

Data Visualizations

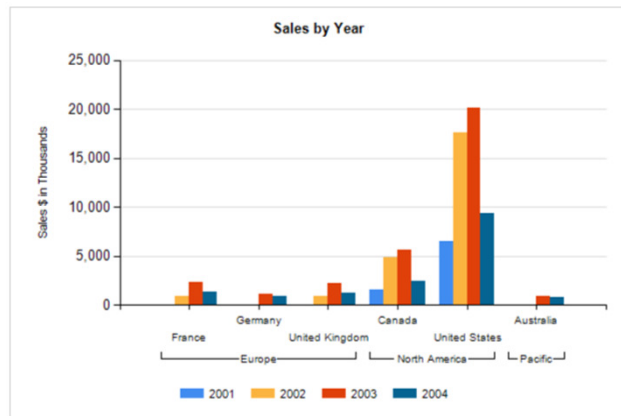
Visualizing data with charts, gauges, and indicators



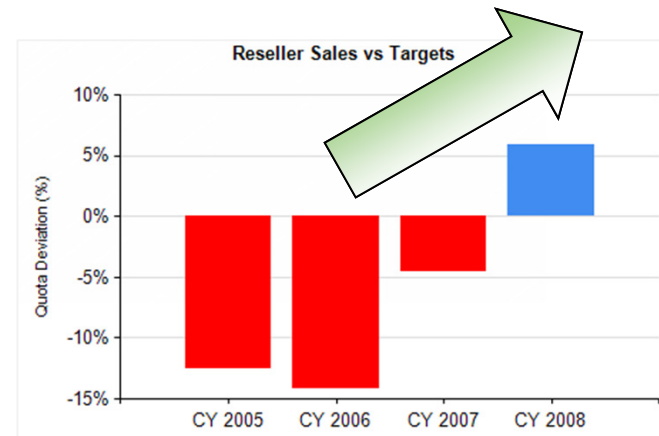
Overview

- Charts
- Data Bars
- Sparklines
- Gauges
- Indicators

Charts



Comparisons and patterns








































Trends



















Outliers

Charts – Linear Data

Chart Category	Example
Column	          
Line	     
Bar	        
Area	       
Scatter	  

Charts – Ratio Data

Chart Category	Example
Pie and doughnut	     
Funnel and pyramid	   
Polar	  
Scatter	  

Charts – Multi-Value Data

Chart Category	Example
Range chart	
Stock chart	

Chart Data Pane

■ Values (Series)

- Numeric fields aggregate using SUM function by default
- Non-numeric fields aggregate using COUNT function
- Expressions override aggregate function or perform more complex operations

■ Category Groups

- Organize labels on horizontal axis

■ Series Groups

- Add another level of grouping to chart

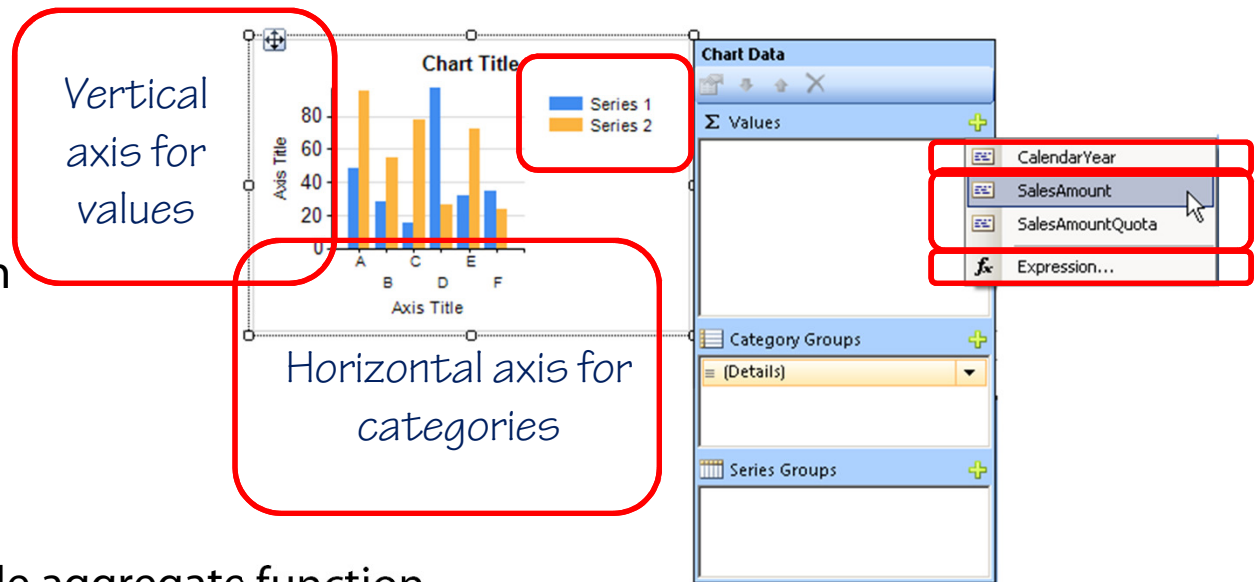


Chart Elements

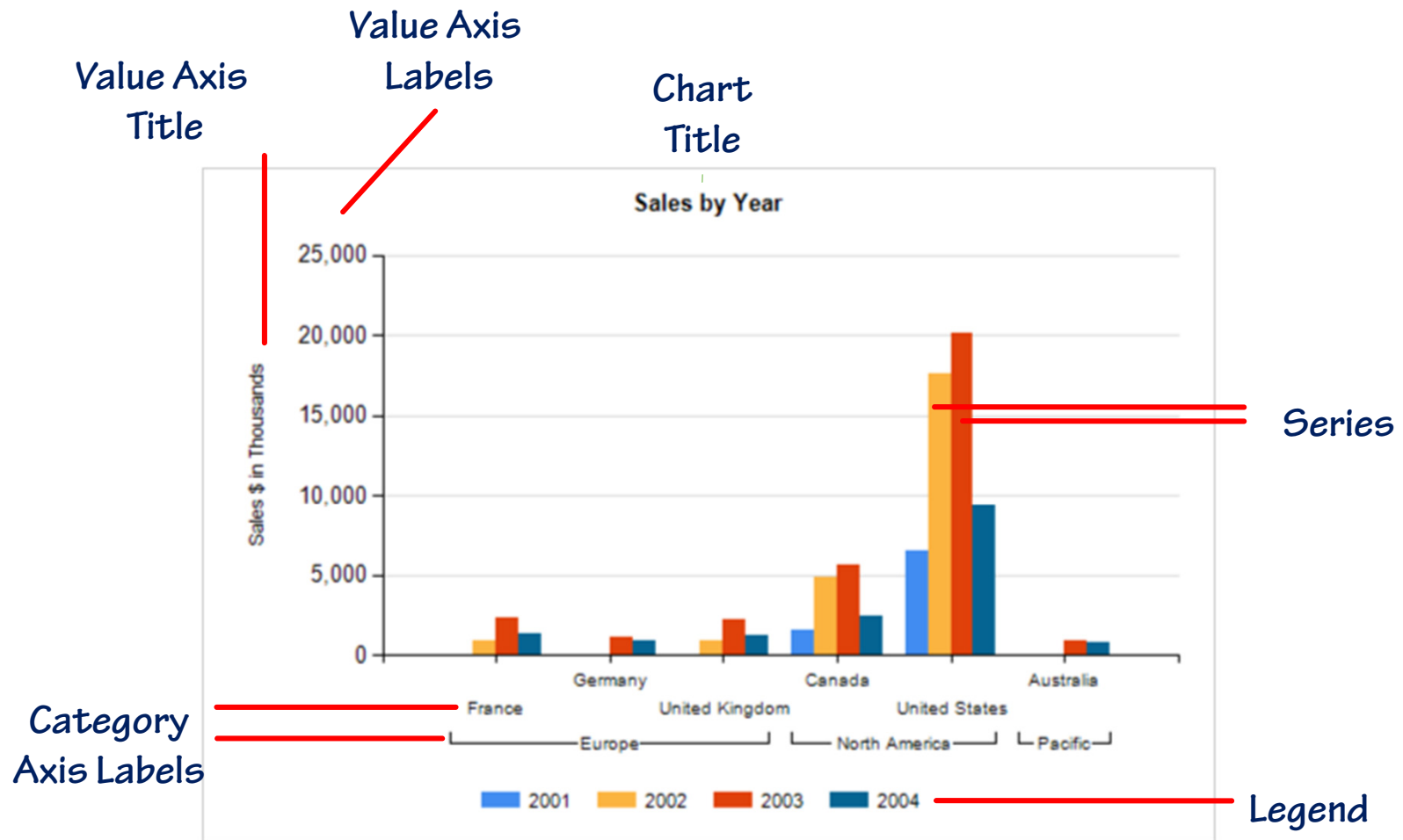
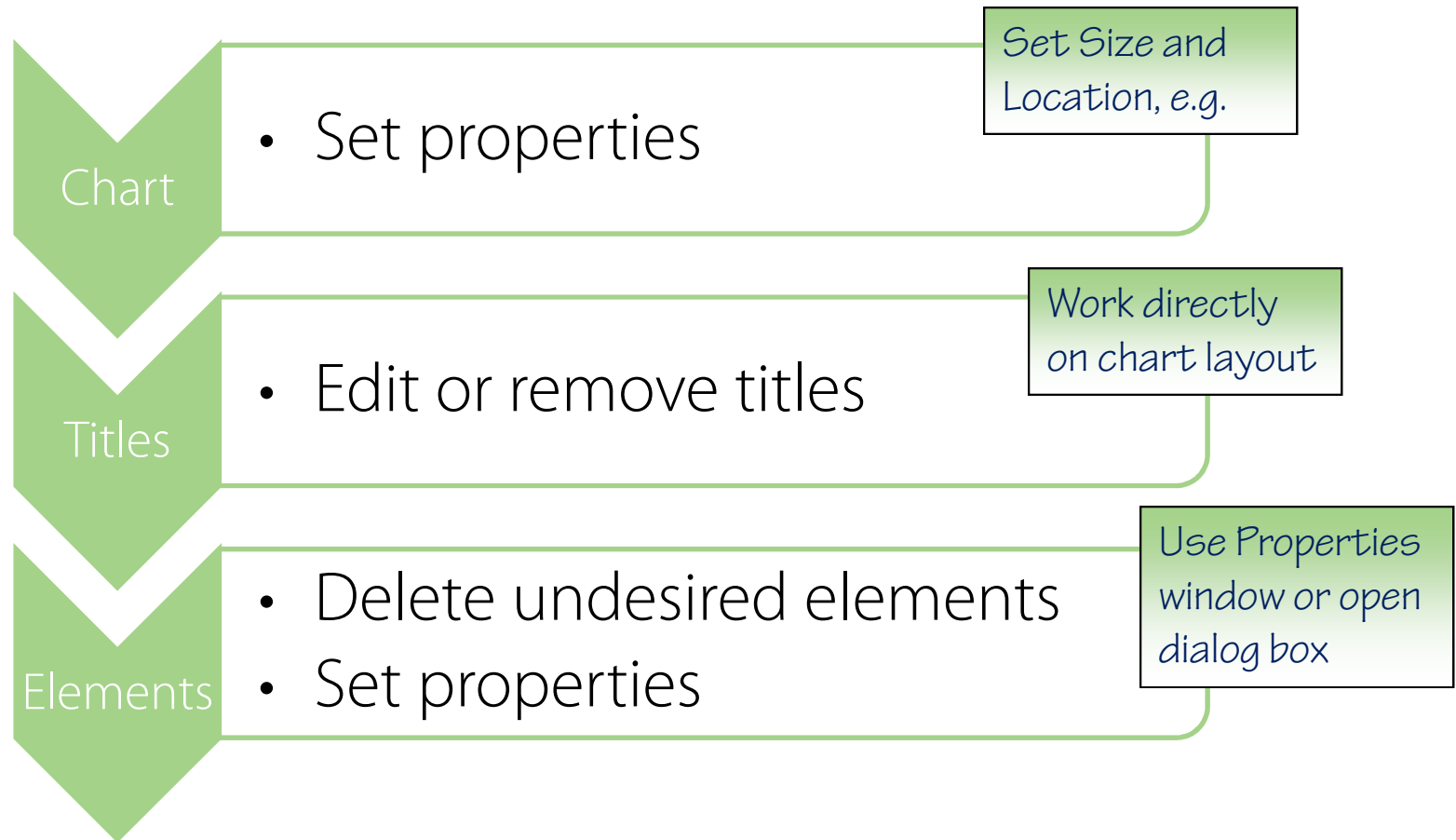


Chart Element Properties



Data Bars

- “Inline” bar or column chart for single data points
- Horizontal axis properties
 - Axis scope
 - Minimum and maximum values
 - Scale options
- Vertical axis properties usually not relevant
- Series properties
 - Visibility and tooltips
 - Fill
- Chart properties
 - Visibility and tooltips
 - Palette
 - Filters

English Product Category Name	Calendar Year	Sales Amount	
Accessories	2005	\$20,235	
	2006	\$92,735	
	2007	\$296,533	
	2008	\$161,794	
Bikes	2005	\$7,395,349	<div></div>
	2006	\$19,956,015	<div></div>
	2007	\$25,551,775	<div></div>
	2008	\$13,399,243	<div></div>
Clothing	2005	\$34,376	
	2006	\$485,587	
	2007	\$871,864	
	2008	\$386,013	
Components	2005	\$615,475	
	2006	\$3,610,092	<div></div>
	2007	\$5,482,497	<div></div>
	2008	\$2,091,012	<div></div>

Sparklines

- **Multiple inline chart types for multiple data points**

- Column, line, area, shape, and range types

- **Vertical axis properties**

















- Axis scope
- Minimum and maximum values
- Scale options

- **Horizontal axis properties**

- Axis type (category, scalar)
- Scale direction

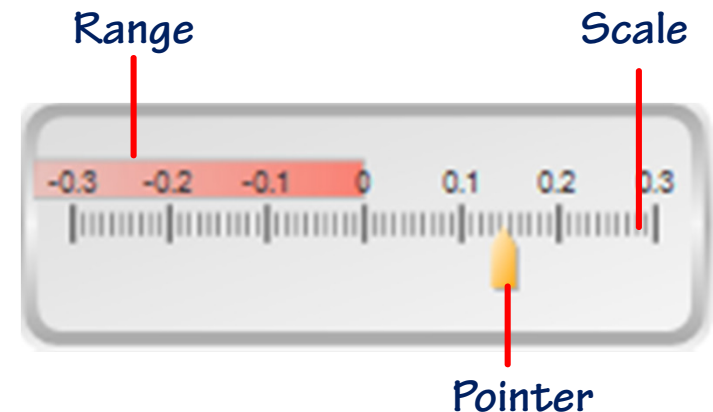
- **Set chart properties**

- Visibility and tooltips
- Palette, fill, and border options
- Filters

Sales Amount			
Accessories	2005	20,235	
	2006	92,735	
	2007	296,533	
	2008	161,794	
Bikes	2005	7,395,349	
	2006	19,956,015	
	2007	25,551,775	
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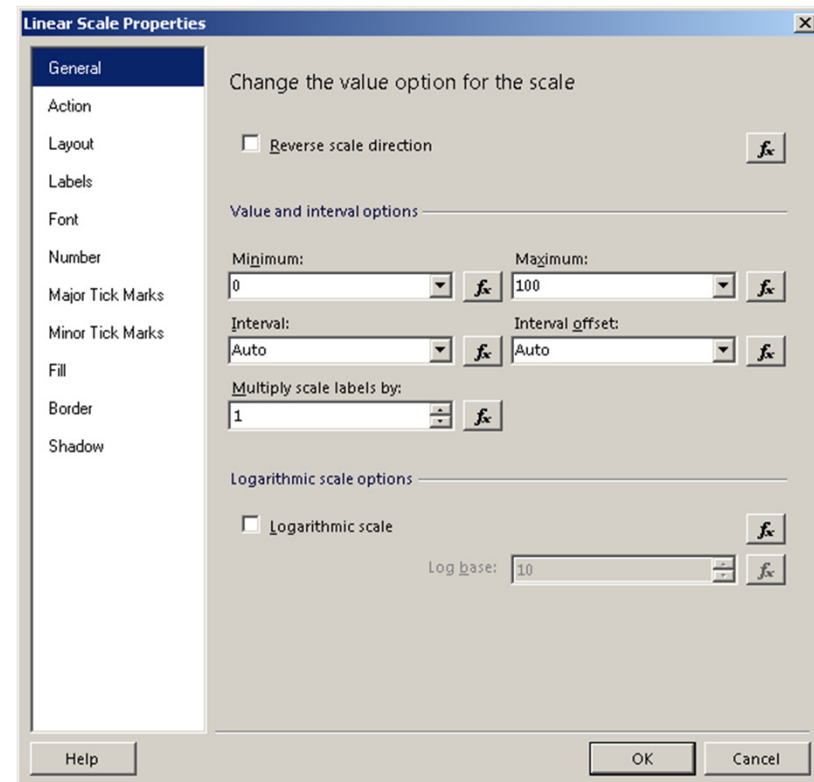
Gauges

- Display key performance indicators in radial or linear gauges
- Display as single data value on a scale with pointer
- Use ranges to display target or warning zones
- Optionally insert into data region to repeat gauges by group
- Optionally use multiple pointers, ranges, and scales in one gauge



Gauges – Scale Properties

- Set scale value options
- Set layout options
 - Position in gauge
 - Margins
 - Scale bar
- Format labels
 - Visibility & placement
 - Font & format
- Configure appearance
 - Fill, border & shadow
- Format tick marks
- Link to Action



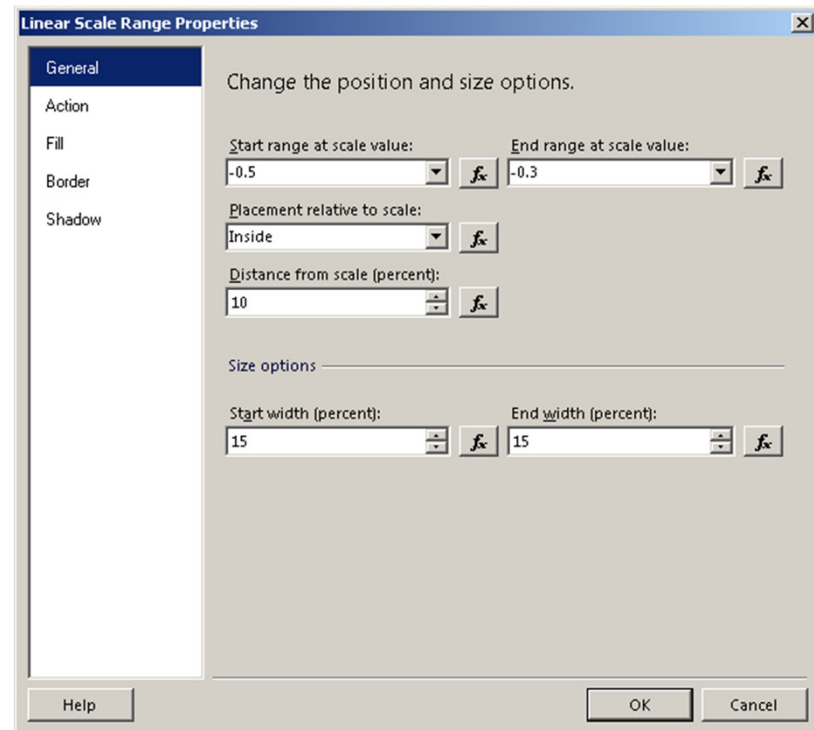
The image shows a 'Linear Scale Properties' dialog box with a sidebar on the left containing the following categories: General, Action, Layout, Labels, Font, Number, Major Tick Marks, Minor Tick Marks, Fill, Border, and Shadow. The 'General' category is selected. The main area of the dialog is titled 'Change the value option for the scale' and contains the following options:

- ☐ Reverse scale direction (with a function button 'fx')
- Value and interval options**
 - Minimum: 0 (with a function button 'fx')
 - Maximum: 100 (with a function button 'fx')
 - Interval: Auto (with a function button 'fx')
 - Interval offset: Auto (with a function button 'fx')
 - Multiply scale labels by: 1 (with a function button 'fx')
- Logarithmic scale options**
 - ☐ Logarithmic scale (with a function button 'fx')
 - Log base: 10 (with a function button 'fx')

At the bottom of the dialog are buttons for 'Help', 'OK', and 'Cancel'.

Gauges – Range Properties

- Specify start and end position of range on scale
- Set placement relative to scale
- Define distance from scale
- Set width of range
- Configure appearance
 - Fill, border & shadow
- Link to Action



The image shows a software dialog box titled "Linear Scale Range Properties". It has a sidebar on the left with tabs: "General" (selected), "Action", "Fill", "Border", and "Shadow". The main area contains settings for a range on a scale. It includes fields for "Start range at scale value" (set to -0.5) and "End range at scale value" (set to -0.3), both with "fx" buttons. Below these is "Placement relative to scale" (set to "Inside" with an "fx" button) and "Distance from scale (percent)" (set to 10 with an "fx" button). A section titled "Size options" contains "Start width (percent)" (set to 15 with an "fx" button) and "End width (percent)" (set to 15 with an "fx" button"). At the bottom are "Help", "OK", and "Cancel" buttons.

Linear Scale Range Properties

Change the position and size options.

Start range at scale value: -0.5 fx End range at scale value: -0.3 fx

Placement relative to scale: Inside fx

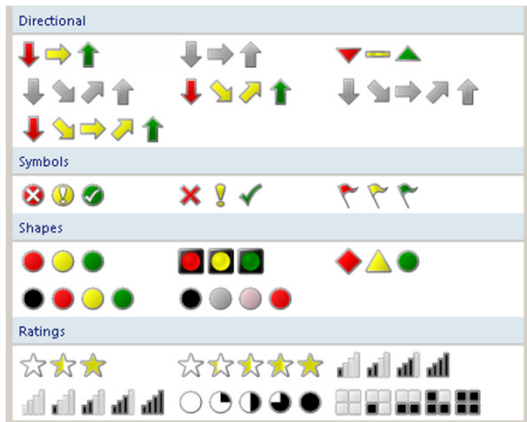
Distance from scale (percent): 10 fx

Size options

Start width (percent): 15 fx End width (percent): 15 fx

Help OK Cancel

Indicators



Group	Country	Prev Yr Avg Sales Change	
Europe	France	-2.35 %	
	Germany	3.28 %	
	United Kingdom	-0.80 %	
North America	Canada	-10.35 %	
	United States	2.72 %	
Pacific	Australia	-18.15 %	

- Display condition-based icons in a table, matrix, or list
- Optionally use custom images
- Set indicator states using absolute or percentage values
- Link indicators to action

Summary

- **Charts**
 - Linear data, ratio data, multi-value data
 - Chart data pane or element context menu provide access to properties
- **Data Bars**
 - Inline chart for single data point
- **Sparklines**
 - Inline chart for multiple data points
- **Gauges**
 - Key performance indicators in radial or linear gauge
- **Indicators**
 - Key performance indicators with icon sets

References

- **Working with Chart Data Regions**
 - [http://msdn.microsoft.com/en-us/library/ms155847\(v=SQL.100\).aspx](http://msdn.microsoft.com/en-us/library/ms155847(v=SQL.100).aspx)
- **Sparklines and Data Bars**
 - <http://msdn.microsoft.com/en-us/library/ee633676.aspx>
- **Working with Gauge Data Regions**
 - [http://msdn.microsoft.com/en-us/library/cc281374\(v=SQL.100\).aspx](http://msdn.microsoft.com/en-us/library/cc281374(v=SQL.100).aspx)
- **Indicators**
 - <http://msdn.microsoft.com/en-us/library/ee633651.aspx>