
  <xsd:attribute name="IX" type="xsd:unsignedInt" />
</xsd:complexType>

<!--Row base types-->
<xsd:complexType name="Row_Type">
  <xsd:sequence>
    <xsd:element name="Cell" type="Cell_Type" minOccurs="0"
      maxOccurs="unbounded" />
  </xsd:sequence>

  <!--The name attributes are only used on named rows-->
  <xsd:attribute name="N" type="xsd:string" />
  <xsd:attribute name="LocalName" type="xsd:string" />

  <!--The index attribute is only used on indexed rows-->
  <xsd:attribute name="IX" type="xsd:unsignedInt" />

  <!--The type attribute is only used on Rows in the Geometry section-->
  <xsd:attribute name="T" type="xsd:string" />

  <!--Any row can be locally deleted-->
  <xsd:attribute name="Del" type="xsd:boolean" />
</xsd:complexType>

<!--Cell base type-->
<xsd:complexType name="Cell_Type" mixed="true">
  <xsd:sequence>
    <xsd:element name="RefBy" type="RefBy_Type" minOccurs="0"
      maxOccurs="unbounded" />
  </xsd:sequence>
  <xsd:attribute name="N" type="xsd:string" use="required" />
  <xsd:attribute name="U" type="xsd:string" />
  <xsd:attribute name="E" type="xsd:string" />
  <xsd:attribute name="F" type="xsd:string" />
  <xsd:attribute name="V" type="xsd:string" />
</xsd:complexType>

<xsd:complexType name="DocumentSheet_Type">
  <xsd:complexContent>
    <xsd:extension base="Sheet_Type">
      <xsd:attribute name="Name" type="xsd:string" />
      <xsd:attribute name="NameU" type="xsd:string" />
      <xsd:attribute name="IsCustomName" type="xsd:boolean" />
      <xsd:attribute name="IsCustomNameU" type="xsd:boolean" />
      <xsd:attribute name="UniqueID" type="xsd:string" />
    </xsd:extension>
  </xsd:complexContent>
</xsd:complexType>

```

```

    </xsd:extension>
  </xsd:complexContent>
</xsd:complexType>

<xsd:complexType name="StyleSheet_Type">
  <xsd:complexContent>
    <xsd:extension base="Sheet_Type">
      <xsd:attribute name="ID" type="xsd:unsignedInt" use="required" />
      <xsd:attribute name="Name" type="xsd:string" />
      <xsd:attribute name="NameU" type="xsd:string" />
      <xsd:attribute name="IsCustomName" type="xsd:boolean" />
      <xsd:attribute name="IsCustomNameU" type="xsd:boolean" />
    </xsd:extension>
  </xsd:complexContent>
</xsd:complexType>

<xsd:complexType name="PageSheet_Type">
  <xsd:complexContent>
    <xsd:extension base="Sheet_Type">
      <xsd:attribute name="UniqueID" type="xsd:string" />
    </xsd:extension>
  </xsd:complexContent>
</xsd:complexType>

<xsd:complexType name="ShapeSheet_Type">
  <xsd:complexContent>
    <xsd:extension base="Sheet_Type">
      <xsd:sequence>
        <!--Sub-shapes if this is a group-->
        <xsd:element name="Shapes" type="Shapes_Type" minOccurs="0"
          maxOccurs="1" />

        <!--Shape Text-->
        <xsd:element name="Text" type="Text_Type" minOccurs="0" maxOccurs="1" />

        <!--Legacy data fields-->
        <xsd:element name="Data1" type="Data_Type" minOccurs="0" maxOccurs="1" />
        <xsd:element name="Data2" type="Data_Type" minOccurs="0" maxOccurs="1" />
        <xsd:element name="Data3" type="Data_Type" minOccurs="0" maxOccurs="1" />

        <!--Foreign object data for images, OLE, ActiveX, etc.-->
        <xsd:element name="ForeignData" type="ForeignData_Type" minOccurs="0"
          maxOccurs="1" />
      </xsd:sequence>

      <xsd:attribute name="ID" type="xsd:unsignedInt" use="required" />
      <xsd:attribute name="Del" type="xsd:boolean" />
      <xsd:attribute name="MasterShape" type="xsd:unsignedInt" />
      <xsd:attribute name="UniqueID" type="xsd:string" />
      <xsd:attribute name="Name" type="xsd:string" />
      <xsd:attribute name="NameU" type="xsd:string" />
      <xsd:attribute name="IsCustomName" type="xsd:boolean" />
      <xsd:attribute name="IsCustomNameU" type="xsd:boolean" />
      <xsd:attribute name="Master" type="xsd:unsignedInt" />
      <xsd:attribute name="Type" type="xsd:token" />
    </xsd:extension>
  </xsd:complexContent>
</xsd:complexType>

```

```

<xsd:complexType name="Text_Type" mixed="true">
  <xsd:choice minOccurs="0" maxOccurs="unbounded">
    <xsd:element name="cp" type="cp_Type" minOccurs="0" maxOccurs="unbounded" />
    <xsd:element name="pp" type="pp_Type" minOccurs="0" maxOccurs="unbounded" />
    <xsd:element name="tp" type="tp_Type" minOccurs="0" maxOccurs="unbounded" />
    <xsd:element name="fld" type="fld_Type" minOccurs="0" maxOccurs="unbounded" />
  </xsd:choice>
</xsd:complexType>

<!--Text fields-->
<xsd:complexType name="cp_Type">
  <xsd:attribute name="IX" type="xsd:unsignedInt" use="required" />
</xsd:complexType>
<xsd:complexType name="pp_Type">
  <xsd:attribute name="IX" type="xsd:unsignedInt" use="required" />
</xsd:complexType>
<xsd:complexType name="tp_Type">
  <xsd:attribute name="IX" type="xsd:unsignedInt" use="required" />
</xsd:complexType>
<xsd:complexType name="fld_Type">
  <xsd:simpleContent>
    <xsd:extension base="xsd:string">
      <xsd:attribute name="IX" type="xsd:unsignedInt" use="required" />
    </xsd:extension>
  </xsd:simpleContent>
</xsd:complexType>

<xsd:complexType name="Data_Type">
  <xsd:simpleContent>
    <xsd:extension base="xsd:string" />
  </xsd:simpleContent>
</xsd:complexType>

<xsd:complexType name="ForeignData_Type" mixed="true">
  <xsd:sequence>
    <xsd:element name="Rel" type="Rel_Type" minOccurs="1" maxOccurs="1" />
  </xsd:sequence>
  <xsd:attribute name="ForeignType" type="xsd:token" use="required" />
  <xsd:attribute name="ObjectType" type="xsd:unsignedInt" />
  <xsd:attribute name="ShowAsIcon" type="xsd:boolean" />
  <xsd:attribute name="ObjectWidth" type="xsd:double" />
  <xsd:attribute name="ObjectHeight" type="xsd:double" />
  <xsd:attribute name="MappingMode" type="xsd:unsignedShort" />
  <xsd:attribute name="ExtentX" type="xsd:double" />
  <xsd:attribute name="ExtentY" type="xsd:double" />
  <xsd:attribute name="CompressionType" type="xsd:token" />
  <xsd:attribute name="CompressionLevel" type="xsd:double" />
</xsd:complexType>

<xsd:complexType name="DocumentSettings_Type">
  <xsd:all>
    <xsd:element name="GlueSettings" type="GlueSettings_Type" minOccurs="0"
      maxOccurs="1" />
    <xsd:element name="SnapSettings" type="SnapSettings_Type" minOccurs="0"
      maxOccurs="1" />
    <xsd:element name="SnapExtensions" type="SnapExtensions_Type" minOccurs="0"
      maxOccurs="1" />
    <xsd:element name="SnapAngles" type="SnapAngles_Type" minOccurs="0"
      maxOccurs="1" />
  </xsd:all>
</xsd:complexType>

```



```

<xsd:element name="DynamicGridEnabled" type="DynamicGridEnabled_Type"
  minOccurs="0" maxOccurs="1" />
<xsd:element name="ProtectStyles" type="ProtectStyles_Type" minOccurs="0"
  maxOccurs="1" />
<xsd:element name="ProtectShapes" type="ProtectShapes_Type" minOccurs="0"
  maxOccurs="1" />
<xsd:element name="ProtectMasters" type="ProtectMasters_Type" minOccurs="0"
  maxOccurs="1" />
<xsd:element name="ProtectBkgnds" type="ProtectBkgnds_Type" minOccurs="0"
  maxOccurs="1" />
<xsd:element name="CustomMenusFile" type="CustomMenusFile_Type" minOccurs="0"
  maxOccurs="1" />
<xsd:element name="CustomToolbarsFile" type="CustomToolbarsFile_Type"
  minOccurs="0" maxOccurs="1" />
<xsd:element name="AttachedToolbars" type="AttachedToolbars_Type" minOccurs="0"
  maxOccurs="1" />
</xsd:all>
<xsd:attribute name="TopPage" type="xsd:unsignedInt" />
<xsd:attribute name="DefaultTextStyle" type="xsd:unsignedInt" />
<xsd:attribute name="DefaultLineStyle" type="xsd:unsignedInt" />
<xsd:attribute name="DefaultFillStyle" type="xsd:unsignedInt" />
<xsd:attribute name="DefaultGuideStyle" type="xsd:unsignedInt" />
</xsd:complexType>
<xsd:complexType name="GlueSettings_Type">
  <xsd:simpleContent>
    <xsd:extension base="xsd:int" />
  </xsd:simpleContent>
</xsd:complexType>
<xsd:complexType name="SnapSettings_Type">
  <xsd:simpleContent>
    <xsd:extension base="xsd:int" />
  </xsd:simpleContent>
</xsd:complexType>
<xsd:complexType name="SnapExtensions_Type">
  <xsd:simpleContent>
    <xsd:extension base="xsd:int" />
  </xsd:simpleContent>
</xsd:complexType>
<xsd:complexType name="SnapAngles_Type">
  <xsd:sequence>
    <xsd:element name="SnapAngle" type="SnapAngle_Type" minOccurs="0"
      maxOccurs="unbounded" />
  </xsd:sequence>
</xsd:complexType>
<xsd:complexType name="SnapAngle_Type">
  <xsd:simpleContent>
    <xsd:extension base="xsd:double" />
  </xsd:simpleContent>
</xsd:complexType>
<xsd:complexType name="DynamicGridEnabled_Type">
  <xsd:simpleContent>
    <xsd:extension base="xsd:boolean" />
  </xsd:simpleContent>
</xsd:complexType>
<xsd:complexType name="ProtectStyles_Type">
  <xsd:simpleContent>
    <xsd:extension base="xsd:boolean" />
  </xsd:simpleContent>
</xsd:complexType>

```

```

<xsd:complexType name="ProtectShapes_Type">
  <xsd:simpleContent>
    <xsd:extension base="xsd:boolean" />
  </xsd:simpleContent>
</xsd:complexType>
<xsd:complexType name="ProtectMasters_Type">
  <xsd:simpleContent>
    <xsd:extension base="xsd:boolean" />
  </xsd:simpleContent>
</xsd:complexType>
<xsd:complexType name="ProtectBkgnds_Type">
  <xsd:simpleContent>
    <xsd:extension base="xsd:boolean" />
  </xsd:simpleContent>
</xsd:complexType>
<xsd:complexType name="CustomMenusFile_Type">
  <xsd:simpleContent>
    <xsd:extension base="xsd:string" />
  </xsd:simpleContent>
</xsd:complexType>
<xsd:complexType name="CustomToolbarsFile_Type">
  <xsd:simpleContent>
    <xsd:extension base="xsd:string" />
  </xsd:simpleContent>
</xsd:complexType>
<xsd:complexType name="AttachedToolbars_Type">
  <xsd:simpleContent>
    <xsd:extension base="xsd:base64Binary" />
  </xsd:simpleContent>
</xsd:complexType>
<xsd:complexType name="Colors_Type">
  <xsd:sequence>
    <xsd:element name="ColorEntry" type="ColorEntry_Type" minOccurs="1"
      maxOccurs="unbounded" />
  </xsd:sequence>
</xsd:complexType>
<xsd:complexType name="ColorEntry_Type">
  <xsd:attribute name="IX" type="xsd:unsignedInt" use="required" />
  <xsd:attribute name="RGB" type="xsd:string" use="required" />
</xsd:complexType>
<xsd:complexType name="FaceNames_Type">
  <xsd:sequence>
    <xsd:element name="FaceName" type="FaceName_Type" minOccurs="1"
      maxOccurs="unbounded" />
  </xsd:sequence>
</xsd:complexType>
<xsd:complexType name="FaceName_Type">
  <xsd:attribute name="NameU" type="xsd:string" use="required" />
  <xsd:attribute name="UnicodeRanges" type="xsd:string" />
  <xsd:attribute name="CharSets" type="xsd:string" />
  <xsd:attribute name="Panos" type="xsd:string" />
  <xsd:attribute name="Flags" type="xsd:unsignedInt" />
</xsd:complexType>
<xsd:complexType name="StyleSheets_Type">
  <xsd:sequence>
    <xsd:element name="StyleSheet" type="StyleSheet_Type" minOccurs="0"
      maxOccurs="unbounded" />
  </xsd:sequence>
</xsd:complexType>

```

```

<xsd:complexType name="Masters_Type">
  <xsd:sequence>
    <xsd:element name="Master" type="Master_Type" minOccurs="0"
      maxOccurs="unbounded" />
    <xsd:element name="MasterShortcut" type="MasterShortcut_Type" minOccurs="0"
      maxOccurs="unbounded" />
  </xsd:sequence>
</xsd:complexType>
<xsd:complexType name="Master_Type">
  <xsd:all>
    <xsd:element name="PageSheet" type="PageSheet_Type" minOccurs="0"
      maxOccurs="1" />
    <xsd:element name="Rel" type="Rel_Type" minOccurs="1" maxOccurs="1" />
    <xsd:element name="Icon" type="Icon_Type" minOccurs="0" maxOccurs="1" />
  </xsd:all>
  <xsd:attribute name="ID" type="xsd:unsignedInt" use="required" />
  <xsd:attribute name="BaseID" type="xsd:string" />
  <xsd:attribute name="UniqueID" type="xsd:string" />
  <xsd:attribute name="MatchByName" type="xsd:boolean" />
  <xsd:attribute name="Name" type="xsd:string" />
  <xsd:attribute name="NameU" type="xsd:string" />
  <xsd:attribute name="IsCustomName" type="xsd:boolean" />
  <xsd:attribute name="IsCustomNameU" type="xsd:boolean" />
  <xsd:attribute name="IconSize" type="xsd:unsignedShort" />
  <xsd:attribute name="PatternFlags" type="xsd:unsignedShort" />
  <xsd:attribute name="Prompt" type="xsd:string" />
  <xsd:attribute name="Hidden" type="xsd:boolean" />
  <xsd:attribute name="IconUpdate" type="xsd:boolean" />
  <xsd:attribute name="AlignName" type="xsd:unsignedShort" />
  <xsd:attribute name="MasterType" type="xsd:unsignedShort" />
</xsd:complexType>
<xsd:complexType name="Icon_Type">
  <xsd:simpleContent>
    <xsd:extension base="xsd:base64Binary" />
  </xsd:simpleContent>
</xsd:complexType>
<xsd:complexType name="MasterShortcut_Type">
  <xsd:all>
    <xsd:element name="Icon" type="Icon_Type" minOccurs="0" maxOccurs="1" />
  </xsd:all>
  <xsd:attribute name="ID" type="xsd:unsignedInt" use="required" />
  <xsd:attribute name="Name" type="xsd:string" />
  <xsd:attribute name="NameU" type="xsd:string" />
  <xsd:attribute name="IsCustomName" type="xsd:boolean" />
  <xsd:attribute name="IsCustomNameU" type="xsd:boolean" />
  <xsd:attribute name="IconSize" type="xsd:unsignedShort" />
  <xsd:attribute name="PatternFlags" type="xsd:unsignedShort" />
  <xsd:attribute name="Prompt" type="xsd:string" />
  <xsd:attribute name="ShortcutURL" type="xsd:string" />
  <xsd:attribute name="ShortcutHelp" type="xsd:string" />
  <xsd:attribute name="AlignName" type="xsd:unsignedShort" />
  <xsd:attribute name="MasterType" type="xsd:unsignedShort" />
</xsd:complexType>
<xsd:complexType name="PageContents_Type">
  <xsd:sequence>
    <xsd:element name="Shapes" type="Shapes_Type" minOccurs="0" maxOccurs="1" />
    <xsd:element name="Connects" type="Connects_Type" minOccurs="0"
      maxOccurs="1" />
  </xsd:sequence>

```

```

</xsd:complexType>
<xsd:complexType name="Shapes_Type">
  <xsd:sequence>
    <xsd:element name="Shape" type="ShapeSheet_Type" minOccurs="0"
      maxOccurs="unbounded" />
  </xsd:sequence>
</xsd:complexType>
<xsd:complexType name="Connects_Type">
  <xsd:sequence>
    <xsd:element name="Connect" type="Connect_Type" minOccurs="0"
      maxOccurs="unbounded" />
  </xsd:sequence>
</xsd:complexType>
<xsd:complexType name="Connect_Type">
  <xsd:attribute name="FromSheet" type="xsd:unsignedInt" use="required" />
  <xsd:attribute name="FromCell" type="xsd:string" />
  <xsd:attribute name="FromPart" type="xsd:int" />
  <xsd:attribute name="ToSheet" type="xsd:unsignedInt" use="required" />
  <xsd:attribute name="ToCell" type="xsd:string" />
  <xsd:attribute name="ToPart" type="xsd:int" />
</xsd:complexType>
<xsd:complexType name="Pages_Type">
  <xsd:sequence>
    <xsd:element name="Page" type="Page_Type" minOccurs="0"
      maxOccurs="unbounded" />
  </xsd:sequence>
</xsd:complexType>
<xsd:complexType name="Page_Type">
  <xsd:all>
    <xsd:element name="PageSheet" type="PageSheet_Type" minOccurs="0"
      maxOccurs="1" />
    <xsd:element name="Rel" type="Rel_Type" minOccurs="1" maxOccurs="1" />
  </xsd:all>
  <xsd:attribute name="ID" type="xsd:unsignedInt" use="required" />
  <xsd:attribute name="Name" type="xsd:string" />
  <xsd:attribute name="NameU" type="xsd:string" />
  <xsd:attribute name="IsCustomName" type="xsd:boolean" />
  <xsd:attribute name="IsCustomNameU" type="xsd:boolean" />
  <xsd:attribute name="Background" type="xsd:boolean" />
  <xsd:attribute name="BackPage" type="xsd:unsignedInt" />
  <xsd:attribute name="ViewScale" type="xsd:double" />
  <xsd:attribute name="ViewCenterX" type="xsd:double" />
  <xsd:attribute name="ViewCenterY" type="xsd:double" />
  <xsd:attribute name="ReviewerID" type="xsd:unsignedInt" />
  <xsd:attribute name="AssociatedPage" type="xsd:unsignedInt" />
</xsd:complexType>
<xsd:complexType name="EventList_Type">
  <xsd:sequence>
    <xsd:element name="EventItem" type="EventItem_Type" minOccurs="0"
      maxOccurs="unbounded" />
  </xsd:sequence>
</xsd:complexType>
<xsd:complexType name="EventItem_Type">
  <xsd:attribute name="ID" type="xsd:unsignedInt" use="required" />
  <xsd:attribute name="Action" type="xsd:unsignedShort" use="required" />
  <xsd:attribute name="EventCode" type="xsd:unsignedShort" use="required" />
  <xsd:attribute name="Enabled" type="xsd:boolean" />
  <xsd:attribute name="Target" type="xsd:string" use="required" />
  <xsd:attribute name="TargetArgs" type="xsd:string" use="required" />

```

```

</xsd:complexType>
<xsd:complexType name="HeaderFooter_Type">
  <xsd:all>
    <xsd:element name="HeaderMargin" type="HeaderMargin_Type" minOccurs="0"
      maxOccurs="1" />
    <xsd:element name="FooterMargin" type="FooterMargin_Type" minOccurs="0"
      maxOccurs="1" />
    <xsd:element name="HeaderLeft" type="HeaderLeft_Type" minOccurs="0"
      maxOccurs="1" />
    <xsd:element name="HeaderCenter" type="HeaderCenter_Type" minOccurs="0"
      maxOccurs="1" />
    <xsd:element name="HeaderRight" type="HeaderRight_Type" minOccurs="0"
      maxOccurs="1" />
    <xsd:element name="FooterLeft" type="FooterLeft_Type" minOccurs="0"
      maxOccurs="1" />
    <xsd:element name="FooterCenter" type="FooterCenter_Type" minOccurs="0"
      maxOccurs="1" />
    <xsd:element name="FooterRight" type="FooterRight_Type" minOccurs="0"
      maxOccurs="1" />
    <xsd:element name="HeaderFooterFont" type="HeaderFooterFont_Type" minOccurs="0"
      maxOccurs="1" />
  </xsd:all>
  <xsd:attribute name="HeaderFooterColor" type="xsd:string" />
</xsd:complexType>
<xsd:complexType name="HeaderMargin_Type">
  <xsd:simpleContent>
    <xsd:extension base="xsd:double">
      <xsd:attribute name="Unit" type="xsd:string" />
    </xsd:extension>
  </xsd:simpleContent>
</xsd:complexType>
<xsd:complexType name="FooterMargin_Type">
  <xsd:simpleContent>
    <xsd:extension base="xsd:double">
      <xsd:attribute name="Unit" type="xsd:string" />
    </xsd:extension>
  </xsd:simpleContent>
</xsd:complexType>
<xsd:complexType name="HeaderLeft_Type">
  <xsd:simpleContent>
    <xsd:extension base="xsd:string" />
  </xsd:simpleContent>
</xsd:complexType>
<xsd:complexType name="HeaderCenter_Type">
  <xsd:simpleContent>
    <xsd:extension base="xsd:string" />
  </xsd:simpleContent>
</xsd:complexType>
<xsd:complexType name="HeaderRight_Type">
  <xsd:simpleContent>
    <xsd:extension base="xsd:string" />
  </xsd:simpleContent>
</xsd:complexType>
<xsd:complexType name="FooterLeft_Type">
  <xsd:simpleContent>
    <xsd:extension base="xsd:string" />
  </xsd:simpleContent>
</xsd:complexType>
<xsd:complexType name="FooterCenter_Type">

```

```

    <xsd:simpleContent>
      <xsd:extension base="xsd:string" />
    </xsd:simpleContent>
  </xsd:complexType>
<xsd:complexType name="FooterRight_Type">
  <xsd:simpleContent>
    <xsd:extension base="xsd:string" />
  </xsd:simpleContent>
</xsd:complexType>
<xsd:complexType name="HeaderFooterFont_Type">
  <xsd:attribute name="Height" type="xsd:int" />
  <xsd:attribute name="Width" type="xsd:int" />
  <xsd:attribute name="Escapement" type="xsd:int" />
  <xsd:attribute name="Orientation" type="xsd:int" />
  <xsd:attribute name="Weight" type="xsd:int" />
  <xsd:attribute name="Italic" type="xsd:unsignedByte" />
  <xsd:attribute name="Underline" type="xsd:unsignedByte" />
  <xsd:attribute name="StrikeOut" type="xsd:unsignedByte" />
  <xsd:attribute name="CharSet" type="xsd:unsignedByte" />
  <xsd:attribute name="OutPrecision" type="xsd:unsignedByte" />
  <xsd:attribute name="ClipPrecision" type="xsd:unsignedByte" />
  <xsd:attribute name="Quality" type="xsd:unsignedByte" />
  <xsd:attribute name="PitchAndFamily" type="xsd:unsignedByte" />
  <xsd:attribute name="FaceName" type="xsd:string" />
</xsd:complexType>
<xsd:complexType name="DataConnections_Type">
  <xsd:sequence>
    <xsd:element name="DataConnection" type="DataConnection_Type" minOccurs="1"
      maxOccurs="unbounded" />
  </xsd:sequence>
  <xsd:attribute name="NextID" type="xsd:unsignedInt" use="required" />
</xsd:complexType>
<xsd:complexType name="DataConnection_Type">
  <xsd:attribute name="ID" type="xsd:unsignedInt" use="required" />
  <xsd:attribute name="FileName" type="xsd:string" use="required" />
  <xsd:attribute name="ConnectionString" type="xsd:string" />
  <xsd:attribute name="Command" type="xsd:string" />
  <xsd:attribute name="FriendlyName" type="xsd:string" />
  <xsd:attribute name="Timeout" type="xsd:unsignedInt" />
  <xsd:attribute name="AlwaysUseConnectionFile" type="xsd:boolean" />
</xsd:complexType>
<xsd:complexType name="DataRecordSets_Type">
  <xsd:sequence>
    <xsd:element name="DataRecordSet" type="DataRecordSet_Type" minOccurs="0"
      maxOccurs="unbounded" />
  </xsd:sequence>
  <xsd:attribute name="NextID" type="xsd:unsignedInt" use="required" />
  <xsd:attribute name="ActiveRecordsetID" type="xsd:unsignedInt" />
  <xsd:attribute name="DataWindowOrder" type="xsd:string" />
</xsd:complexType>
<xsd:complexType name="DataRecordSet_Type">
  <xsd:sequence>
    <xsd:element name="Rel" type="Rel_Type" minOccurs="1" maxOccurs="1" />
    <xsd:element name="DataColumns" type="DataColumns_Type" minOccurs="1"
      maxOccurs="1" />
    <xsd:element name="PrimaryKey" type="PrimaryKey_Type" minOccurs="0"
      maxOccurs="unbounded" />
    <xsd:element name="RowMap" type="RowMap_Type" minOccurs="0"
      maxOccurs="unbounded" />
  </xsd:sequence>

```

```

<xsd:element name="RefreshConflict" type="RefreshConflict_Type" minOccurs="0"
maxOccurs="unbounded" />
<xsd:element name="AutoLinkComparison" type="AutoLinkComparison_Type"
minOccurs="0" maxOccurs="unbounded" />
</xsd:sequence>
<xsd:attribute name="ID" type="xsd:unsignedInt" use="required" />
<xsd:attribute name="ConnectionID" type="xsd:unsignedInt" />
<xsd:attribute name="Command" type="xsd:string" />
<xsd:attribute name="Options" type="xsd:unsignedInt" />
<xsd:attribute name="TimeRefreshed" type="xsd:dateTime" />
<xsd:attribute name="NextRowID" type="xsd:unsignedInt" />
<xsd:attribute name="Name" type="xsd:string" />
<xsd:attribute name="RowOrder" type="xsd:boolean" />
<xsd:attribute name="RefreshOverwriteAll" type="xsd:boolean" />
<xsd:attribute name="RefreshNoReconciliationUI" type="xsd:boolean" />
<xsd:attribute name="RefreshInterval" type="xsd:unsignedInt" />
<xsd:attribute name="ReplaceLinks" type="xsd:unsignedInt" />
<xsd:attribute name="Checksum" type="xsd:unsignedInt" />
</xsd:complexType>
<xsd:complexType name="DataColumns_Type">
  <xsd:sequence>
    <xsd:element name="DataColumn" type="DataColumn_Type" minOccurs="1"
maxOccurs="unbounded" />
  </xsd:sequence>
  <xsd:attribute name="SortColumn" type="xsd:string" />
  <xsd:attribute name="SortAsc" type="xsd:boolean" />
</xsd:complexType>
<xsd:complexType name="DataColumn_Type">
  <xsd:attribute name="ColumnNameID" type="xsd:string" use="required" />
  <xsd:attribute name="Name" type="xsd:string" use="required" />
  <xsd:attribute name="Label" type="xsd:string" use="required" />
  <xsd:attribute name="OrigLabel" type="xsd:string" />
  <xsd:attribute name="LangID" type="xsd:unsignedInt" />
  <xsd:attribute name="Calendar" type="xsd:unsignedShort" />
  <xsd:attribute name="DataType" type="xsd:unsignedShort" />
  <xsd:attribute name="UnitType" type="xsd:string" />
  <xsd:attribute name="Currency" type="xsd:unsignedShort" />
  <xsd:attribute name="Degree" type="xsd:unsignedInt" />
  <xsd:attribute name="DisplayWidth" type="xsd:unsignedInt" />
  <xsd:attribute name="DisplayOrder" type="xsd:unsignedInt" />
  <xsd:attribute name="Mapped" type="xsd:boolean" />
  <xsd:attribute name="Hyperlink" type="xsd:boolean" />
</xsd:complexType>
<xsd:complexType name="PrimaryKey_Type">
  <xsd:sequence>
    <xsd:element name="RowKeyValue" type="RowKeyValue_Type" minOccurs="0"
maxOccurs="unbounded" />
  </xsd:sequence>
  <xsd:attribute name="ColumnNameID" type="xsd:string" use="required" />
</xsd:complexType>
<xsd:complexType name="RowKeyValue_Type">
  <xsd:attribute name="RowID" type="xsd:unsignedInt" use="required" />
  <xsd:attribute name="Value" type="xsd:string" use="required" />
</xsd:complexType>
<xsd:complexType name="RowMap_Type">
  <xsd:attribute name="RowID" type="xsd:unsignedInt" use="required" />
  <xsd:attribute name="PageID" type="xsd:unsignedInt" use="required" />
  <xsd:attribute name="ShapeID" type="xsd:unsignedInt" use="required" />
</xsd:complexType>

```

```

<xsd:complexType name="RefreshConflict_Type">
  <xsd:attribute name="RowID" type="xsd:unsignedInt" use="required" />
  <xsd:attribute name="ShapeID" type="xsd:unsignedInt" use="required" />
  <xsd:attribute name="PageID" type="xsd:unsignedInt" use="required" />
</xsd:complexType>
<xsd:complexType name="AutoLinkComparison_Type">
  <xsd:attribute name="ColumnName" type="xsd:string" use="required" />
  <xsd:attribute name="ContextType" type="xsd:unsignedInt" use="required" />
  <xsd:attribute name="ContextTypeLabel" type="xsd:string" />
</xsd:complexType>
<xsd:complexType name="PublishSettings_Type">
  <xsd:sequence>
    <xsd:element name="PublishedPage" type="PublishedPage_Type" minOccurs="0"
      maxOccurs="unbounded" />
    <xsd:element name="RefreshableData" type="RefreshableData_Type" minOccurs="0"
      maxOccurs="unbounded" />
  </xsd:sequence>
</xsd:complexType>
<xsd:complexType name="Comments_Type">
  <xsd:sequence>
    <xsd:element name="AuthorList" type="AuthorList_Type" minOccurs="0"
      maxOccurs="1" />
    <xsd:element name="CommentList" type="CommentList_Type" minOccurs="0"
      maxOccurs="1" />
  </xsd:sequence>
</xsd:complexType>
<xsd:complexType name="AuthorList_Type">
  <xsd:sequence>
    <xsd:element name="AuthorEntry" type="AuthorEntry_Type" minOccurs="0"
      maxOccurs="unbounded" />
  </xsd:sequence>
</xsd:complexType>
<xsd:complexType name="AuthorEntry_Type">
  <xsd:attribute name="Name" type="xsd:string" />
  <xsd:attribute name="Initials" type="xsd:string" />
  <xsd:attribute name="ResolutionID" type="xsd:string" />
  <xsd:attribute name="ID" type="xsd:unsignedInt" use="required" />
</xsd:complexType>
<xsd:complexType name="CommentList_Type">
  <xsd:sequence>
    <xsd:element name="CommentEntry" type="CommentEntry_Type" minOccurs="0"
      maxOccurs="unbounded" />
  </xsd:sequence>
</xsd:complexType>
<xsd:complexType name="CommentEntry_Type">
  <xsd:simpleContent>
    <xsd:extension base="xsd:string">
      <xsd:attribute name="AuthorID" type="xsd:unsignedInt" use="required" />
      <xsd:attribute name="PageID" type="xsd:unsignedInt" use="required" />
      <xsd:attribute name="ShapeID" type="xsd:unsignedInt" />
      <xsd:attribute name="Date" type="xsd:dateTime" use="required" />
      <xsd:attribute name="EditDate" type="xsd:dateTime" />
      <xsd:attribute name="Done" type="xsd:boolean" />
      <xsd:attribute name="CommentID" type="xsd:unsignedInt" use="required" />
    </xsd:extension>
  </xsd:simpleContent>
</xsd:complexType>
<xsd:complexType name="PublishedPage_Type">
  <xsd:attribute name="ID" type="xsd:unsignedInt" use="required" />

```



```

</xsd:complexType>
<xsd:complexType name="RefreshableData_Type">
  <xsd:attribute name="ID" type="xsd:unsignedInt" use="required" />
</xsd:complexType>
<xsd:complexType name="RefBy_Type">
  <xsd:attribute name="T" type="xsd:string" use="required" />
  <xsd:attribute name="ID" type="xsd:unsignedInt" use="required" />
</xsd:complexType>
<xsd:complexType name="Extensions_Type">
  <xsd:sequence>
    <xsd:element name="CellDef" type="CellDef_Type" minOccurs="0"
      maxOccurs="unbounded" />
    <xsd:element name="FunctionDef" type="FunctionDef_Type" minOccurs="0"
      maxOccurs="unbounded" />
    <xsd:element name="SectionDef" type="SectionDef_Type" minOccurs="0"
      maxOccurs="unbounded" />
  </xsd:sequence>
</xsd:complexType>
<xsd:complexType name="CellDef_Type">
  <xsd:attribute name="N" type="xsd:string" use="required" />
  <xsd:attribute name="T" type="xsd:token" use="required" />
  <xsd:attribute name="F" type="xsd:string" />
  <xsd:attribute name="IX" type="xsd:unsignedByte" />
</xsd:complexType>
<xsd:complexType name="FunctionDef_Type">
  <xsd:attribute name="N" type="xsd:string" use="required" />
</xsd:complexType>
<xsd:complexType name="SectionDef_Type">
  <xsd:sequence>
    <xsd:element name="CellDef" type="CellDef_Type" minOccurs="0"
      maxOccurs="unbounded" />
    <xsd:element name="RowDef" type="RowDef_Type" minOccurs="0" maxOccurs="1" />
  </xsd:sequence>
  <xsd:attribute name="N" type="xsd:string" use="required" />
  <xsd:attribute name="T" type="xsd:string" />
</xsd:complexType>
<xsd:complexType name="RowDef_Type">
  <xsd:sequence>
    <xsd:element name="CellDef" type="CellDef_Type" minOccurs="0"
      maxOccurs="unbounded" />
  </xsd:sequence>
</xsd:complexType>
<xsd:complexType name="Rel_Type">
  <xsd:attribute ref="r:id" use="required"/>
</xsd:complexType>
</xsd:schema>

```

6 Appendix B: Product Behavior

The information in this specification is applicable to the following Microsoft products or supplemental software. References to product versions include released service packs:

- Microsoft® SharePoint® Server 15 Technical Preview
- Microsoft® Visio® 15 Technical Preview

Exceptions, if any, are noted below. If a service pack or Quick Fix Engineering (QFE) number appears with the product version, behavior changed in that service pack or QFE. The new behavior also applies to subsequent service packs of the product unless otherwise specified. If a product edition appears with the product version, behavior is different in that product edition.

Unless otherwise specified, any statement of optional behavior in this specification that is prescribed using the terms SHOULD or SHOULD NOT implies product behavior in accordance with the SHOULD or SHOULD NOT prescription. Unless otherwise specified, the term MAY implies that the product does not follow the prescription.

7 Change Tracking

No table of changes is available. The document is either new or has had no changes since its last release.

Preliminary

8 Index

A

Abs
[function token definitions](#) 227
ACos
[function token definitions](#) 228
Add
[function token definitions](#) 228
And
[function token definitions](#) 230
Ang360
[function token definitions](#) 230
angleInternalUnitNumber
[custom internal unit types](#) 355
AngleToLoc
[function token definitions](#) 231
AngleToPar
[function token definitions](#) 231
App
[part enumeration](#) 70
[App XML part](#) 70
[Applicability](#) 26
ASin
[function token definitions](#) 232
ATan
[function token definitions](#) 233
ATan2
[function token definitions](#) 232

B

BitAnd
[function token definitions](#) 233
BitNot
[function token definitions](#) 234
BitOr
[function token definitions](#) 234
BitXor
[function token definitions](#) 235
BkgPageName
[function token definitions](#) 235
Blend
[function token definitions](#) 236
Bound
[function token definitions](#) 237

C

Cat
[function token definitions](#) 238
Category
[function token definitions](#) 239
Ceiling
[function token definitions](#) 239
CellIsThemed
[function token definitions](#) 240
[Change tracking](#) 455
Char
[function token definitions](#) 240

[Common data types and fields](#) 28
Company
[function token definitions](#) 241
Compound file
[file structure overview](#) 28
Conceptual overview
[Structures](#) 29
ContentType
[part enumeration](#) 70
Core
[part enumeration](#) ([section 2.3.2.3](#) 70, [section 2.3.2.4](#) 71)
[Core XML part](#) 70
Cos
[function token definitions](#) 241
CosH
[function token definitions](#) 241
Creator
[function token definitions](#) 242
[Custom input type definitions](#) 350
[vBoolean](#) 350
[vColor](#) 350
[vDouble](#) 351
[vDoubleEx](#) 351
[vFloat](#) 351
[vSignedInt](#) 352
[vSignedLong](#) 352
[vString](#) 352
[vUnsignedInt](#) 353
[vUnsignedLong](#) 353
[Custom internal unit types](#) 354
[angleInternalUnitNumber](#) 355
[durationInternalUnitNumber](#) 355
[lengthInternalUnitNumber](#) 355
[typographicInternalUnitNumber](#) 355
[Custom structures](#) 355
[vCalendar](#) 355
[vCurrencyID](#) 356
[vFormatString](#) 365
[vLanguageID](#) 371
[Custom token groupings](#) 353
[vAngle](#) 353
[vAny](#) ([section 2.5.7.2](#) 354, [section 2.5.7.3](#) 354)
[vNum](#) 354
[vNumAny](#) ([section 2.5.7.5](#) 354, [section 2.5.7.6](#) 354)
[vUnitType](#) 354
CY
[function token definitions](#) 242

D

[Data connections](#) 61
[Data connectivity and refresh](#) 61
[data connections](#) 61
[Data types and fields - common](#) 28
Date
[function token definitions](#) 243
DateTime

[function token definitions](#) 243
 DateValue
 [function token definitions](#) 244
 Day
 [function token definitions](#) 245
 DayOfYear
 [function token definitions](#) 245
 Deg
 [function token definitions](#) 246
 DependsOn
 [function token definitions](#) 246
 Description
 [function token definitions](#) 247
 Details
 [App XML part](#) 70
 [common data types and fields](#) 28
 [Core XML part](#) 70
 [formula evaluation and shape property recalculation](#) 225
 Details – custom input type definitions
 [vBoolean](#) 350
 [vColor](#) 350
 [vDouble](#) 351
 [vDoubleEx](#) 351
 [vFloat](#) 351
 [vSignedInt](#) 352
 [vSignedLong](#) 352
 [vString](#) 352
 [vUnsignedInt](#) 353
 [vUnsignedLong](#) 353
 Details – custom internal unit types
 [angleInternalUnitNumber](#) 355
 [durationInternalUnitNumber](#) 355
 [lengthInternalUnitNumber](#) 355
 [typographicInternalUnitNumber](#) 355
 Details – custom structures
 [vCalendar](#) 355
 [vCurrencyID](#) 356
 [vFormatString](#) 365
 [vLanguageID](#) 371
 Details – custom token groupings
 [vAngle](#) 353
 vAny ([section 2.5.7.2](#) 354, [section 2.5.7.3](#) 354)
 [vNum](#) 354
 vNumAny ([section 2.5.7.5](#) 354, [section 2.5.7.6](#) 354)
 [vUnitType](#) 354
 Details - file structure
 [App](#) 70
 [ContentType](#) 70
 Core ([section 2.3.2.3](#) 70, [section 2.3.2.4](#) 71)
 [Rels](#) 71
 Details - formula token definitions
 [Abs](#) 227
 [ACos](#) 228
 [Add](#) 228
 [And](#) 230
 [Ang360](#) 230
 [AngleToLoc](#) 231
 [AngleToPar](#) 231
 [ASin](#) 232
 [ATan](#) 233
 [ATan2](#) 232
 [BitAnd](#) 233
 [BitNot](#) 234
 [BitOr](#) 234
 [BitXor](#) 235
 [BkgPageName](#) 235
 [Blend](#) 236
 [Bound](#) 237
 [Cat](#) 238
 [Category](#) 239
 [Ceiling](#) 239
 [CellIsThemed](#) 240
 [Char](#) 240
 [Company](#) 241
 [Cos](#) 241
 [Cosh](#) 241
 [Creator](#) 242
 [CY](#) 242
 [Date](#) 243
 [DateTime](#) 243
 [DateValue](#) 244
 [Day](#) 245
 [DayOfYear](#) 245
 [Deg](#) 246
 [DependsOn](#) 246
 [Description](#) 247
 [Directory](#) 247
 [Div](#) 247
 [DocCreation](#) 249
 [DocLastEdit](#) 250
 [DocLastPrint](#) 250
 [DocLastSave](#) 250
 [EEQ](#) 250
 [EGE](#) 251
 [EGT](#) 251
 [ELE](#) 252
 [ELT](#) 252
 [ENE](#) 253
 [FEQ](#) 254
 [FGE](#) 254
 [FGT](#) 255
 [FieldPicture](#) 255
 [FileName](#) 256
 [Find](#) 256
 [FLE](#) 257
 [Floor](#) 257
 [FLT](#) 258
 [FNE](#) 259
 [Format](#) 259
 [FormatEx](#) 260
 [Gravity](#) 261
 [Guard](#) 262
 [HasCategory](#) 262
 [Hour](#) 262
 [HSL](#) 263
 [Hue](#) 264
 [HueDiff](#) 264
 [HyperlinkBase](#) 265
 [ID](#) 265
 [IF](#) 265

[IfError](#) 266
[Index](#) 267
[Int](#) 268
[IntersectX](#) 268
[IntersectY](#) 269
[Intup](#) 270
[Is1D](#) 270
[IsErr](#) 271
[IsErrNA](#) 271
[IsError](#) 272
[IsErrValue](#) 272
[IsThemed](#) 272
[Keywords](#) 273
[Language](#) 273
[Left](#) 273
[Len](#) 274
[Ln](#) 274
[Loc](#) 275
[LocToLoc](#) 275
[LocToPar](#) 276
[Log10](#) 277
[Lookup](#) 277
[Lower](#) 278
[Lum](#) 278
[LumDiff](#) 279
[Magnitude](#) 279
[Manager](#) 280
[MasterName](#) 280
[Max](#) 281
[Mid](#) 282
[Min](#) 282
[Minute](#) 283
[Modulus](#) 283
[Month](#) 284
[MsoShade](#) 285
[MsoTint](#) 285
[Mul](#) 286
[NA](#) 287
[Name](#) 288
[Not](#) 288
[Now](#) 289
[Nurbs](#) 289
[Or](#) 290
[PageCount](#) 291
[PageName](#) 291
[PageNumber](#) 291
[Par](#) 292
[Pct](#) 292
[Pi](#) 293
[Pnt](#) 293
[Pntx](#) 293
[PntY](#) 294
[PolyLine](#) 294
[Pow](#) 295
[Rad](#) 296
[Rand](#) 297
[Ref](#) 297
[Replace](#) 297
[RGB](#) 298
[Right](#) 299
[Round](#) 299

[Sat](#) 300
[SatDiff](#) 300
[Second](#) 301
[SetAtRef](#) 302
[SetAtRefEval](#) 302
[SetAtRefExpr](#) 302
[Shade](#) 303
[ShapeText](#) 303
[Sign](#) 304
[Sin](#) 305
[Sinh](#) 305
[Sqrt](#) 306
[StrSame](#) 306
[StrSameEx](#) 307
[Sub](#) 308
[Subject](#) 309
[Sum](#) 311
[Tan](#) 311
[TanH](#) 312
[TextHeight](#) 312
[TextWidth](#) 313
[Theme](#) 313
[ThemeCBV](#) 314
[ThemeGuard](#) 315
[ThemeProp](#) 315
[ThemeRestore](#) 316
[ThemeVal](#) 316
[Time](#) 317
[TimeValue](#) 318
[Tint](#) 318
[Title](#) 319
[Tone](#) 319
[Trim](#) 320
[Trunc](#) 321
[UMinus](#) 322
[UniChar](#) 322
[UPlus](#) 323
[Upper](#) 323
[Use](#) 323
[Version](#) 324
[WeekDay](#) 324
[Year](#) 325

Details - parse token definitions

PtgAcre ([section 2.5.4.1](#) 326, [section 2.5.4.46](#) 344, [section 2.5.4.47](#) 345)
PtgAngDD ([section 2.5.4.2](#) 326, [section 2.5.4.3](#) 326)
[PtgAngDft](#) 326
[PtgAngDMS](#) 327
[PtgAngRad](#) 327
[PtgBool](#) 328
[PtgColorRGB](#) 328
[PtgCy](#) 329
[PtgDate](#) 329
[PtgEDay](#) 329
[PtgEHour](#) 330
[PtgEMin](#) 330
[PtgErr](#) 331
[PtgESec](#) 331
[PtgEWeek](#) 331
[PtgHectare](#) 332

- [PtgNum](#) 332
- [PtgNumCM](#) 333
- [PtgNumDft](#) 333
- [PtgNumF](#) 334
- [PtgNumFI](#) 334
- [PtgNumI](#) 334
- [PtgNumKM](#) 335
- [PtgNumM](#) 335
- [PtgNumMI](#) 335
- [PtgNumMM](#) 336
- [PtgNumMultiDim](#) 336
- [PtgNumNM](#) 338
- [PtgNumPct](#) 338
- [PtgNumYards](#) 338
- [PtgPageDft](#) 339
- [PtgPnt](#) 339
- [PtgPtgUnsWord](#) 343
- [PtgString](#) 340
- [PtgTDurDft](#) 340
- [PtgTypCi](#) 341
- [PtgTypDi](#) 342
- [PtgTypeCD](#) 341
- [PtgTypPi](#) 342
- [PtgTypPP](#) 343
- [PtgTypPt](#) 343
- Directory
 - [function token definitions](#) 247
- Div
 - [function token definitions](#) 247
- DocCreation
 - [function token definitions](#) 249
- DocLastEdit
 - [function token definitions](#) 250
- DocLastPrint
 - [function token definitions](#) 250
- DocLastSave
 - [function token definitions](#) 250
- [Document with a Shape on a Page example](#) 425
- [Document with Master Inheritance example](#) 433
- Drawing page overview
 - [Structures](#) 29
- durationInternalUnitNumber
 - [custom internal unit types](#) 355

E

- EEQ
 - [function token definitions](#) 250
- EGE
 - [function token definitions](#) 251
- EGT
 - [function token definitions](#) 251
- ELE
 - [function token definitions](#) 252
- ELT
 - [function token definitions](#) 252
- ENE
 - [function token definitions](#) 253
- [Examples](#) 425
 - [Document with a Shape on a Page](#) 425
 - [Document with Master Inheritance](#) 433

F

- FEQ
 - [function token definitions](#) 254
- FGE
 - [function token definitions](#) 254
- FGT
 - [function token definitions](#) 255
- FieldPicture
 - [function token definitions](#) 255
- [Fields - vendor-extensible](#) 27
- File structure
 - [overview](#) 28
- File structure overview
 - [compound file](#) 28
 - [package](#) 28
 - [part enumeration](#) 69
 - [parts](#) 28
 - [relationships](#) 28
- FileName
 - [function token definitions](#) 256
- Find
 - [function token definitions](#) 256
- FLE
 - [function token definitions](#) 257
- Floor
 - [function token definitions](#) 257
- FLT
 - [function token definitions](#) 258
- FNE
 - [function token definitions](#) 259
- Format
 - [function token definitions](#) 259
- FormatEx
 - [function token definitions](#) 260
- Formula evaluation
 - [ABNF](#) 225
 - [custom input type definitions](#) 350
 - [custom internal unit types](#) 354
 - [custom structures](#) 355
 - [custom token groupings](#) 353
 - [full grammar definition](#) 225
 - [function token definitions](#) 227
 - [parse token definitions](#) 325
 - [Formula evaluation and shape property recalculation](#) 225
- [Formulas](#) 64
- [Full XML schema](#) 440
- [Function token definitions](#) 227
 - [Abs](#) 227
 - [ACos](#) 228
 - [Add](#) 228
 - [And](#) 230
 - [Ang360](#) 230
 - [AngleToLoc](#) 231
 - [AngleToPar](#) 231
 - [ASin](#) 232
 - [ATan](#) 233
 - [ATan2](#) 232
 - [BitAnd](#) 233
 - [BitNot](#) 234

[BitOr](#) 234
[BitXor](#) 235
[BkgPageName](#) 235
[Blend](#) 236
[Bound](#) 237
[Cat](#) 238
[Category](#) 239
[Ceiling](#) 239
[CellIsThemed](#) 240
[Char](#) 240
[Company](#) 241
[Cos](#) 241
[Cosh](#) 241
[Creator](#) 242
[CY](#) 242
[Date](#) 243
[DateTime](#) 243
[DateValue](#) 244
[Day](#) 245
[DayOfYear](#) 245
[Deg](#) 246
[DependsOn](#) 246
[Description](#) 247
[Directory](#) 247
[Div](#) 247
[DocCreation](#) 249
[DocLastEdit](#) 250
[DocLastPrint](#) 250
[DocLastSave](#) 250
[EEQ](#) 250
[EGE](#) 251
[EGT](#) 251
[ELE](#) 252
[ELT](#) 252
[ENE](#) 253
[FEQ](#) 254
[FGE](#) 254
[FGT](#) 255
[FieldPicture](#) 255
[FileName](#) 256
[Find](#) 256
[FLE](#) 257
[Floor](#) 257
[FLT](#) 258
[FNE](#) 259
[Format](#) 259
[FormatEx](#) 260
[Gravity](#) 261
[Guard](#) 262
[HasCategory](#) 262
[Hour](#) 262
[HSL](#) 263
[Hue](#) 264
[HueDiff](#) 264
[HyperlinkBase](#) 265
[ID](#) 265
[IE](#) 265
[IfError](#) 266
[Index](#) 267
[Int](#) 268
[IntersectX](#) 268
[IntersectY](#) 269
[Intup](#) 270
[IsID](#) 270
[IsErr](#) 271
[IsErrNA](#) 271
[IsError](#) 272
[IsErrValue](#) 272
[IsThemed](#) 272
[Keywords](#) 273
[Language](#) 273
[Left](#) 273
[Len](#) 274
[Ln](#) 274
[Loc](#) 275
[LocToLoc](#) 275
[LocToPar](#) 276
[Log10](#) 277
[Lookup](#) 277
[Lower](#) 278
[Lum](#) 278
[LumDiff](#) 279
[Magnitude](#) 279
[Manager](#) 280
[MasterName](#) 280
[Max](#) 281
[Mid](#) 282
[Min](#) 282
[Minute](#) 283
[Modulus](#) 283
[Month](#) 284
[MsoShade](#) 285
[MsoTint](#) 285
[Mul](#) 286
[NA](#) 287
[Name](#) 288
[Not](#) 288
[Now](#) 289
[Nurbs](#) 289
[Or](#) 290
[PageCount](#) 291
[PageName](#) 291
[PageNumber](#) 291
[Par](#) 292
[Pct](#) 292
[Pi](#) 293
[Pnt](#) 293
[Pntx](#) 293
[PntY](#) 294
[PolyLine](#) 294
[Pow](#) 295
[Rad](#) 296
[Rand](#) 297
[Ref](#) 297
[Replace](#) 297
[RGB](#) 298
[Right](#) 299
[Round](#) 299
[Sat](#) 300
[SatDiff](#) 300
[Second](#) 301
[SetAtRef](#) 302

[SetAtRefEval](#) 302
[SetAtRefExpr](#) 302
[Shade](#) 303
[ShapeText](#) 303
[Sign](#) 304
[Sin](#) 305
[SinH](#) 305
[Sqrt](#) 306
[StrSame](#) 306
[StrSameEx](#) 307
[Sub](#) 308
[Subject](#) 309
[Sum](#) 311
[Tan](#) 311
[TanH](#) 312
[TextHeight](#) 312
[TextWidth](#) 313
[Theme](#) 313
[ThemeCBV](#) 314
[ThemeGuard](#) 315
[ThemeProp](#) 315
[ThemeRestore](#) 316
[ThemeVal](#) 316
[Time](#) 317
[TimeValue](#) 318
[Tint](#) 318
[Title](#) 319
[Tone](#) 319
[Trim](#) 320
[Trunc](#) 321
[UMinus](#) 322
[UniChar](#) 322
[UPlus](#) 323
[Upper](#) 323
[Use](#) 323
[Version](#) 324
[WeekDay](#) 324
[Year](#) 325

G

[Glossary](#) 23
 Gravity
 [function token definitions](#) 261
 Guard
 [function token definitions](#) 262

H

HasCategory
 [function token definitions](#) 262
 Hour
 [function token definitions](#) 262
 HSL
 [function token definitions](#) 263
 Hue
 [function token definitions](#) 264
 HueDiff
 [function token definitions](#) 264
 HyperlinkBase
 [function token definitions](#) 265

I

ID
 [function token definitions](#) 265
 IF
 [function token definitions](#) 265
 IfError
 [function token definitions](#) 266
[Implementer - security considerations](#) 439
 Index
 [function token definitions](#) 267
[Informative references](#) 25
 Int
 [function token definitions](#) 268
 IntersectX
 [function token definitions](#) 268
 IntersectY
 [function token definitions](#) 269
[Introduction](#) 23
 Intup
 [function token definitions](#) 270
 Is1D
 [function token definitions](#) 270
 IsErr
 [function token definitions](#) 271
 IsErrNA
 [function token definitions](#) 271
 IsError
 [function token definitions](#) 272
 IsErrValue
 [function token definitions](#) 272
 IsThemed
 [function token definitions](#) 272

K

Keywords
 [function token definitions](#) 273

L

Language
 [function token definitions](#) 273
 Left
 [function token definitions](#) 273
 Len
 [function token definitions](#) 274
 lengthInternalUnitNumber
 [custom internal unit types](#) 355
 Ln
 [function token definitions](#) 274
 Loc
 [function token definitions](#) 275
[Localization](#) 26
 LocToLoc
 [function token definitions](#) 275
 LocToPar
 [function token definitions](#) 276
 Log10
 [function token definitions](#) 277
 Lookup

[function token definitions](#) 277
Lower
[function token definitions](#) 278
Lum
[function token definitions](#) 278
LumDiff
[function token definitions](#) 279

M

Magnitude
[function token definitions](#) 279
Manager
[function token definitions](#) 280
MasterName
[function token definitions](#) 280
Max
[function token definitions](#) 281
Mid
[function token definitions](#) 282
Min
[function token definitions](#) 282
Minute
[function token definitions](#) 283
Modulus
[function token definitions](#) 283
Month
[function token definitions](#) 284
MsoShade
[function token definitions](#) 285
MsoTint
[function token definitions](#) 285
Mul
[function token definitions](#) 286

N

NA
[function token definitions](#) 287
Name
[function token definitions](#) 288
[Normative references](#) 24
Not
[function token definitions](#) 288
Now
[function token definitions](#) 289
Nurbs
[function token definitions](#) 289

O

Or
[function token definitions](#) 290
[Overview \(synopsis\)](#) 26

P

Package
[file structure overview](#) 28
PageCount
[function token definitions](#) 291
PageName

[function token definitions](#) 291
PageNumber
[function token definitions](#) 291
Par
[function token definitions](#) 292
[Parse token definitions](#) 325
[NumKM](#) 335
PtgAcre ([section 2.5.4.1](#) 326, [section 2.5.4.46](#) 344, [section 2.5.4.47](#) 345)
PtgAngDD ([section 2.5.4.2](#) 326, [section 2.5.4.3](#) 326)
[PtgAngDft](#) 326
[PtgAngDMS](#) 327
[PtgAngRad](#) 327
[PtgBool](#) 328
[PtgColorRGB](#) 328
[PtgCy](#) 329
[PtgDate](#) 329
[PtgEDay](#) 329
[PtgEHour](#) 330
[PtgEMin](#) 330
[PtgErr](#) 331
[PtgESec](#) 331
[PtgEWeek](#) 331
[PtgHectare](#) 332
[PtgNum](#) 332
[PtgNumCM](#) 333
[PtgNumDft](#) 333
[PtgNumF](#) 334
[PtgNumFI](#) 334
[PtgNumI](#) 334
[PtgNumM](#) 335
[PtgNumMI](#) 335
[PtgNumMM](#) 336
[PtgNumMultiDim](#) 336
[PtgNumNM](#) 338
[PtgNumPct](#) 338
[PtgNumYards](#) 338
[PtgPageDft](#) 339
[PtgPnt](#) 339
[PtgPtqUnsWord](#) 343
[PtgString](#) 340
[PtgTDurDft](#) 340
[PtgTypCD](#) 341
[PtgTypCi](#) 341
[PtgTypDi](#) 342
[PtgTypPi](#) 342
[PtgTypPP](#) 343
[PtgTypPt](#) 343
Part enumeration
[App](#) 70
[ContentType](#) 70
Core ([section 2.3.2.3](#) 70, [section 2.3.2.4](#) 71)
[file structure overview](#) 69
[Rels](#) 71
Parts
[file structure overview](#) 28
[Structures](#) 69
Pct
[function token definitions](#) 292
Pi

[function token definitions](#) 293
 Pnt
 [function token definitions](#) 293
 Pntx
 [function token definitions](#) 293
 PntY
 [function token definitions](#) 294
 PolyLine
 [function token definitions](#) 294
 Pow
 [function token definitions](#) 295
[Product behavior](#) 454
 PtgAcre
 parse token definitions ([section 2.5.4.1](#) 326,
 [section 2.5.4.46](#) 344, [section 2.5.4.47](#) 345)
 PtgAngDD
 parse token definitions ([section 2.5.4.2](#) 326,
 [section 2.5.4.3](#) 326)
 PtgAngDft
 [parse token definitions](#) 326
 PtgAngDMS
 [parse token definitions](#) 327
 PtgAngRad
 [parse token definitions](#) 327
 PtgBool
 [parse token definitions](#) 328
 PtgColorRGB
 [parse token definitions](#) 328
 PtgCy
 [parse token definitions](#) 329
 PtgDate
 [parse token definitions](#) 329
 PtgEDay
 [parse token definitions](#) 329
 PtgEHour
 [parse token definitions](#) 330
 PtgEMin
 [parse token definitions](#) 330
 PtgErr
 [parse token definitions](#) 331
 PtgESec
 [parse token definitions](#) 331
 PtgEWeek
 [parse token definitions](#) 331
 PtgHectare
 [parse token definitions](#) 332
 PtgNum
 [parse token definitions](#) 332
 PtgNumCM
 [parse token definitions](#) 333
 PtgNumDft
 [parse token definitions](#) 333
 PtgNumF
 [parse token definitions](#) 334
 PtgNumFI
 [parse token definitions](#) 334
 PtgNumI
 [parse token definitions](#) 334
 PtgNumKM
 [parse token definitions](#) 335
 PtgNumM

[parse token definitions](#) 335
 PtgNumMI
 [parse token definitions](#) 335
 PtgNumMM
 [parse token definitions](#) 336
 PtgNumMultiDim
 [parse token definitions](#) 336
 PtgNumNM
 [parse token definitions](#) 338
 PtgNumPct
 [parse token definitions](#) 338
 PtgNumYards
 [parse token definitions](#) 338
 PtgPageDft
 [parse token definitions](#) 339
 PtgPnt
 [parse token definitions](#) 339
 PtgString
 [parse token definitions](#) 340
 PtgTDurDft
 [parse token definitions](#) 340
 PtgTypCD
 [parse token definitions](#) 341
 PtgTypCi
 [parse token definitions](#) 341
 PtgTypDi
 [parse token definitions](#) 342
 PtgTypPi
 [parse token definitions](#) 342
 PtgTypPP
 [parse token definitions](#) 343
 PtgTypPt
 [parse token definitions](#) 343
 PtgUnsWord
 [parse token definitions](#) 343

R

Rad
 [function token definitions](#) 296
 Rand
 [function token definitions](#) 297
[Recalculating shape properties](#) 63
 [formulas](#) 64
 [unit number](#) 68
[Recordset](#) 62
 Recordset refresh ([section 2.2.10.2](#) 62, [section 2.2.10.3](#) 62)
 Ref
 [function token definitions](#) 297
[References](#) 24
 [informative](#) 25
 [normative](#) 24
[Relationship to protocols and other structures](#) 26
 Relationships
 [file structure overview](#) 28
 Rels
 [part enumeration](#) 71
 Replace
 [function token definitions](#) 297
 RGB
 [function token definitions](#) 298

Right
[function token definitions](#) 299

Round
[function token definitions](#) 299

S

Sat
[function token definitions](#) 300

SatDiff
[function token definitions](#) 300

Second
[function token definitions](#) 301

Security
[implementer considerations](#) 439

SetAtRef
[function token definitions](#) 302

SetAtRefEval
[function token definitions](#) 302

SetAtRefExpr
[function token definitions](#) 302

Shade
[function token definitions](#) 303

[Shape data](#) 35

[Shape hyperlinks](#) 35

Shape identification ([section 2.2.3.1](#) 32, [section 2.2.4.1](#) 36, [section 2.2.5.1](#) 36, [section 2.2.5.1](#) 36, [section 2.2.5.2](#) 36)

Shape overview
Structures ([section 2.2.3](#) 32, [section 2.2.5](#) 36)

Shape selection ([section 2.2.3.2](#) 32, [section 2.2.3.4](#) 35)

ShapeText
[function token definitions](#) 303

ShapeSheet properties
[Structures](#) 141

Sign
[function token definitions](#) 304

Sin
[function token definitions](#) 305

SinH
[function token definitions](#) 305

Sqrt
[function token definitions](#) 306

StrSame
[function token definitions](#) 306

StrSameEx
[function token definitions](#) 307

Structures
[App XML part](#) 70
[conceptual overview](#) 29
[Core XML part](#) 70
[data connectivity and refresh](#) 61
[drawing page overview](#) 29
[file structure](#) 28
[formula evaluation and shape property recalculation](#) 225
[overview](#) 28
[parts](#) 69
[recalculating shape properties](#) 63
[Recordset](#) 62

Recordset refresh ([section 2.2.10.2](#) 62, [section 2.2.10.3](#) 62)
[shape data](#) 35
[shape hyperlinks](#) 35
shape identification ([section 2.2.3.1](#) 32, [section 2.2.4.1](#) 36, [section 2.2.5.1](#) 36, [section 2.2.5.2](#) 36)
shape overview ([section 2.2.3](#) 32, [section 2.2.5](#) 36)
shape selection ([section 2.2.3.2](#) 32, [section 2.2.3.4](#) 35)
[ShapeSheet properties](#) 141
[Web drawing overview](#) 29

Sub
[function token definitions](#) 308

Subject
[function token definitions](#) 309

Sum
[function token definitions](#) 311

T

Tan
[function token definitions](#) 311

TanH
[function token definitions](#) 312

TextHeight
[function token definitions](#) 312

TextWidth
[function token definitions](#) 313

Theme
[function token definitions](#) 313

ThemeCBV
[function token definitions](#) 314

ThemeGuard
[function token definitions](#) 315

ThemeProp
[function token definitions](#) 315

ThemeRestore
[function token definitions](#) 316

ThemeVal
[function token definitions](#) 316

Time
[function token definitions](#) 317

TimeValue
[function token definitions](#) 318

Tint
[function token definitions](#) 318

Title
[function token definitions](#) 319

Tone
[function token definitions](#) 319
[Tracking changes](#) 455

Trim
[function token definitions](#) 320

Trunc
[function token definitions](#) 321

typographicInternalUnitNumber
[custom internal unit types](#) 355

U

UMinus
 [function token definitions](#) 322
UniChar
 [function token definitions](#) 322
[Unit number](#) 68
UPlus
 [function token definitions](#) 323
Upper
 [function token definitions](#) 323
Use
 [function token definitions](#) 323

V

vAngle
 [custom token groupings](#) 353
vAny
 custom token groupings ([section 2.5.7.2](#) 354,
 [section 2.5.7.3](#) 354)
vBoolean
 [custom input type definitions](#) 350
vCalendar
 [custom structures](#) 355
vColor
 [custom input type definitions](#) 350
vCurrencyID
 [custom structures](#) 356
vDouble
 [custom input type definitions](#) 351
vDoubleEx
 [custom input type definitions](#) 351
[Vendor-extensible fields](#) 27
Version
 [function token definitions](#) 324
[Versioning](#) 26
vFloat
 [custom input type definitions](#) 351
vFormatString
 [custom structures](#) 365
vLanguageID
 [custom structures](#) 371
vNum
 [custom token groupings](#) 354
vNumAny
 custom token groupings ([section 2.5.7.5](#) 354,
 [section 2.5.7.6](#) 354)
vSignedInt
 [custom input type definitions](#) 352
vSignedLong
 [custom input type definitions](#) 352
vString
 [custom input type definitions](#) 352
vUnitType
 [custom token groupings](#) 354
vUnsignedInt
 [custom input type definitions](#) 353
vUnsignedLong
 [custom input type definitions](#) 353

W

Web drawing overview

[Structures](#) 29
WeekDay
 [function token definitions](#) 324

X

XML parts
 [App](#) 70
 [Core](#) 70
 [XML schema](#) 440

Y

Year
 [function token definitions](#) 325