Creating Charts Using Db2 Web Query Designer

Release 2.3

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Chapter 1

Creating Charts

Charts communicate overall trends quickly with eye-catching and intuitive graphics. Charts come in many different varieties that allow you to communicate information with varying degrees of complexity and specificity. You can use simple charts to effectively communicate simple metrics, and more complex charts to clearly display relationships between different aspects of your data, making it easy to identify less obvious trends.

Different chart types utilize different kinds of data and enable different styling options. You can easily change chart types by selecting a different option from the Content picker, making it easy to ensure that you choose the chart type that best represents your data.

When creating your visualization, you can use tooltips and on-chart filtering to get the necessary information from your chart, and you can also enhance the chart with run-time capabilities such as drill-downs and In-Document Analytics to make even more information available from a single chart.

In this chapter:

Creating a Chart Using Db2 Web Query Designer

To create a chart Using Db2 Web Query Designer:

1. Open Db2 Web Query Designer. On the default Db2 Web Query Home Page, click *Visualize Data*.

   Db2 Web Query Designer opens in a new browser tab.

2. Select a workspace and a data source available from that workspace.

3. Use the Content picker to change the chart type, or use the default vertical stacked bar chart. The Content picker is shown in the following image.

4. Add measures by dragging them onto the canvas.

   Note: You can also double-click a measure to add it to the default measure bucket or drag it into an appropriate bucket of your choice.

5. Add dimensions by dragging them onto the canvas.

   Note: You can also double-click a dimension to add it to the default dimension bucket or drag it into an appropriate bucket of your choice.

   The chart refreshes with your selections.

6. You can format your chart in the following ways:

   a. Edit the style, size, or format of your fonts.

   b. Modify the appearance or location of your legend.

   c. Modify axis options.

   d. Add a header and footer.

   e. Customize the series in your chart.

7. On the Db2 Web Query Designer toolbar, click *Save* to save your chart.

When you create a single chart and save it for the first time, it is saved as a stand-alone chart, which allows you to add it as external content to pages. If you click *Convert to Page* or *Add visualization* on the Visualization toolbar, your content becomes a page to which you can add more content and containers. After this point, it is saved as a multi-content page.

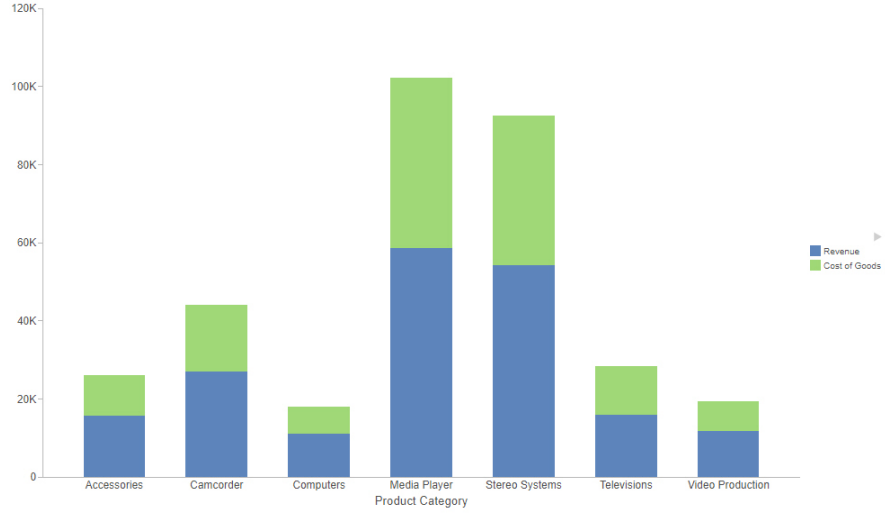
You can now continue editing your chart, or add more charts to the visualization to turn it into a page.

8. To reopen your chart once you have exited Db2 Web Query Designer, locate it on the Home Page, right-click it, and click *Edit* from the shortcut menu.

Creating Vertical Stacked Bar Charts

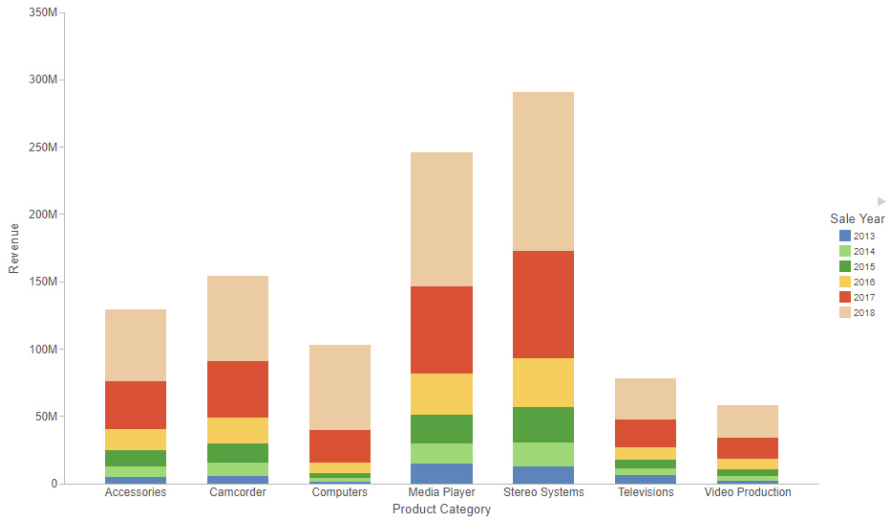
Use a vertical stacked bar chart when you want to view information for one dimension within another dimension. For example, when you want to see which product subcategories accounted for the most sales within each product category.

If you use one measure in the Vertical bucket and one dimension in the Horizontal bucket, a simple bar chart is created, with no stacked segments. Vertical stacked bar charts require at least one measure and one dimension. If you add a second measure to the Vertical bucket, a second series is created for the new measure and a new segment is placed on top of the first measure in each bar, as shown in the following image.



Additional measures increase the number of segments in a stack.

If you instead add a dimension field to the Color bucket, colored segments are created for each value in that dimension field, as shown in the following image.



Additional fields added to the color field create additional segments based on concatenated values.

The following display options are available for a vertical stacked bar chart:

- **Change chart orientation.** Switches the horizontal and vertical axes, making the bars horizontal.
- Chart layout options:
  - **Stacked.** When selected, creates a vertical stacked bar chart.
  - **Side-by-Side.** When selected, creates a vertical side-by-side bar chart, in which the series are placed side-by-side in groups.
  - **Absolute.** When selected, creates a vertical absolute bar chart, in which the series are layered in front of one another.
  - **Percent.** When selected, creates a vertical percent bar chart. Each series is stacked to show a proportion of each bar instead of their actual value.
- Calculation options:
  - **Summary.** Sums measure values for each sort value. This is the default.
  - **Count.** Provides a count of records in the selected measure field, for each sort value.

- **Detail.** Displays the value of each individual record.

- **Clear buckets content.** Empties all buckets.

You can add fields to the following buckets for a vertical stacked bar chart:

- **Vertical.** The first field is added to the vertical axis to determine the height of each bar. Additional measures create additional segments in each bar. You can also choose to display multiple measures on different axes in a dual-axis chart by clicking the axis icon  . Additional dimensions create matrix rows.

- **Horizontal.** The first field is added to the horizontal axis to create a bar for each unique value. You can click the icon in the bucket field label to toggle between using the field as a horizontal axis sort field  or matrix column  .

- **Size.** Controls the width of the bars based on a measure value.

- **Color.** If a dimension field is used, creates segments for each value. If a measure field is used, applies a color scale to the bars.

- **Tooltip.** The data placed in this bucket displays in the tooltip at run time. Can be used to make additional information available without changing the appearance of the chart.

- **Animate.** Enables you to animate time progression using a slider control. As you move the control along the slider bar, an animation effect results. The slider control has a Play button that allows you to play and pause the animation. When you click Play, the Pause option is activated, enabling you to pause the progression and analyze your data. Slider controls are limited to one sort field and should be time or sequence related, such as month or year.

- **MultiPage.** Enables the creation of multiple graphs based on the field that you place in this bucket. The MultiPage bucket is available for stand-alone charts. If you convert the chart to a page created from new content, the MultiPage bucket disappears.

Procedure: How to Create a Vertical Stacked Bar Chart

1. Open Db2 Web Query Designer. On the default Db2 Web Query Home Page, click *Visualize Data*.

   Db2 Web Query Designer opens in a new browser tab.

2. Select a workspace and a data source available from that workspace.

   Once you select a data source, Db2 Web Query Designer loads with options to create a single content item.

Vertical stacked bar is the default chart type. If you have a different content type selected by default, select the vertical stacked bar chart option from the Content picker.

3. Add one or more measures and dimensions to the chart.

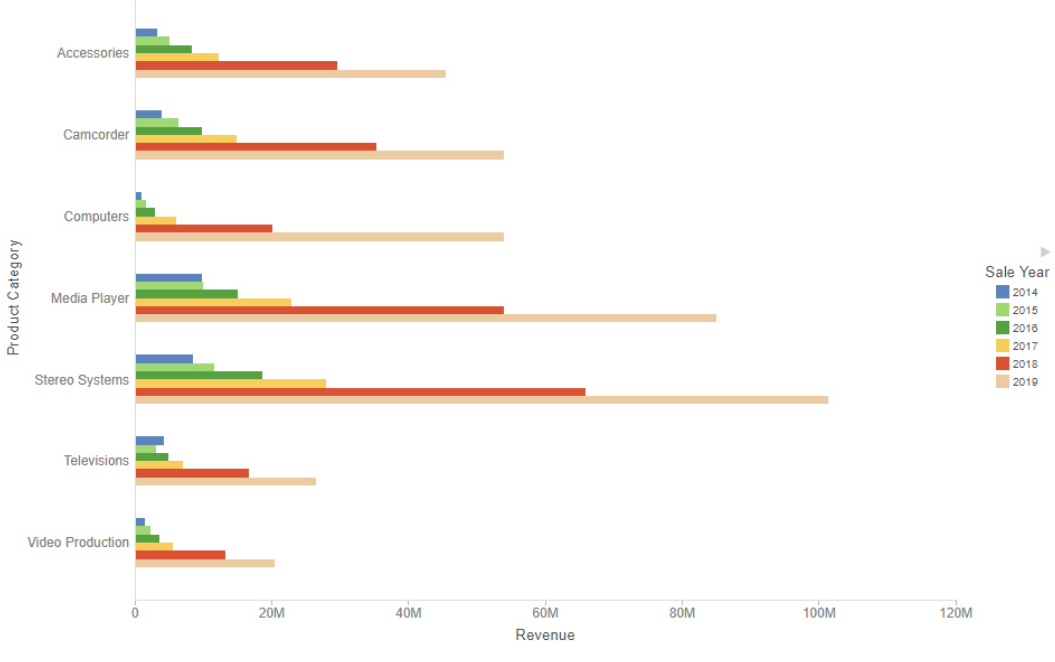
   The vertical stacked bar chart refreshes with your selections.

4. You can perform the following tasks with your vertical stacked bar chart:
   a. Add additional measures or dimensions to the chart, where applicable.
   b. Change the fields to obtain different information.
   c. Format the chart (for example, customize the header and footer or style the legend).
5. Save your vertical stacked bar chart as a stand-alone chart, or as part of a page.

Creating Horizontal Bar Charts

Use a horizontal bar chart when you want to emphasize a ranking relationship in descending order. This chart type can also be used when the x-axis label is too long to fit legibly side-by-side.

If you add additional measure fields to the Horizontal bucket or add dimension fields to the Color bucket, additional bars are placed in groups for each vertical axis value. A horizontal bar chart with multiple dimension fields is shown in the following image.



Note: Horizontal bar charts require at least one measure and one dimension. Add measures as required to compare additional values.

To sort the bars from high to low, right-click a measure value in the Horizontal bucket and click *Sort descending*.

The following display options are available for a horizontal bar chart:

- **Change chart orientation.** Switches the horizontal and vertical axes, making the bars vertical.
- Chart layout options:
  - **Stacked.** When selected, creates a vertical stacked bar chart.
  - **Side-by-Side.** When selected, creates a vertical side-by-side bar chart, in which the series are placed side-by-side in groups.
  - **Absolute.** When selected, creates a vertical absolute bar chart, in which the series are layered in front of one another.
  - **Percent.** When selected, creates a vertical percent bar chart. Each series is stacked to show a proportion of each bar instead of their actual value.
- Calculation options:
  - **Summary.** Sums measure values for each sort value. This is the default.
  - **Count.** Provides a count of records in the selected measure field, for each sort value.
  - **Detail.** Displays the value of each individual record.
- **Clear buckets content.** Empties all buckets.

Note: When sorting a bar chart, each series is treated as a unique bar. As a result, groups of series such as stacked bar segments, side-by-side groups, or absolute overlapping bars may be separated.

You can add fields to the following buckets for a horizontal bar chart:

- **Vertical.** The first field is added to the vertical axis to create a bar for each unique value. You can click the icon in the bucket field label to toggle between using the field as a vertical axis sort field  or matrix row  .

- **Horizontal.** The first field added to the vertical axis determines the height of each bar. Additional measures create additional series for each bar. You can also choose to display multiple measures on different axes in a dual-axis chart by clicking the axis icon  . Additional dimensions create matrix rows.
- **Size.** Controls the width of the bars based on a measure value.
- **Color.** If a dimension field is used, creates a new series for each value. If a measure field is used, applies a color scale to the bars.
- **Tooltip.** The data placed in this bucket displays in the tooltip at run time. Can be used to make additional information available without changing the appearance of the chart.
- **Animate.** Enables you to animate time progression using a slider control. As you move the control along the slider bar, an animation effect results. The slider control has a Play button that allows you to play and pause the animation. When you click Play, the Pause option is activated, enabling you to pause the progression and analyze your data. Slider controls are limited to one sort field and should be time or sequence related, such as month or year.
- **MultiPage.** Enables the creation of multiple graphs based on the field that you place in this bucket. The MultiPage bucket is available for stand-alone charts. If you convert the chart to a page created from new content, the MultiPage bucket disappears.

Procedure: How to Create a Horizontal Bar Chart

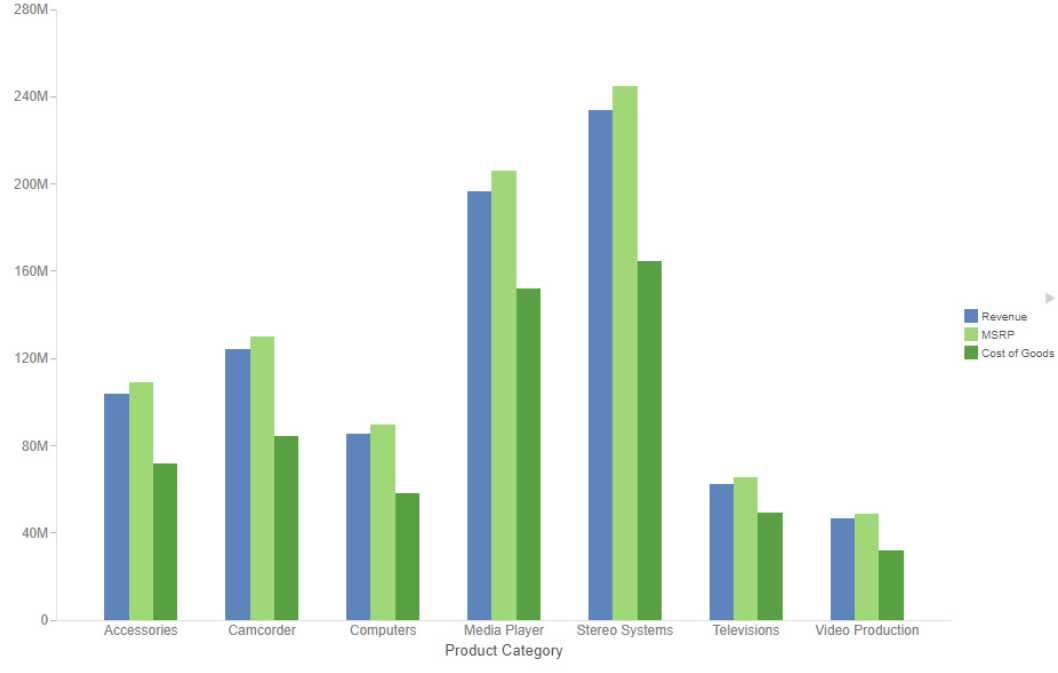
1. Open Db2 Web Query Designer. On the default Db2 Web Query Home Page, click *Visualize Data*.

   Db2 Web Query Designer opens in a new browser tab.
2. Select a workspace and a data source available from that workspace.

   Once you select a data source, Db2 Web Query Designer loads with options to create a single content item.
3. On the Content picker, change the chart type to a horizontal bar chart.
4. Add a measure and a dimension to the chart.
5. You can perform the following tasks with your horizontal bar chart:
   a. Add additional measures or dimensions to the chart, where applicable.
   b. Change the fields to obtain different information.
   c. Format the chart (for example, customize the header and footer or style the legend).
6. Save your horizontal bar chart.

Creating Vertical Side-by-Side Bar Charts

Vertical side-by-side bar charts can be used to show additional measure or dimension values for each horizontal axis value using differing identifying colors. Side-by-side bar charts are useful to directly compare the values for different measures or categories within each horizontal axis sort value. The following image shows a vertical side-by-side bar chart with one dimension field and multiple measure fields.



Note: This chart requires at least one measure and one dimension. Add measures as required to compare additional values.

The following display options are available for a vertical side-by-side bar chart:

- **Change chart orientation.** Switches the horizontal and vertical axes, making the bars horizontal.
- Chart layout options:
  - **Stacked.** When selected, creates a vertical stacked bar chart.
  - **Side-by-Side.** When selected, creates a vertical side-by-side bar chart, in which the series are placed side-by-side in groups.

- **Absolute.** When selected, creates a vertical absolute bar chart, in which the series are layered in front of one another.
- **Percent.** When selected, creates a vertical percent bar chart. Each series is stacked to show a proportion of each bar instead of their actual value.

- Calculation options:
  - **Summary.** Sums measure values for each sort value. This is the default.
  - **Count.** Provides a count of records in the selected measure field, for each sort value.
  - **Detail.** Displays the value of each individual record.
- **Clear buckets content.** Empties all buckets.

You can add fields to the following buckets for a vertical side-by-side bar chart:

- **Vertical.** The first field is added to the vertical axis to determine the height of each bar. Additional measures create additional bars for each horizontal axis value. You can also choose to display multiple measures on different axes in a dual-axis chart by clicking the axis icon  . Additional dimensions create matrix rows.
- **Horizontal.** The first field is added to the horizontal axis to create a bar for each unique value. You can click the icon in the bucket field label to toggle between using the field as a horizontal axis sort field  or matrix column  .
- **Size.** Controls the width of the bars based on a measure value.
- **Color.** If a dimension field is used, creates new bars for each value, placed in groups for each horizontal axis sort value. If a measure field is used, applies a color scale to the bars.
- **Tooltip.** The data placed in this bucket displays in the tooltip at run time. Can be used to make additional information available without changing the appearance of the chart.
- **Animate.** Enables you to animate time progression using a slider control. As you move the control along the slider bar, an animation effect results. The slider control has a Play button that allows you to play and pause the animation. When you click Play, the Pause option is activated, enabling you to pause the progression and analyze your data. Slider controls are limited to one sort field and should be time or sequence related, such as month or year.
- **MultiPage.** Enables the creation of multiple graphs based on the field that you place in this bucket. The MultiPage bucket is available for stand-alone charts. If you convert the chart to a page created from new content, the MultiPage bucket disappears.

Procedure: How to Create a Vertical Side-by-Side Bar Chart

1. Open Db2 Web Query Designer. On the default Db2 Web Query Home Page, click *Visualize Data*.

   Db2 Web Query Designer opens in a new browser tab.

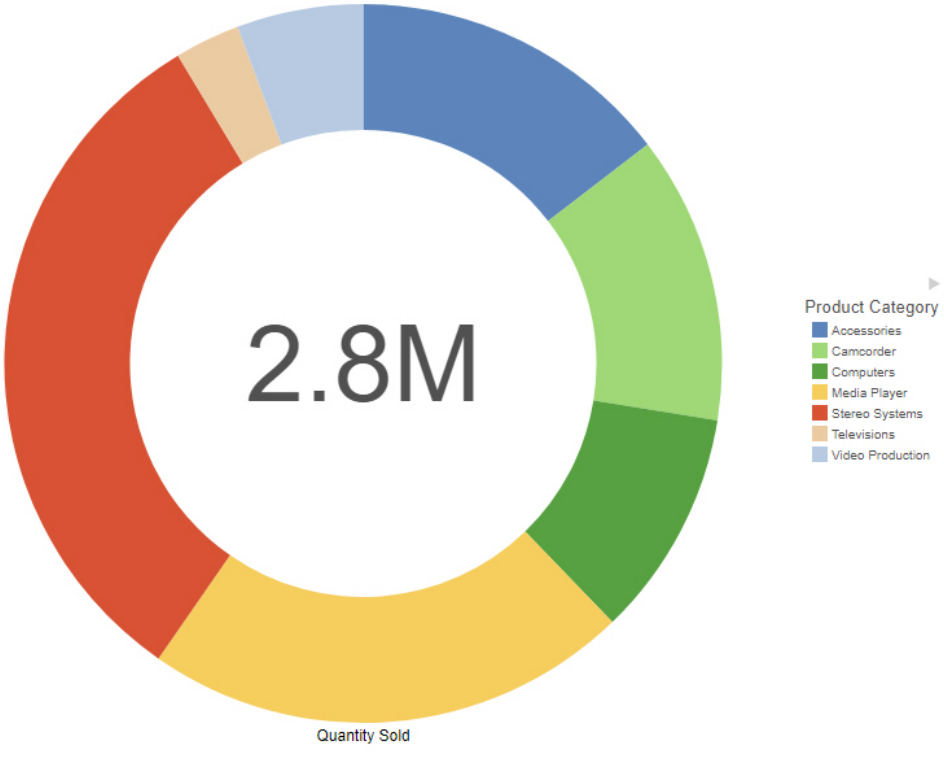
2. Select a workspace and a data source available from that workspace.

   Once you select a data source, Db2 Web Query Designer loads with options to create a single content item.

3. Add one or more measures and dimensions to the chart.
4. You can perform the following tasks with your vertical side-by-side bar chart:
   a. Add additional measures or dimensions to the chart, where applicable.
   b. Change the fields to obtain different information.
   c. Format the chart (for example, customize the header and footer or style the legend).
5. Save your vertical side-by-side bar chart.

Creating Ring Pie Charts

Use a ring pie chart when you want to review the value of each segment, which represents the measure value for the selected dimension, as it relates to the total for the selected measure. The total value represented by all segments displays in the middle of the ring pie chart. The following image shows a ring pie chart.



Note: Ring pie charts require at least one measure (placed in the Measure bucket) and one dimension (placed in the Color bucket). Add additional measures as required to create a separate ring pie for each measure.

The following display options are available for a ring pie chart:

- Calculation options:
  - **Summary.** Sums measure values for each sort value. This is the default.
  - **Count.** Provides a count of records in the selected measure field, for each sort value.
  - **Detail.** Displays the value of each individual record.

- **Clear buckets content.** Empties all buckets.

You can add fields to the following buckets in a ring pie chart:

- **Vertical.** Enables you to specify a field to display row data in a matrix chart. The use of measure fields is supported. Row data is displayed on the left side of the chart, along the y-axis.
- **Horizontal.** Enables you to specify a field to display column data in a matrix chart. The use of measure fields is supported. Column data is displayed at the top of the chart, along the x-axis.
- **Measure.** Use this bucket to specify a measure that will define the size of segments in a pie chart. The Measure metric is used with the Color bucket for pie charts to create sections based on your field selections. Each field in the Measure bucket results in a separate ring pie chart.
- **Size.** When creating a matrix chart that contains ring pie charts, the size bucket controls the diameter of each chart based on a measure value.
- **Color.** Add a dimension field to the Color bucket to create a segment in the ring pie chart for each value.
- **Tooltip.** The data placed in this bucket displays in the tooltip at run time. Can be used to make additional information available without changing the appearance of the chart.
- **Animate.** Enables you to animate time progression using a slider control. As you move the control along the slider bar, an animation effect results. The slider control has a Play button that allows you to play and pause the animation. When you click Play, the Pause option is activated, enabling you to pause the progression and analyze your data. Slider controls are limited to one sort field and should be time or sequence related, such as month or year.
- **MultiPage.** Enables the creation of multiple graphs based on the field that you place in this bucket. The MultiPage bucket is available for stand-alone charts. If you convert the chart to a page created from new content, the MultiPage bucket disappears.

Procedure: How to Create a Ring Pie Chart

1. Open Db2 Web Query Designer. On the default Db2 Web Query Home Page, click *Visualize Data*.

   Db2 Web Query Designer opens in a new browser tab.

2. Select a workspace and a data source available from that workspace.

Once you select a data source, Db2 Web Query Designer loads with options to create a single content item.

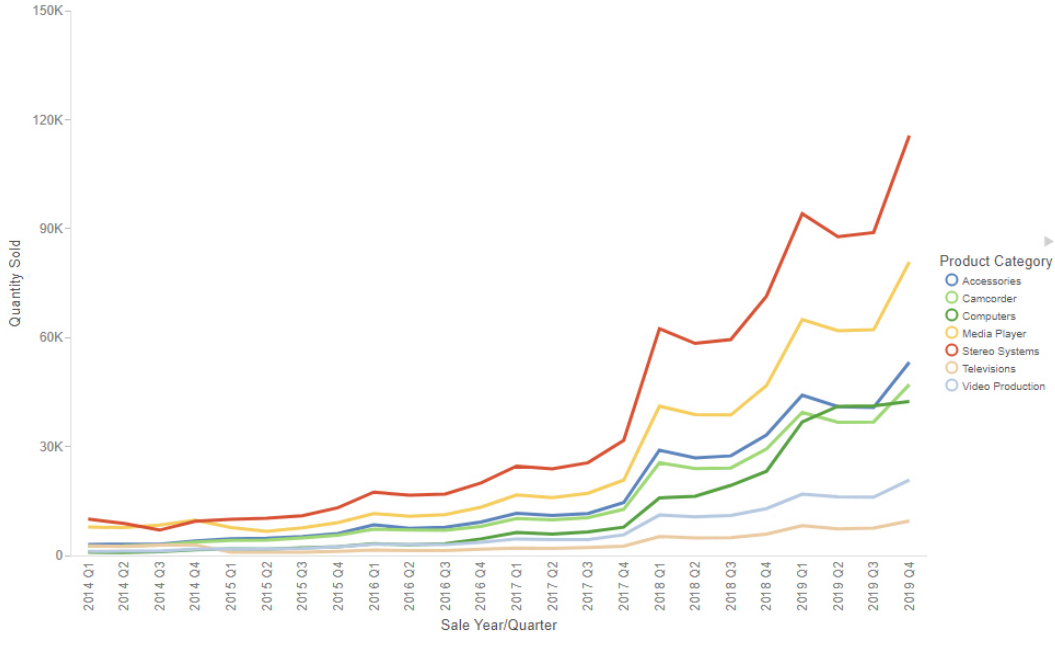
3. On the Content picker, change the chart to a ring pie chart.
4. Add one measure and a dimension to the chart.

   The ring pie chart refreshes with your selections.
5. You can perform the following tasks with your ring pie chart:
   a. Add additional measures or dimensions to the chart, where applicable.
   b. Change the fields to obtain different information.
   c. Format the chart (for example, customize the header and footer or style the legend).
   d. Change the size of the hole in the ring pie chart. On the Format tab, select *Series* from the area menu, then adjust the value of the Hole Size % property. Setting this property to 0 removes the hole entirely, creating a standard pie chart.
6. Save your ring pie chart.

Creating Absolute Line Charts

Use absolute line charts when you want to show trend data over time. For example, monthly changes in employment figures, or yearly sales of an item in your inventory.

Note: Absolute line charts require at least one measure and one dimension. Adding multiple measures or adding fields to the Color bucket will create additional lines on the chart, as shown in the following image.



The following display options are available for a line chart:

- **Change chart orientation.** Switches the vertical and horizontal axes so that the lines draw from top to bottom.
- Chart layout options:
  - **Stacked.** Stacks each line on top of the previous line, similar to a stacked bar chart. As a result, the value for each point on a line is a sum of the value represented by that point and all points for the same horizontal axis value below it.
  - **Absolute.** Each point on each line represents an absolute value.
  - **Percent.** When selected, the points in each line are stacked and represent a proportion of the total for each horizontal axis value instead of their actual value.
- Calculation options:
  - **Summary.** Sums measure values for each sort value. This is the default.

- **Count.** Provides a count of records in the selected measure field, for each sort value.
- **Detail.** Displays the value of each individual record.

- **Clear buckets content.** Empties all buckets.

You can add fields to the following buckets for a line chart:

- **Vertical.** The first field is added to the vertical axis to determine the height of points on the line. Additional measures create additional lines. You can also choose to display multiple measures on different axes in a dual-axis chart by clicking the axis icon  . Additional dimensions create matrix rows.
- **Horizontal.** The first field is added to the horizontal axis to create a point on each line for each unique value. Additional fields create matrix columns. You can click the icon in the bucket field label to toggle between using the field as a horizontal axis sort field  or matrix column  .
- **Size.** Controls the thickness of the lines based on a measure value. The thickness changes at each point on the horizontal axis.
- **Color.** If a dimension field is used, creates additional lines for each value. If a measure field is used, applies a color scale to the lines.
- **Tooltip.** The data placed in this bucket displays in the tooltip at run time. Can be used to make additional information available without changing the appearance of the chart.
- **Animate.** Enables you to animate time progression using a slider control. As you move the control along the slider bar, an animation effect results. The slider control has a Play button that allows you to play and pause the animation. When you click Play, the Pause option is activated, enabling you to pause the progression and analyze your data. Slider controls are limited to one sort field and should be time or sequence related, such as month or year.
- **MultiPage.** Enables the creation of multiple graphs based on the field that you place in this bucket. The MultiPage bucket is available for stand-alone charts. If you convert the chart to a page created from new content, the MultiPage bucket disappears.

Procedure: How to Create an Absolute Line Chart

1. Open Db2 Web Query Designer. On the default Db2 Web Query Home Page, click *Visualize Data*.

   Db2 Web Query Designer opens in a new browser tab.

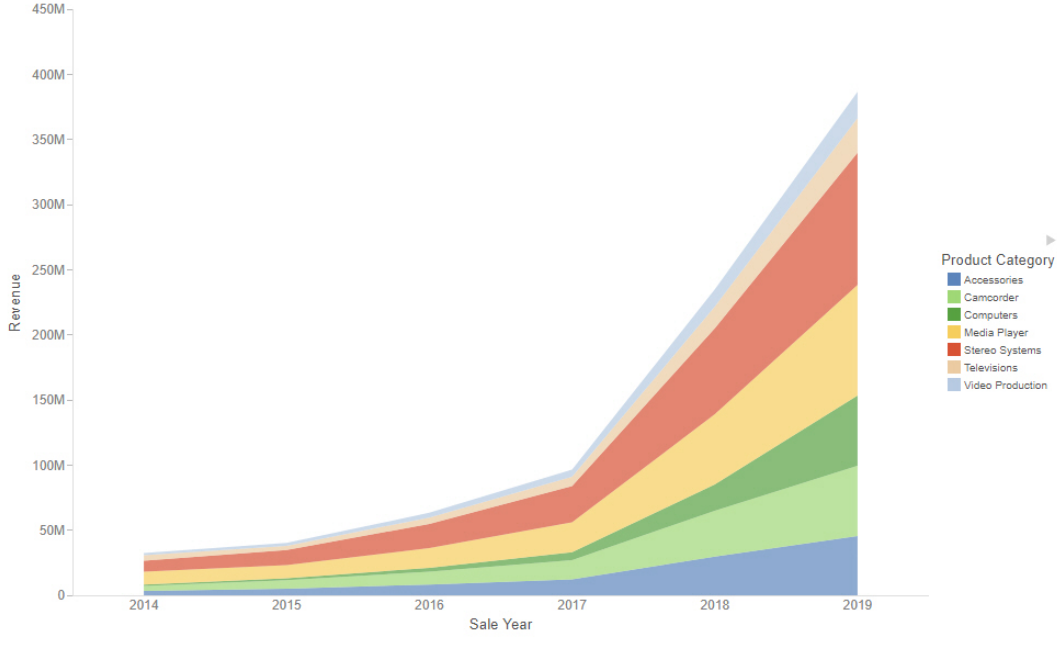
2. Select a workspace and a data source available from that workspace.

   Once you select a data source, Db2 Web Query Designer loads with options to create a single content item.

3. On the Content picker, change the chart to an absolute line chart.
4. Add one or more measures and a dimension to the chart.
5. You can perform the following tasks with your absolute line chart:
   a. Add additional measures or dimensions to the chart, where applicable.
   b. Change the fields to obtain different information.
   c. Format the chart (for example, customize the header and footer or style the legend).
6. Save your absolute line chart.

Creating Vertical Stacked Area Charts

Use vertical stacked area charts when you want to distinguish your data more dramatically by highlighting volume with color. In a vertical stacked area chart, each area is stacked on top of the sections below it, as shown in the following image.



Note: Vertical stacked area charts require at least one measure and one dimension. Adding multiple measures will create additional shaded areas on the chart.

The following display options are available for an area chart:

- **Change chart orientation.** Switches the vertical and horizontal axes so that the lines draw from top to bottom.
- Chart layout options:
  - **Stacked.** Stacks each area on top of the previous area, similar to a stacked bar chart. As a result, the value for each point along the top of an area is a sum of the value represented by that point and all points for the same horizontal axis value in the areas below it.
  - **Absolute.** Each point in each area represents an absolute value. Areas are layered in front of each other.
  - **Percent.** When selected, the areas are stacked to fill the chart area and represent a proportion of the total for each horizontal axis value instead of their actual value.
- Calculation options:
  - **Summary.** Sums measure values for each sort value. This is the default.
  - **Count.** Provides a count of records in the selected measure field, for each sort value.
  - **Detail.** Displays the value of each individual record.
- **Clear buckets content.** Empties all buckets.

You can add fields to the following buckets for an area chart:

- **Vertical.** The first field is added to the vertical axis to determine the height of points in the area chart. Additional measures create additional areas. You can also choose to display multiple measures on different axes in a dual-axis chart by clicking the axis icon  . Additional dimensions create matrix rows.
- **Horizontal.** The first field is added to the horizontal axis to create a point at the top of each area for each unique value in the field. You can click the icon in the bucket field label to toggle between using the field as a horizontal axis sort field  or matrix column  .
- **Color.** If a dimension field is used, creates additional areas for each value. If a measure field is used, applies a color scale to the areas.
- **Tooltip.** The data placed in this bucket displays in the tooltip at run time. Can be used to make additional information available without changing the appearance of the chart.

- **Animate.** Enables you to animate time progression using a slider control. As you move the control along the slider bar, an animation effect results. The slider control has a Play button that allows you to play and pause the animation. When you click Play, the Pause option is activated, enabling you to pause the progression and analyze your data. Slider controls are limited to one sort field and should be time or sequence related, such as month or year.
- **MultiPage.** Enables the creation of multiple graphs based on the field that you place in this bucket. The MultiPage bucket is available for stand-alone charts. If you convert the chart to a page created from new content, the MultiPage bucket disappears.

Procedure: How to Create a Vertical Stacked Area Chart

1. Open Db2 Web Query Designer. On the default Db2 Web Query Home Page, click *Visualize Data*.

   Db2 Web Query Designer opens in a new browser tab.

2. Select a workspace and a data source available from that workspace.

   Once you select a data source, Db2 Web Query Designer loads with options to create a single content item.

3. On the Content picker, change the chart to a vertical stacked area chart.
4. Add one or more measures and a dimension to the chart.

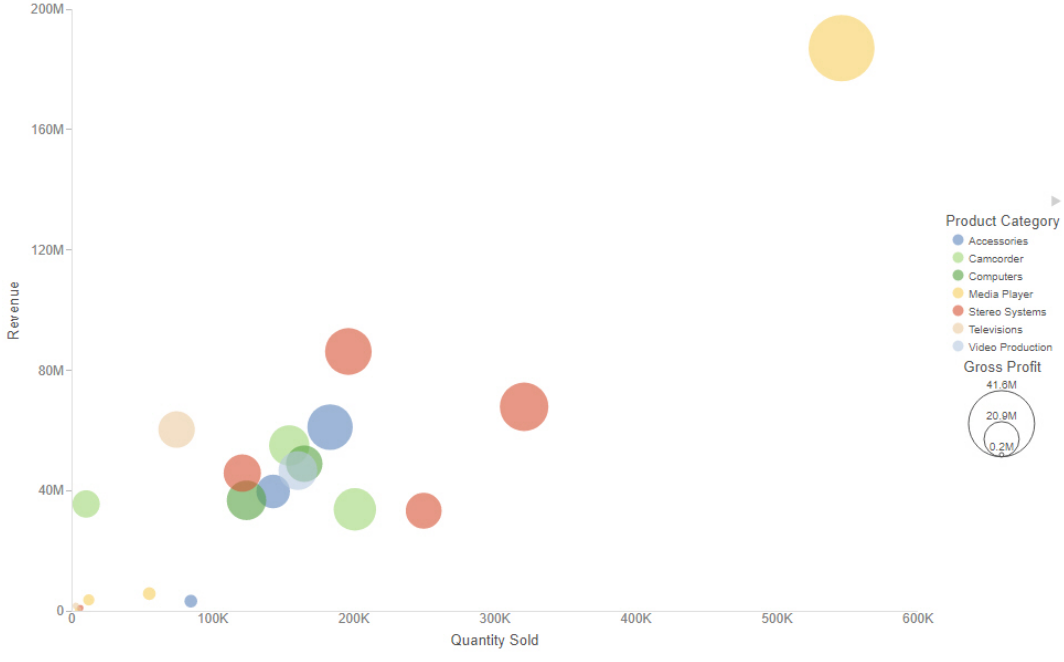
   The vertical stacked area chart refreshes with your selections.

5. You can perform the following tasks with your vertical stacked area chart:
   a. Add additional measures or dimensions to the chart, where applicable.
   b. Change the fields to obtain different information.
   c. Format the chart (for example, customize the header and footer or style the legend).
6. Save your vertical stacked area chart.

Creating Scatter/Bubble Charts

Scatter charts are used to show relationships between X and Y values. They compare two sets of numbers at once, which is useful for discovering patterns and trends.

A bubble chart is a chart in which the data points are represented by bubbles. Bubble charts can have two column fields representing X and Y data values, or have three column fields representing X, Y, and Z data values, in that order. The third variable (Z) represents size. The size of each bubble is used to show the relative importance of the data. A bubble chart can be used to effectively show the relationship between three measure fields, as shown in the following image.



Note: Scatter/bubble charts require at least two measures, and one dimension, which can be a color field or detail field. Optionally, add a dimension to the Size bucket using the count aggregation to view the concentration of data.

The following display options are available for a scatter plot or bubble chart:

- Calculation options:
  - **Summary.** Sums measure values for each sort value. This is the default.
  - **Count.** Provides a count of records in the selected measure field, for each sort value.
  - **Detail.** Displays the value of each individual record.
- **Clear buckets content.** Empties all buckets.

You can add fields to the following buckets for a scatter plot or bubble chart:

- **Vertical.** Add a measure field to the vertical axis to determine the vertical position of points. Additional dimensions create matrix rows.
- **Horizontal.** Add a measure or dimension field to the horizontal axis to determine the horizontal position of points. Additional dimension fields create matrix columns.
- **Detail.** Use this bucket to add detail to your visual by adding a data field to it. For example, if you add Sale,Quarter to the Detail bucket in your Scatter plot, the points on the plot are quadrupled, one for each quarter. In addition, the field that you specify in the Detail bucket also displays on the hover menu for each point in the plot.
- **Size.** Controls the size of each bubble based on a measure value.
- **Color.** If a dimension field is used, creates points or bubbles for each value and determines their color. If you also add a dimension to the Detail bucket, the values in the detail field are used to create points, and the values in the color field determine the color of the points. If a measure field is used, applies a color scale to the points.
- **Tooltip.** The data placed in this bucket displays in the tooltip at run time. Can be used to make additional information available without changing the appearance of the chart.
- **Animate.** Enables you to animate time progression using a slider control. As you move the control along the slider bar, an animation effect results. The slider control has a Play button that allows you to play and pause the animation. When you click Play, the Pause option is activated, enabling you to pause the progression and analyze your data. Slider controls are limited to one sort field and should be time or sequence related, such as month or year.
- **MultiPage.** Enables the creation of multiple graphs based on the field that you place in this bucket. The MultiPage bucket is available for stand-alone charts. If you convert the chart to a page created from new content, the MultiPage bucket disappears.

Procedure: How to Create a Scatter/Bubble Chart

1. Open Db2 Web Query Designer. On the default Db2 Web Query Home Page, click *Visualize Data*.

   Db2 Web Query Designer opens in a new browser tab.

2. Select a workspace and a data source available from that workspace.

   Once you select a data source, Db2 Web Query Designer loads with options to create a single content item.

3. On the Content picker, change the chart to a scatter or bubble chart.

4. Add one measure and one dimension to the chart. Also, add fields in the Detail and Color buckets.

   The scatter/bubble chart refreshes with your selections.

5. You can perform the following tasks with your scatter/bubble chart:

   a. Add additional measures or dimensions to the chart, where applicable.

   b. Change the fields to obtain different information.

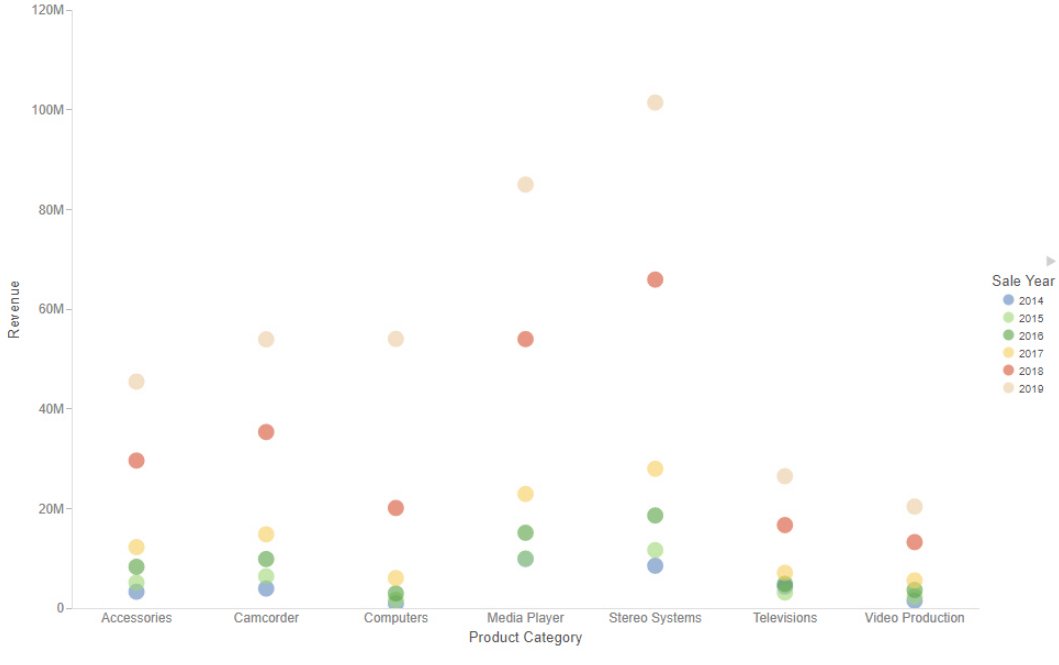
   c. Format the chart (for example, customize the header and footer or style the legend).

   d. Add trend lines. On the *Format* tab, select *Series* from the quick access menu and, with all series or a single series selected, click *Show trend line*. You can set the line style, trend line equation format, and, when using the polynomial equation, set the order or degree of the expression.

6. Save your scatter/bubble chart.

Creating Circle Plot Charts

Use circle plot charts to display differing values in rows, enabling you to draw inferences as to how the values overlap. An example of a circle plot is shown in the following image.



Note: Circle plot charts require at least one measure and one dimension, as well as one for the Detail and Color buckets. Optionally, add a dimension to the Size bucket with the count aggregation to view the concentration of data.

The following display options are available for a circle plot chart:

- Calculation options:
  - **Summary.** Sums measure values for each sort value. This is the default.
  - **Count.** Provides a count of records in the selected measure field, for each sort value.
  - **Detail.** Displays the value of each individual record.
- **Clear buckets content.** Empties all buckets.

You can add fields to the following buckets for a circle plot chart:

- **Vertical.** Add a measure field to the vertical axis to determine the vertical position of points. Additional dimensions create matrix rows.
- **Horizontal.** Add a dimension field to the horizontal axis to determine the horizontal position of points. You can click the icon in the bucket field label to toggle between using the field as a horizontal axis field  or matrix column  .
- **Detail.** Use this bucket to add detail to your visual by adding a data field to it. For example, if you add Sale,Quarter to the Detail bucket in your Scatter plot, the points on the plot are quadrupled, one for each quarter. In addition, the field that you specify in the Detail bucket also displays on the hover menu for each point in the plot.
- **Size.** Controls the size of each point based on a measure value.
- **Color.** If a dimension field is used, creates points for each value and determines their color. If you also add a dimension to the Detail bucket, the values in the detail field are used to create points, and the values in the color field determine the color of the points. If a measure field is used, applies a color scale to the points.
- **Tooltip.** The data placed in this bucket displays in the tooltip at run time. Can be used to make additional information available without changing the appearance of the chart.
- **Animate.** Enables you to animate time progression using a slider control. As you move the control along the slider bar, an animation effect results. The slider control has a Play button that allows you to play and pause the animation. When you click Play, the Pause option is activated, enabling you to pause the progression and analyze your data. Slider controls are limited to one sort field and should be time or sequence related, such as month or year.

- **MultiPage.** Enables the creation of multiple graphs based on the field that you place in this bucket. The MultiPage bucket is available for stand-alone charts. If you convert the chart to a page created from new content, the MultiPage bucket disappears.

Procedure: How to Create a Circle Plot Chart

1. Open Db2 Web Query Designer. On the default Db2 Web Query Home Page, click *Visualize Data*.

   Db2 Web Query Designer opens in a new browser tab.

2. Select a workspace and a data source available from that workspace.

   Once you select a data source, Db2 Web Query Designer loads with options to create a single content item.

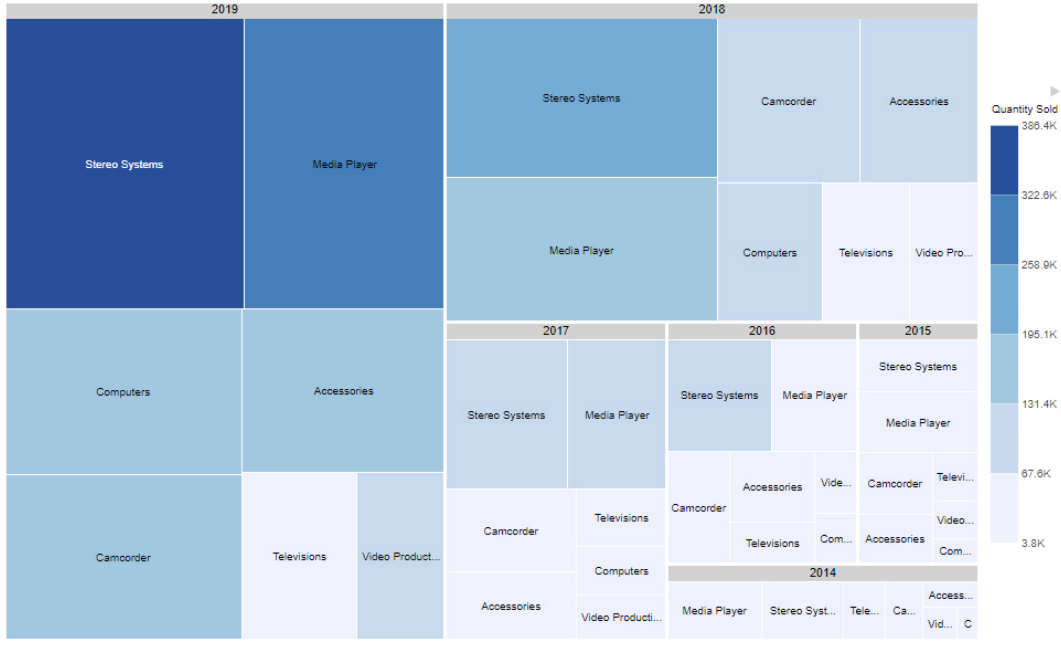
3. On the Content picker, change the chart to a circle plot.
4. Add one measure, one dimension to the chart. Also, add a field into the Detail and Color buckets.

   The circle plot chart refreshes with your selections.

5. You can perform the following tasks with your circle plot chart:
   a. Add additional measures or dimensions to the chart, where applicable.
   b. Change the fields to obtain different information.
   c. Format the chart (for example, customize the header and footer or style the legend).
6. Save your circle plot chart.

Creating Treemap Charts

Treemap charts can be used to display large amounts of hierarchically structured data. Using a set of nested rectangles to illustrate data relationships, sections of a treemap represent branches of a tree. A treemap is shown in the following image.



Note: Treemap charts require at least one measure and one dimension, to be placed in the Size and Color buckets. Groups are determined by those fields specified in the Grouping bucket.

The following content display options are available for a treemap:

- Calculation options:
  - **Summary.** Sums measure values for each sort value. This is the default.
  - **Count.** Provides a count of records in the selected measure field, for each sort value.
  - **Detail.** Displays the value of each individual record.
- **Clear buckets content.** Empties all buckets.

You can add fields to the following buckets for a treemap:

- **Group.** Enables you to specify dimension fields by which to present your data in nested categories or groups.

- **Size.** Use a measure field to determine the size of boxes in the treemap.
- **Color.** If a dimension field is used, creates boxes to contain values for the field in the Group bucket. If a measure field is used, applies a color scale to the boxes in the treemap.
- **Tooltip.** The data placed in this bucket displays in the tooltip at run time. Can be used to make additional information available without changing the appearance of the chart.
- **Animate.** Enables you to animate time progression using a slider control. As you move the control along the slider bar, an animation effect results. The slider control has a Play button that allows you to play and pause the animation. When you click Play, the Pause option is activated, enabling you to pause the progression and analyze your data. Slider controls are limited to one sort field and should be time or sequence related, such as month or year.
- **MultiPage.** Enables the creation of multiple graphs based on the field that you place in this bucket. The MultiPage bucket is available for stand-alone charts. If you convert the chart to a page created from new content, the MultiPage bucket disappears.

Procedure: How to Create a Treemap Chart

1. Open Db2 Web Query Designer. On the default Db2 Web Query Home Page, click *Visualize Data*.

   Db2 Web Query Designer opens in a new browser tab.

2. Select a workspace and a data source available from that workspace.

   Once you select a data source, Db2 Web Query Designer loads with options to create a single content item.

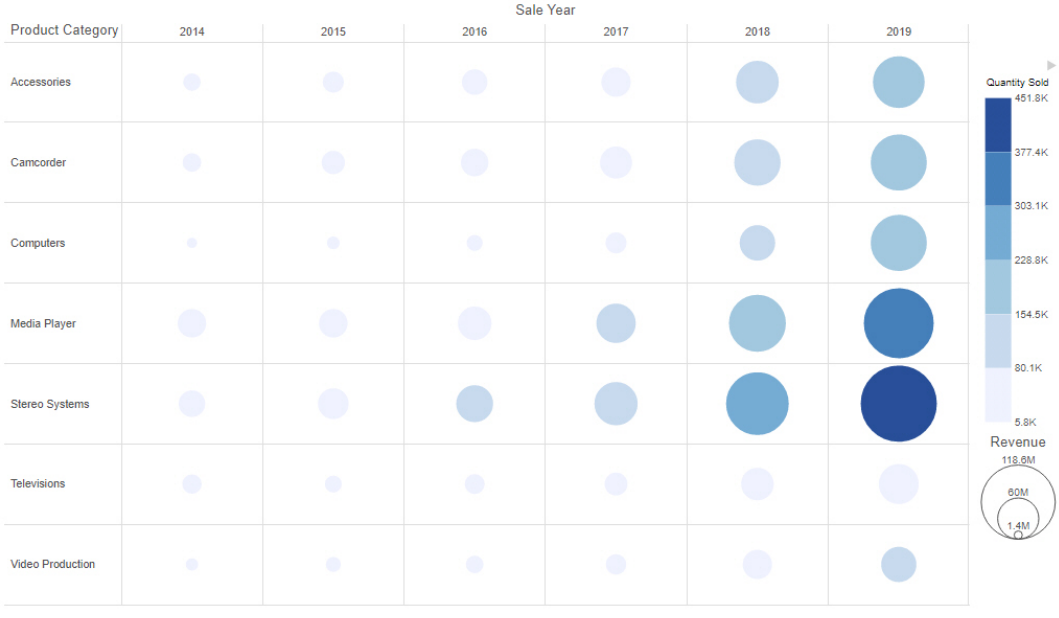
3. On the Content picker, change the chart to a treemap chart.
4. Add one measure, one dimension to the chart. Also, add a field into the Size and Color buckets.

   The treemap chart refreshes with your selections.

5. You can perform the following tasks with your treemap chart:
   a. Add additional measures or dimensions to the chart, where applicable.
   b. Change the fields to obtain different information.
   c. Format the chart (for example, customize the header and footer or style the legend).
6. Save your treemap chart.

Creating Matrix Marker Charts

Matrix marker charts can be used to analyze one or two measures against a crosstab of two categorical dimensions. The result is a color scaled matrix chart that shows categorized trends, as shown in the following image.



Note: Matrix marker charts require at least two measures and two dimensions. It also requires a field in the Color and Size buckets, which allow you to see the concentration of data for that intersection of the chart.

The following display options are available for a matrix marker chart:

- **Change chart orientation.** Switches the vertical and horizontal axes.
- Chart layout options:
  - **Circle marker.** Uses circles as the markers. You can choose a different marker shape from the Format tab. On the Format tab, open the Quick Access menu and click *Series*. In the Shape section, select a shape from the drop-down menu.
  - **Square marker.** Uses squares as the markers. You can choose a different marker shape from the Format tab. On the Format tab, open the Quick Access menu and click *Series*. In the Shape section, select a shape from the drop-down menu.
  - **Fill marker.** The markers fill the grid, changing the chart into a heatmap. Instead of using the Size bucket, use the Color bucket to indicate measure values.

- Calculation options:
  - **Summary.** Sums measure values for each sort value. This is the default.
  - **Count.** Provides a count of records in the selected measure field, for each sort value.
  - **Detail.** Displays the value of each individual record.
- **Clear buckets content.** Empties all buckets.

You can add fields to the following buckets for a matrix marker chart:

- **Vertical.** Add a dimension field to the Vertical bucket to set the vertical axis values for the matrix marker chart. Additional dimension fields are nested.
- **Horizontal.** Add a dimension field to the Horizontal bucket to set the horizontal axis values for the matrix marker chart. Additional dimension fields are nested.
- **Size.** Controls the size of each marker based on a measure value. Is not applied to matrix marker charts using the fill marker, or heatmap, display.
- **Color.** Use a measure field to apply a color scale to the markers.
- **Tooltip.** The data placed in this bucket displays in the tooltip at run time. Can be used to make additional information available without changing the appearance of the chart.
- **Animate.** Enables you to animate time progression using a slider control. As you move the control along the slider bar, an animation effect results. The slider control has a Play button that allows you to play and pause the animation. When you click Play, the Pause option is activated, enabling you to pause the progression and analyze your data. Slider controls are limited to one sort field and should be time or sequence related, such as month or year.
- **MultiPage.** Enables the creation of multiple graphs based on the field that you place in this bucket. The MultiPage bucket is available for stand-alone charts. If you convert the chart to a page created from new content, the MultiPage bucket disappears.

Procedure: How to Create a Matrix Marker Chart

1. Open Db2 Web Query Designer. On the default Db2 Web Query Home Page, click *Visualize Data*.

   Db2 Web Query Designer opens in a new browser tab.

2. Select a workspace and a data source available from that workspace.

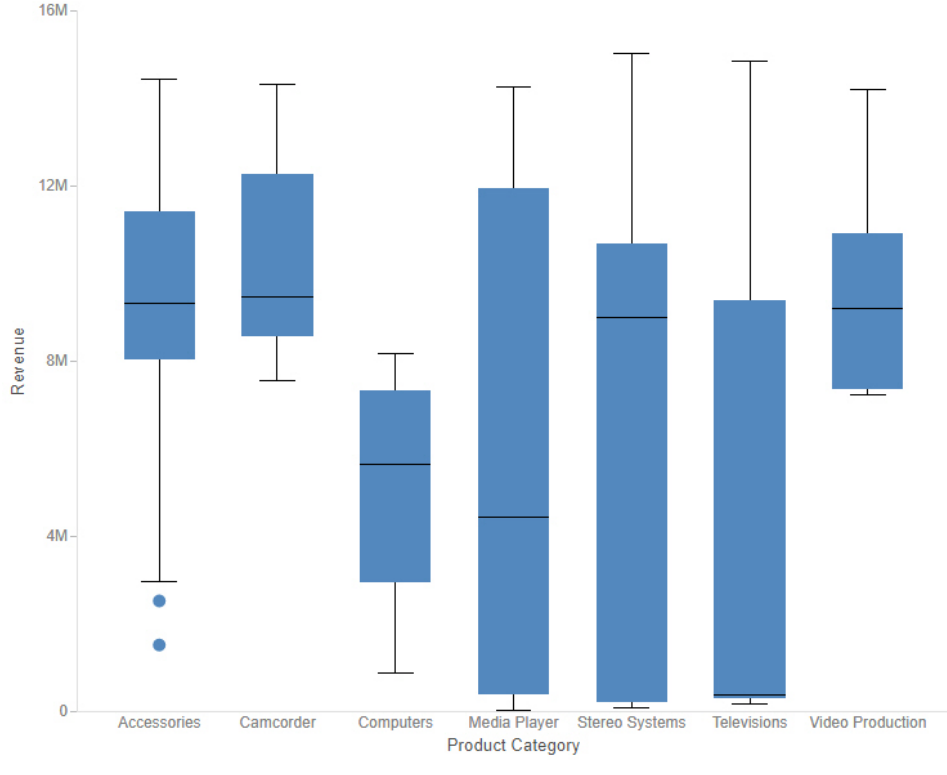
   Once you select a data source, Db2 Web Query Designer loads with options to create a single content item.

3. On the Content picker, change the chart to a matrix marker chart.
4. Add two measures and two dimensions to the chart. Also, add fields to the Color and Size buckets.

   The matrix marker chart refreshes with your selections.
5. You can perform the following tasks with your matrix marker chart:
   a. Add additional measures or dimensions to the chart, where applicable.
   b. Change the fields to obtain different information.
   c. Format the chart (for example, customize the header and footer or style the legend).
6. Save your matrix marker chart.

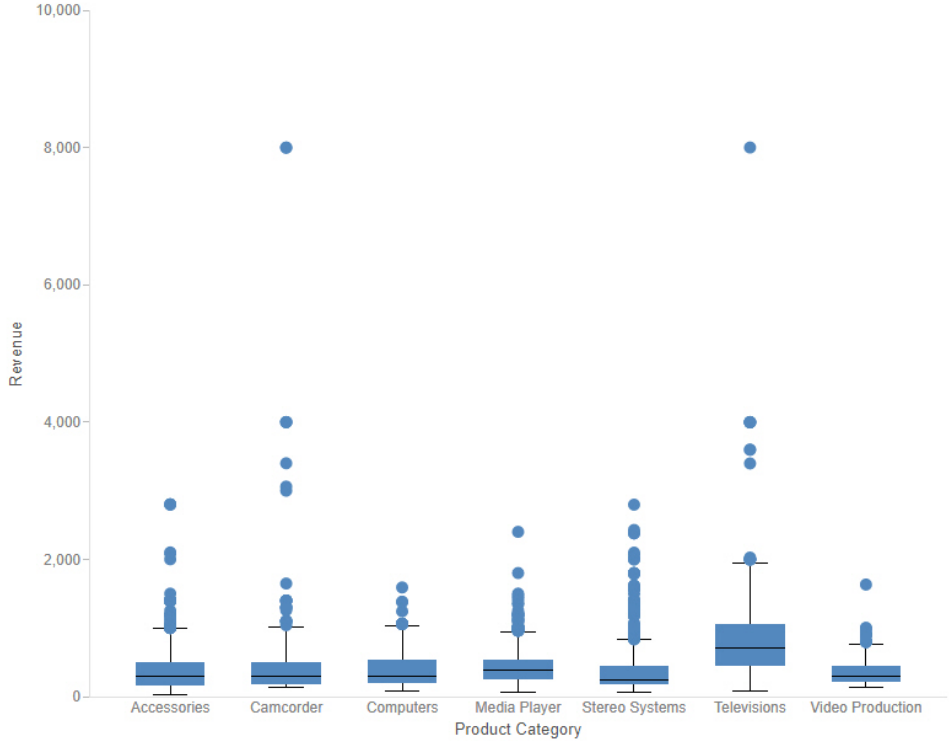
Creating Statistical Box Plot Charts

A box plot, also known as a box-and-whisker plot, is a chart type that provides distribution information about your data. The box represents the range between the upper and lower quartiles, and the line inside the box represents the median. The whiskers represent the maximum and minimum with outliers excluded, and outliers are represented by individual points. An example of a box plot is shown in the following image.



Since box plots display the distribution of points in your data, you need to provide detail values. You can do this in one of two ways. One option is to add a dimension field to the Detail bucket. This field should have a large number of distinct values in order to generate a sufficient spread of data for the box plot. For example, in the image above, a separate box plot is created for each Product Category to show the distribution of values in the Model field, which has been placed in the Detail bucket.

Another option is to incorporate your entire data set into the box plot. You can do this by changing the calculation method from Summary to Detail. In this case, you do not need a field in the Detail bucket to generate the box plot. The following image shows a box plot chart in which separate box plots are still generated for each product category, but which uses the Detail calculation option instead of using Model as the Detail field. Since more data values are used in this chart, there are more outliers.



The following display options are available for a box plot:

- **Change chart orientation.** Switches the vertical and horizontal axes.

- Calculation options:
  - **Summary.** Sums measure values for each sort value. This is the default. Add a dimension field to the Detail bucket to create a box plot when using the Summary option.
  - **Count.** Provides a count of records in the selected measure field, for each sort value. Add a dimension field to the Detail bucket to create a box plot when using the Count option.
  - **Detail.** Displays the value of each individual record. You do not need to add a field to the Detail bucket when using the Detail calculation option.
- **Clear buckets content.** Empties all buckets.

You can add fields to the following buckets for a box plot chart:

- **Vertical.** A measure field whose values constitute the set of data for the box plot. The outliers, maximum, minimum, median, and upper and lower quartile are calculated for these values.
- **Horizontal.** Add a dimension field to the Horizontal bucket to generate a separate box plot for each value, allowing you to compare the distribution of each.
- **Detail.** When using the Summary of Count calculation options, use the Detail bucket to provide individual values for the measure field in the Vertical bucket. The Detail bucket should provide multiple values for each value of the field in the Horizontal bucket.
- **Tooltip.** The data placed in this bucket displays in the tooltip at run time. Can be used to make additional information available without changing the appearance of the chart.
- **Animate.** Enables you to animate time progression using a slider control. As you move the control along the slider bar, an animation effect results. The slider control has a Play button that allows you to play and pause the animation. When you click Play, the Pause option is activated, enabling you to pause the progression and analyze your data. Slider controls are limited to one sort field and should be time or sequence related, such as month or year.
- **MultiPage.** Enables the creation of multiple graphs based on the field that you place in this bucket. The MultiPage bucket is available for stand-alone charts. If you convert the chart to a page created from new content, the MultiPage bucket disappears.

Procedure: How to Create a Box Plot Chart

1. Open Db2 Web Query Designer. On the default Db2 Web Query Home Page, click *Visualize Data*.

Db2 Web Query Designer opens in a new browser tab.

2. Select a workspace and a data source available from that workspace.

   Once you select a data source, Db2 Web Query Designer loads with options to create a single content item.

3. On the Content picker, change the chart to a statistical box plot.
4. Add a measure to the Vertical bucket and a dimension to the Horizontal bucket.

   A single measure value displays as a line in each column.

5. Use one of the following methods to generate a set of data for each column:

   - Add a dimension field to the Detail bucket. This field should provide multiple records for Horizontal bucket value.
   - Change the calculation option from Summary to Detail  . If you have a very large data source, this may generate too many records to evaluate in the box plot.

   A set of box plots appears on the canvas, showing indicators for outliers, maximum and minimum, median, and upper and lower quartiles.

6. You can perform the following tasks with your box plot chart:

   a. Add additional measures or dimensions to the Tooltip, Animate, and MultiPage buckets, where applicable.

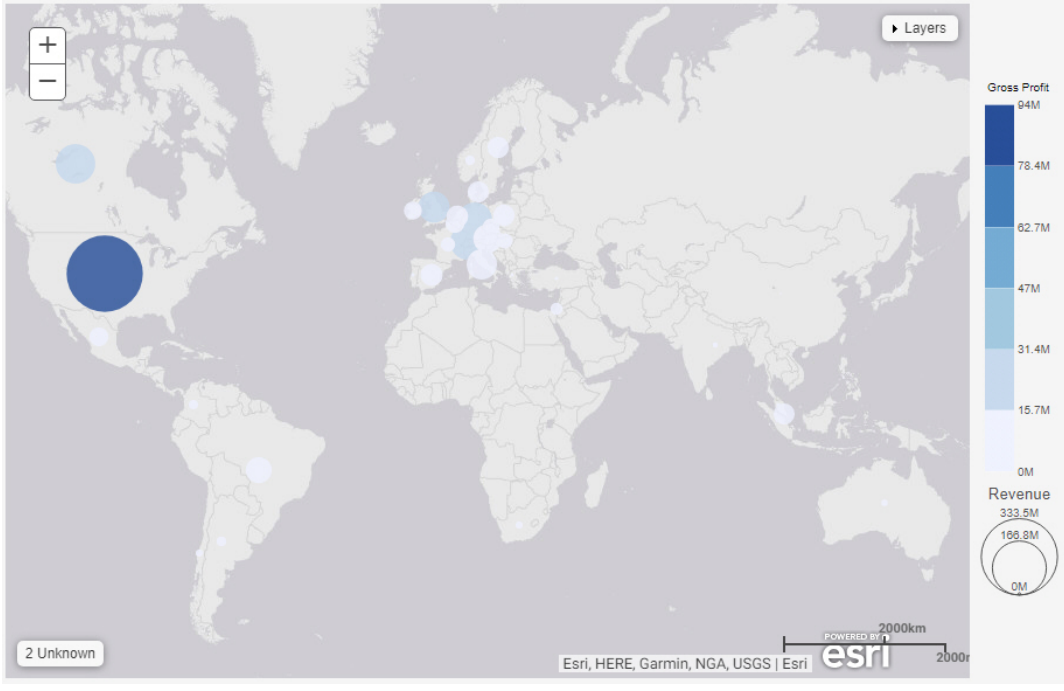
   b. Change the fields to obtain different information.

   c. Format the chart (for example, customize the header and footer , change the series colors, or set box plot-specific properties).

7. Save your box plot chart.

Creating Proportional Symbol Maps

Proportional symbol maps, or bubble maps, use symbols of different sizes to represent data associated with different areas or locations within the map, as shown in the following image.



Note: Proportional symbol maps require at least one measure and one Georole, which contains geographic location information. You can add a field to the Color bucket to color the map.

The following display options are available for a proportional symbol map.

- Calculation options:
  - **Summary.** Sums measure values for each sort value. This is the default.
  - **Count.** Provides a count of records in the selected measure field, for each sort value.
  - **Detail.** Displays the value of each individual record.
- **Clear buckets content.** Empties all buckets.

You can add fields to the following buckets for a proportional symbol map:

- **Size.** Use a measure field to determine the size of bubbles on the proportional symbol map.

- **Color.** Use a measure field to apply a color scale to the bubbles on the proportional symbol map. You can also use a dimension to color the points on the map. Each point can show one color, so it is advisable to use overarching categories that apply to distinct sets of points. For example, you could use a country field in the Color bucket to categorize points representing states.

- **Location.** Enables you to specify a Geolocation field for use in a map. Each value from the field is plotted on the map if it is recognized. A proportional symbol map can plot geographic areas, such as cities, states, or countries, as well as individual point locations such as street addresses and geographic coordinates.

  Note: Geolocation fields must be configured in the data source to use a corresponding geographic role. Values from the field are matched to values from the geographic role to plot them in the correct location. For example, if your field contains country names, use the Country Name geographic role.

- **Tooltip.** The data placed in this bucket displays in the tooltip at run time. Can be used to make additional information available without changing the appearance of the chart.

- **MultiPage.** Enables the creation of multiple graphs based on the field that you place in this bucket. The MultiPage bucket is available for stand-alone charts. If you convert the chart to a page created from new content, the MultiPage bucket disappears.

Procedure: How to Create a Proportional Symbol Map

1. Open Db2 Web Query Designer. On the default Db2 Web Query Home Page, click *Visualize Data*.

   Db2 Web Query Designer opens in a new browser tab.

2. Select a workspace and a data source available from that workspace.

   Once you select a data source, Db2 Web Query Designer loads with options to create a single content item.

3. On the Content picker, change the chart to a bubble map.

4. Add measures to the Color and Size buckets and one field with an assigned geographic role to the Location bucket.

   The proportional symbol map refreshes with your selections.

   Note: In this case, we have also added Product,Subcategory to add color to the map.

5. You can perform the following tasks with your proportional symbol map:

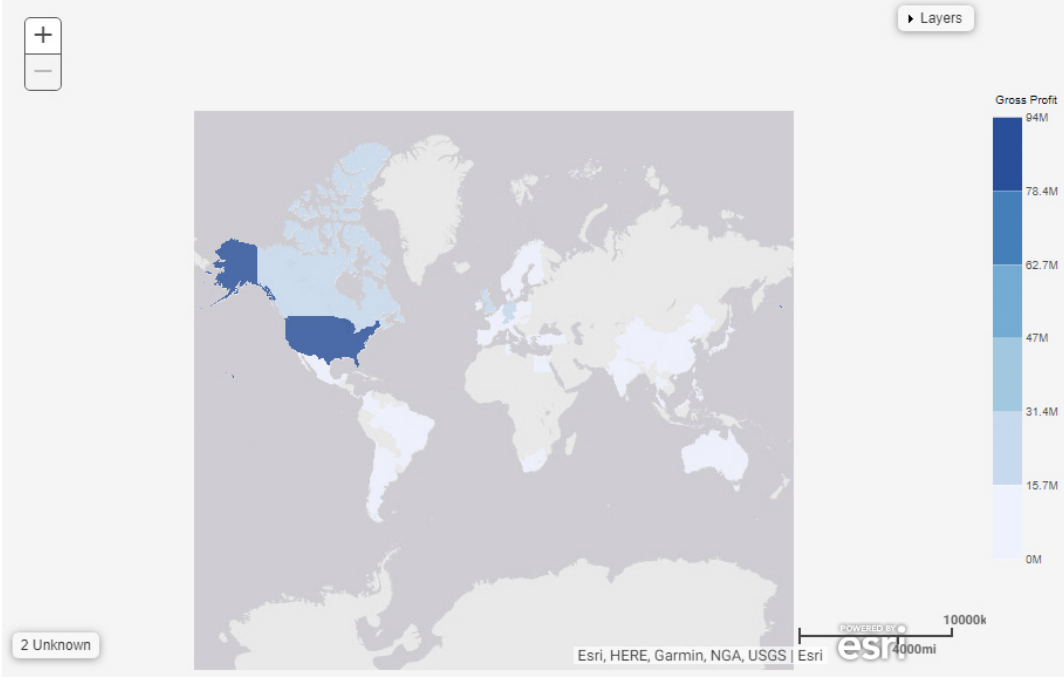
   a. Change the field in the Location bucket to analyze other trends.

b. Zoom in or out to see different views of the data.

6. Save your proportional symbol map.

Creating Choropleth Maps

Choropleth maps can be used to create geographically-based heat maps. They are useful for visualizing location-based data, trends, and distributions across a geographic area, as shown in the following image.



Note: Choropleth maps require at least one measure and one Georole, which contains geographic location information. You can add a field to the Color bucket to color the map.

The following display options are available for a choropleth map.

- Calculation options:
  - **Summary.** Sums measure values for each sort value. This is the default.
  - **Count.** Provides a count of records in the selected measure field, for each sort value.
  - **Detail.** Displays the value of each individual record.
- **Clear buckets content.** Empties all buckets.

You can add fields to the following buckets for a choropleth map:

- **Color.** Use a measure field to apply a color scale to the areas on the choropleth map. You can also use a dimension to color the areas on the map. Each area can show one color, so it is advisable to use overarching categories that apply to distinct sets of points. For example, you could use a country field in the Color bucket to categorize states shown on the map.
- **Location.** Enables you to specify a Geolocation field for use in a map. Each value from the field is plotted on the map if it is recognized. A choropleth can plot geographic areas, such as cities, states, or countries.

  Note: Geolocation fields must be configured in the data source to use a corresponding geographic role. Values from the field are matched to values from the geographic role to plot them in the correct location. For example, if your field contains country names, use the Country Name geographic role.
- **Tooltip.** The data placed in this bucket displays in the tooltip at run time. Can be used to make additional information available without changing the appearance of the chart.
- **MultiPage.** Enables the creation of multiple graphs based on the field that you place in this bucket. The MultiPage bucket is available for stand-alone charts. If you convert the chart to a page created from new content, the MultiPage bucket disappears.

Procedure: How to Create a Choropleth Map

1. Open Db2 Web Query Designer. On the default Db2 Web Query Home Page, click *Visualize Data*.

   Db2 Web Query Designer opens in a new browser tab.
2. Select a workspace and a data source available from that workspace.

   Once you select a data source, Db2 Web Query Designer loads with options to create a single content item.
3. On the Content picker, change the chart to a choropleth map.
4. Add a measure to the Color bucket and one field with an assigned geograhic role to the Location bucket.

   The choropleth map refreshes with your selections.
5. You can perform the following tasks with your choropleth map:
   a. Change the field in the Location bucket to analyze other trends.
   b. Zoom in or out to see different views of the data.

6. Save your choropleth map.

Creating Data Grids

A data grid is a kind of chart that can be used to present data in tabular form. For example, you can create a grid (table) that summarizes your data. Data grids include sorting and tooltip features by default, unlike tabular reports. An example of a data grid is shown in the following image.

	Sale Quarter	1		2		3		4	
Product Category	Sale Year	Quantity Sold	Revenue	Quantity Sold	Revenue	Quantity Sold	Revenue	Quantity Sold	Revenue
Accessories	2014	3,028	$744,930.42	3,103	$764,754.44	3,097	$825,606.72	3,968	$956,740.30
	2015	4,603	$1,138,922.67	4,773	$1,181,883.87	5,196	$1,297,056.97	6,054	$1,502,258.19
	2016	8,423	$2,138,504.92	7,473	$1,862,380.05	7,796	$1,945,292.99	9,192	$2,343,058.27
	2017	11,617	$2,960,774.08	10,992	$2,789,195.45	11,534	$2,898,411.06	14,553	$3,595,589.15
	2018	28,986	$7,320,410.85	26,844	$6,839,186.33	27,421	$6,973,473.26	33,164	$8,472,187.00
	2019	44,150	$11,247,102.74	40,978	$10,417,816.74	40,777	$10,338,632.79	53,182	$13,440,167.26
Camcorder	2014	2,577	$824,496.92	2,607	$827,550.35	2,896	$1,078,819.79	3,673	$1,197,050.11
	2015	4,125	$1,504,323.51	4,224	$1,368,773.84	4,810	$1,669,034.52	5,565	$1,840,136.47
	2016	7,245	$2,424,537.93	7,035	$2,362,778.07	6,962	$2,352,484.83	7,994	$2,703,299.86
	2017	10,208	$3,591,283.52	9,808	$3,374,989.46	10,432	$3,481,229.19	12,739	$4,356,820.06
	2018	25,511	$8,783,112.69	23,927	$8,238,442.56	24,103	$8,245,433.79	29,341	$10,063,548.64
	2019	39,393	$13,312,909.74	36,666	$12,538,035.14	36,774	$12,426,734.63	47,036	$15,653,012.81
Computers	2014	880	$199,174.40	805	$186,062.11	1,089	$232,199.36	1,617	$327,443.33
	2015	1,776	$355,634.16	1,767	$359,051.59	2,150	$439,404.85	2,421	$490,769.35
	2016	3,228	$655,346.96	2,967	$607,796.72	3,250	$686,144.06	4,561	$998,840.56
	2017	6,340	$1,441,530.34	5,898	$1,341,050.78	6,459	$1,468,170.73	7,796	$1,775,092.06
	2018	15,834	$3,599,921.91	16,299	$4,123,475.47	19,302	$5,651,484.49	23,171	$6,716,582.29
	2019	36,755	$11,692,593.66	41,079	$13,041,225.28	41,213	$13,465,169.21	42,408	$15,805,232.13

Note: Data grids require at least one measure and one dimension. Additional measures create unique columns. You can add multiple dimensions in the Row bucket to create customized rows based on the structure of your selection, and add dimensions to the Column bucket to create groups of measure columns based on dimension values.

The following display options are available for a data grid:

- Calculation options:
  - **Summary.** Sums measure values for each sort value. This is the default.
  - **Count.** Provides a count of records in the selected measure field, for each sort value.
  - **Detail.** Displays the value of each individual record.
- **Clear buckets content.** Empties all buckets.

You can add fields to the following buckets for a data grid:

- **Measure.** Supplies the measure values to display in the cells of the data grid.

- **Row.** Use a dimension field to define the rows in the data grid, similar to the BY field in a report.
- **Column.** Use a dimension to provide an additional sort column for each value. Each measure column is nested within each column field value. The column bucket is similar to an ACROSS field in a report.
- **Animate.** Enables you to animate time progression using a slider control. As you move the control along the slider bar, an animation effect results. The slider control has a Play button that allows you to play and pause the animation. When you click Play, the Pause option is activated, enabling you to pause the progression and analyze your data. Slider controls are limited to one sort field and should be time or sequence related, such as month or year.
- **MultiPage.** Enables the creation of multiple graphs based on the field that you place in this bucket. The MultiPage bucket is available for stand-alone charts. If you convert the chart to a page created from new content, the MultiPage bucket disappears.

Procedure: How to Create a Data Grid

1. Open Db2 Web Query Designer. On the default Db2 Web Query Home Page, click *Visualize Data*.

   Db2 Web Query Designer opens in a new browser tab.

2. Select a workspace and a data source available from that workspace.

   Once you select a data source, Db2 Web Query Designer loads with options to create a single content item.

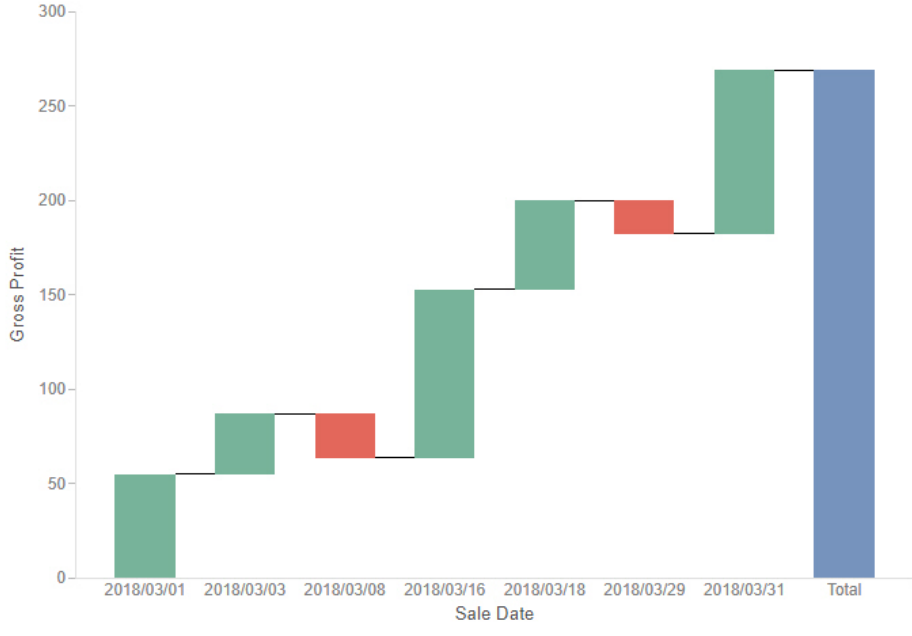
3. On the Content picker, select *Data Grid (Chart)*.
4. Add one or more measures and dimensions to the chart.

   The data grid refreshes with your selections.

5. You can perform the following tasks with your data grid:
   a. Add additional measures or dimensions to the chart, where applicable.
   b. Change the fields to obtain different information.
   c. Format the chart (for example, customize the header and footer or style the legend).
6. Save your data grid.

Creating Waterfall Charts

Waterfall charts allow you to see incremental positive and negative changes in your data, resulting in a rolling total. Positive and negative values are represented by different colored risers that start at the end point of the previous riser. Waterfall charts can be a good way to show change over time. An example of a waterfall chart is shown in the following image.



The following display options are available for a waterfall chart:

- **Change chart orientation.** Switches the vertical and horizontal axes so that the risers draw horizontally.
- Calculation options:
  - **Summary.** Sums measure values for each sort value. This is the default.
  - **Count.** Provides a count of records in the selected measure field, for each sort value.
  - **Detail.** Displays the value of each individual record.
- **Clear buckets content.** Empties all buckets.

You can add fields to the following buckets for a waterfall chart:

- **Vertical.** Specifies the measure field used in the chart to set the riser height. Negative values of this field display in red by default.

- **Horizontal.** A sort field whose values are represented by each riser.
- **Tooltip.** The data placed in this bucket displays in the tooltip at run time. Can be used to make additional information available without changing the appearance of the chart.
- **Animate.** Enables you to animate time progression using a slider control. As you move the control along the slider bar, an animation effect results. The slider control has a Play button that allows you to play and pause the animation. When you click Play, the Pause option is activated, enabling you to pause the progression and analyze your data. Slider controls are limited to one sort field and should be time or sequence related, such as month or year.
- **MultiPage.** Enables the creation of multiple graphs based on the field that you place in this bucket. The MultiPage bucket is available for stand-alone charts. If you convert the chart to a page created from new content, the MultiPage bucket disappears.

Procedure: How to Create a Waterfall Chart

1. Open Db2 Web Query Designer. On the default Db2 Web Query Home Page, click *Visualize Data*.

   Db2 Web Query Designer opens in a new browser tab.

2. Select a workspace and a data source available from that workspace.

   Once you select a data source, Db2 Web Query Designer loads with options to create a single content item.

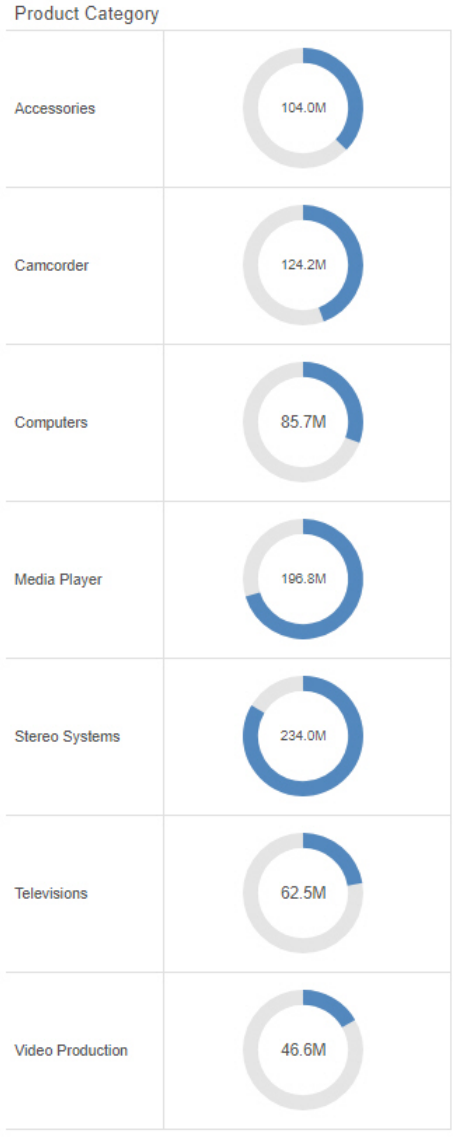
3. On the Content picker, change the chart to a waterfall chart.
4. Add one measure to the Vertical bucket, and one dimension to the Horizontal bucket.

   The waterfall chart refreshes with your selections. Any positive values display in green, and any negative values display in red, by default. There is also a Total column, which displays in blue by default.

5. You can perform the following tasks with your waterfall chart:
   a. Add additional measures or dimensions to the Tooltip, Animate, or MultiPage buckets of the chart, where applicable.
   b. Change the fields to obtain different information.
   c. Format the chart (for example, customize the header and footer or add data labels).
6. Save your waterfall chart.

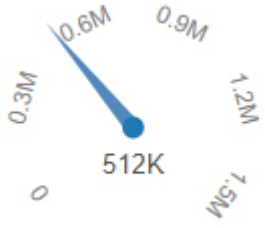
Creating Gauge Charts

A gauge is a simple visual that shows a measure value. These can be used to create straightforward KPI graphics, or use matrix rows and columns to compare data for different sort values. The following example shows a gauge chart with matrix rows.

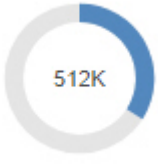


The following display options are available for a gauge chart:

- **Change chart orientation.** Switches the vertical and horizontal matrix axes.
- Chart layout options:
  - **Circular.** Shows the measure value using a pointer with values arranged in a semicircle starting at the bottom left, similar to a speedometer. A circular gauge is shown in the following image.



  - **Simple.** The default value, shows the measure value as a clockwise, colored fill on a circle starting at the top. The value is also displayed as text inside the circle. A simple gauge is shown in the following image.



  - **KPI.** Shows the measure value as text. A KPI gauge is shown in the following image.

- Calculation options:
  - **Summary.** Sums measure values for each sort value. This is the default.
  - **Count.** Provides a count of records in the selected measure field, for each sort value.
  - **Detail.** Displays the value of each individual record.
- **Clear buckets content.** Empties all buckets.

You can add fields to the following buckets for a gauge chart:

- **Vertical.** A dimension field used to generate matrix rows.
- **Horizontal.** A dimension field used to generate matrix columns.
- **Measure.** The measure field whose value is represented by the gauge.
- **Tooltip.** The data placed in this bucket displays in the tooltip at run time. Can be used to make additional information available without changing the appearance of the chart. The KPI style gauge does not show a tooltip.
- **Animate.** Enables you to animate time progression using a slider control. As you move the control along the slider bar, an animation effect results. The slider control has a Play button that allows you to play and pause the animation. When you click Play, the Pause option is activated, enabling you to pause the progression and analyze your data. Slider controls are limited to one sort field and should be time or sequence related, such as month or year.
- **MultiPage.** Enables the creation of multiple graphs based on the field that you place in this bucket. The MultiPage bucket is available for stand-alone charts. If you convert the chart to a page created from new content, the MultiPage bucket disappears.

Procedure: How to Create a Gauge Chart

1. Open Db2 Web Query Designer. On the default Db2 Web Query Home Page, click *Visualize Data*.

   Db2 Web Query Designer opens in a new browser tab.

2. Select a workspace and a data source available from that workspace.

   Once you select a data source, Db2 Web Query Designer loads with options to create a single content item.

3. On the Content picker, change the chart to a gauge chart.
4. Choose a gauge type from the display options. Simple, Circular, and KPI gauge types are available.
5. Add one measure to the Measure bucket.

   The gauge loads to display the value of the measure field.

6. You can make the following additional customizations to your gauge chart:
   a. Create a matrix chart by adding dimension fields to the Vertical and Horizontal buckets.
   b. Add additional measures or dimensions to the Tooltip, Animate, or MultiPage buckets of the chart, where applicable.

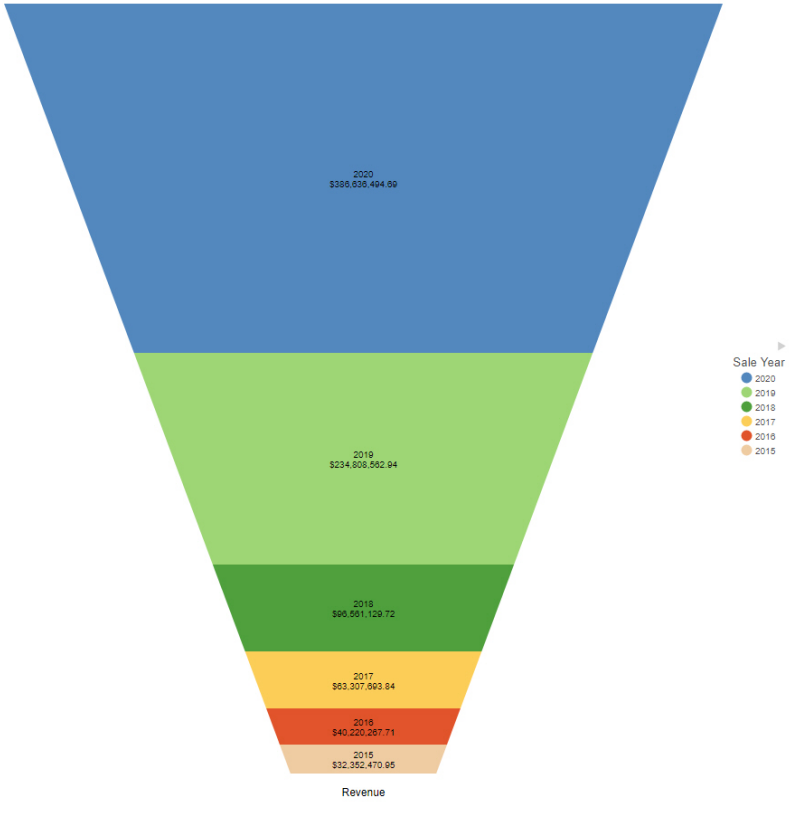
c. Change the fields to obtain different information.

d. Format the chart (for example, customize the header and footer or change the series color).

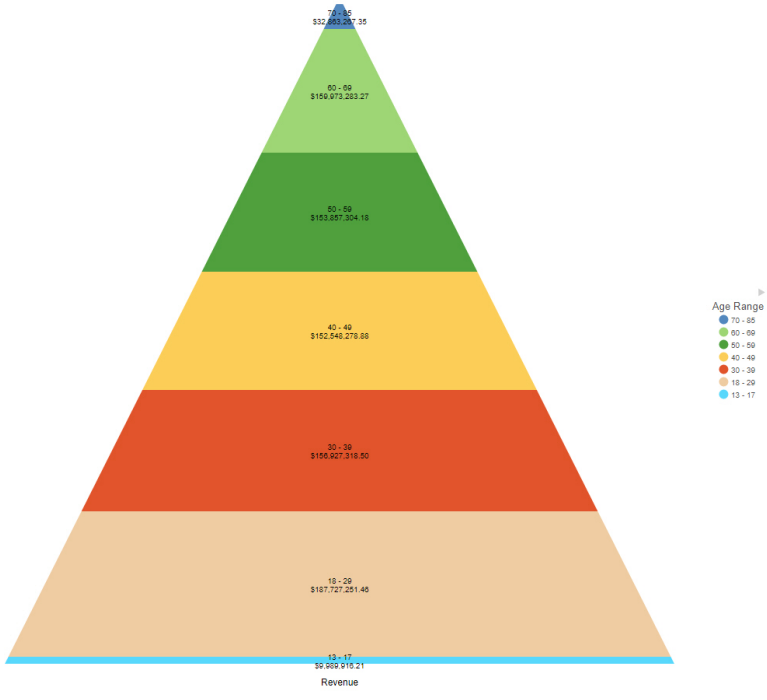
7. Save your gauge chart.

Creating Funnel Charts

A funnel chart shows values of a dimension field as a proportion of the whole, similar to a bar in a stacked bar chart. The shape of the funnel makes it useful to show information about processes that involve cascading or narrowing down due to the hierarchy it implies. For example, the following image shows revenue by year in a funnel chart. The entire funnel can be taken to represent all sales, with the top segment representing the most recent year, the top two segments the two most recent years, and so on.



Conversely, you can use the pyramid option to show values in an implied hierarchy, as shown in the following image of a pyramid chart showing revenue by age rand. The oldest range, 70-85 is at the top, and the youngest range, 13-17, is at the bottom.



The following display options are available for a funnel chart:

- Chart layout options:
  - **Funnel.** The default value, arranges the chart in a funnel shape, wide at the top and narrow at the bottom.
  - **Pyramid.** Arranges the chart in a triangle, wide at the bottom with a point at the top.
- Calculation options:
  - **Summary.** Sums measure values for each sort value. This is the default.
  - **Count.** Provides a count of records in the selected measure field, for each sort value.
  - **Detail.** Displays the value of each individual record.
- **Clear buckets content.** Empties all buckets.

You can add fields to the following buckets for a funnel chart:

- **Measure.** The measure field whose values are represented by each layer of the funnel chart.
- **Color.** A dimension field that determines the layers of the funnel chart.
- **Tooltip.** The data placed in this bucket displays in the tooltip at run time. Can be used to make additional information available without changing the appearance of the chart.
- **Animate.** Enables you to animate time progression using a slider control. As you move the control along the slider bar, an animation effect results. The slider control has a Play button that allows you to play and pause the animation. When you click Play, the Pause option is activated, enabling you to pause the progression and analyze your data. Slider controls are limited to one sort field and should be time or sequence related, such as month or year.
- **MultiPage.** Enables the creation of multiple graphs based on the field that you place in this bucket. The MultiPage bucket is available for stand-alone charts. If you convert the chart to a page created from new content, the MultiPage bucket disappears.

Procedure: How to Create a Funnel Chart

1. Open Db2 Web Query Designer. On the default Db2 Web Query Home Page, click *Visualize Data*.

   Db2 Web Query Designer opens in a new browser tab.

2. Select a workspace and a data source available from that workspace.

   Once you select a data source, Db2 Web Query Designer loads with options to create a single content item.

3. On the Content picker, change the chart to a funnel chart.
4. Add at least one measure to the Measure bucket and a dimension to the Color bucket.

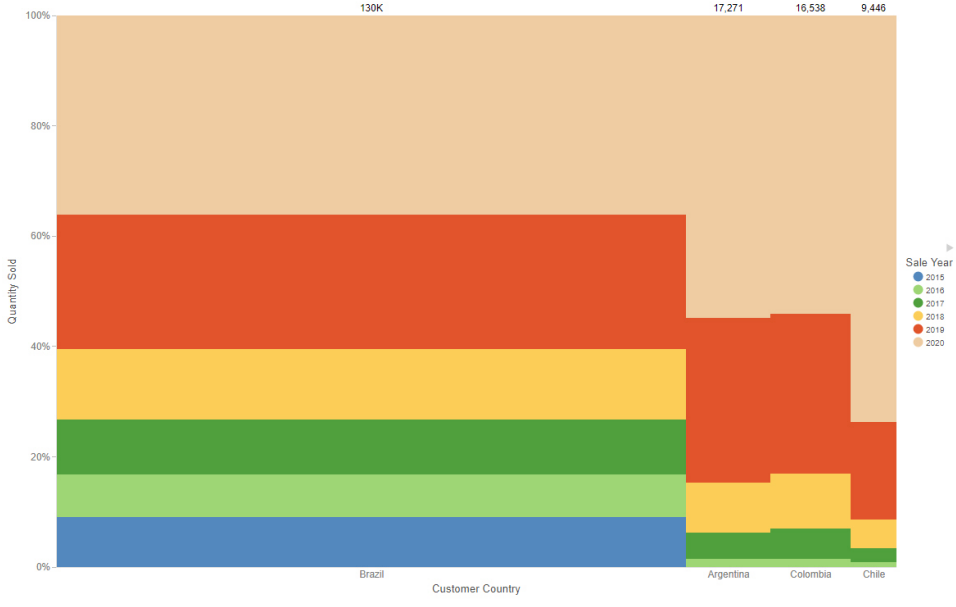
   The funnel chart loads, showing each dimension field as a layer with height based on the value of the measure field.

5. You can make the following additional customizations to your funnel chart:
   a. Change the funnel chart to a pyramid chart.
   b. Add additional measures or dimensions to the Tooltip, Animate, or MultiPage buckets of the chart, where applicable.
   c. Change the fields to obtain different information.
   d. Format the chart (for example, customize the header and footer or change the series color).

6. Save your funnel chart.

Creating Mekko Charts

A Mekko chart allows you to see proportional values of a measure field for two dimension fields. The intersections of these dimension fields and their relative sizes make it possible to quickly identify the most significant combinations of values. An example of a Mekko chart is shown in the following image.



The following display options are available for a Mekko chart:

- Calculation options:
  - **Summary.** Sums measure values for each sort value. This is the default.
  - **Count.** Provides a count of records in the selected measure field, for each sort value.
  - **Detail.** Displays the value of each individual record.
- **Clear buckets content.** Empties all buckets.

You can add fields to the following buckets for a Mekko chart:

- **Vertical.** The measure field whose values are represented by the proportional width of each column and height of each color segment.

- **Horizontal.** A dimension field to break the Mekko chart into columns. The width of each column is based on the measure field in the Vertical bucket, and represents that column's share of the total.
- **Color.** A dimension field that determines the segments of the columns in the Mekko chart. The area of each segment represents its share of the total.
- **Tooltip.** The data placed in this bucket displays in the tooltip at run time. Can be used to make additional information available without changing the appearance of the chart.
- **Animate.** Enables you to animate time progression using a slider control. As you move the control along the slider bar, an animation effect results. The slider control has a Play button that allows you to play and pause the animation. When you click Play, the Pause option is activated, enabling you to pause the progression and analyze your data. Slider controls are limited to one sort field and should be time or sequence related, such as month or year.
- **MultiPage.** Enables the creation of multiple graphs based on the field that you place in this bucket. The MultiPage bucket is available for stand-alone charts. If you convert the chart to a page created from new content, the MultiPage bucket disappears.

Procedure: How to Create a Mekko Chart

1. Open Db2 Web Query Designer. On the default Db2 Web Query Home Page, click *Visualize Data*.

   Db2 Web Query Designer opens in a new browser tab.

2. Select a workspace and a data source available from that workspace.

   Once you select a data source, Db2 Web Query Designer loads with options to create a single content item.

3. On the Content picker, change the chart to a Mekko chart.
4. Add one measure to the Vertical bucket and a dimension to the Horizontal and Color buckets.

   The Mekko chart loads to display the proportional value of the measure field for each segment in each column.

5. You can make the following additional customizations to your Mekko chart:
   a. Add additional measures or dimensions to the Tooltip, Animate, or MultiPage buckets of the chart, where applicable.
   b. Change the fields to obtain different information.
   c. Format the chart (for example, customize the header and footer or change the series color).

6. Save your Mekko chart.

Creating Tag Clouds

A tag cloud allows you to see the most frequent or largest values in a dimension field based on the size and color of the text, making it easy to identify the most important values. An example of a tag cloud is shown in the following image.

The following display options are available for a tag cloud:

- Calculation options:
  - **Summary.** Sums measure values for each sort value. This is the default.
  - **Count.** Provides a count of records in the selected measure field, for each sort value.
  - **Detail.** Displays the value of each individual record.
- **Clear buckets content.** Empties all buckets.

You can add fields to the following buckets for a tag cloud:

- **Detail.** The dimension field whose values are displayed as text in the tag cloud.
- **Size.** A measure value that determines the font size of each value.
- **Color.** A measure value to set a color scale for the tag cloud text.
- **Tooltip.** The data placed in this bucket displays in the tooltip at run time. Can be used to make additional information available without changing the appearance of the chart.

- **Animate.** Enables you to animate time progression using a slider control. As you move the control along the slider bar, an animation effect results. The slider control has a Play button that allows you to play and pause the animation. When you click Play, the Pause option is activated, enabling you to pause the progression and analyze your data. Slider controls are limited to one sort field and should be time or sequence related, such as month or year.
- **MultiPage.** Enables the creation of multiple graphs based on the field that you place in this bucket. The MultiPage bucket is available for stand-alone charts. If you convert the chart to a page created from new content, the MultiPage bucket disappears.

Procedure: How to Create a Tag Cloud

1. Open Db2 Web Query Designer. On the default Db2 Web Query Home Page, click *Visualize Data*.

   Db2 Web Query Designer opens in a new browser tab.

2. Select a workspace and a data source available from that workspace.

   Once you select a data source, Db2 Web Query Designer loads with options to create a single content item.

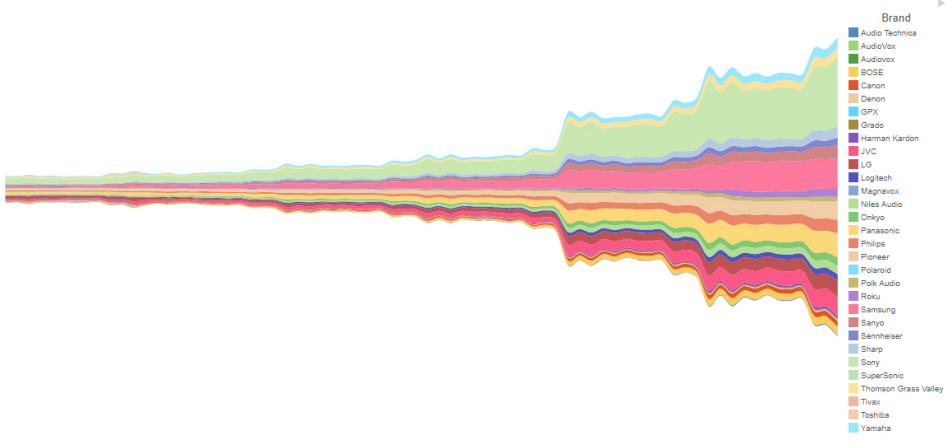
3. On the Content picker, change the chart to a tag cloud.
4. Add a dimension field to the Detail bucket and a measure field to the Size bucket. Optionally, add a measure field to the Color bucket.

   The tag cloud loads, showing each value of the Detail field with a font size determined by the Size field.

5. You can make the following additional customizations to your tag cloud:
   a. Add additional measures or dimensions to the Tooltip, Animate, or MultiPage buckets of the chart, where applicable.
   b. Change the fields to obtain different information.
   c. Format the chart (for example, customize the header and footer).
6. Save your tag cloud.

Creating Streamgraphs

A streamgraph is a simplified area chart. It does not show labels for measure values, but makes it easy to identify trends for different dimension values over time. An example of a streamgraph is shown in the following image.



The following display options are available for a streamgraph:

- Calculation options:
  - **Summary.** Sums measure values for each sort value. This is the default.
  - **Count.** Provides a count of records in the selected measure field, for each sort value.
  - **Detail.** Displays the value of each individual record.
- **Clear buckets content.** Empties all buckets.

You can add fields to the following buckets for a streamgraph:

- **Vertical.** The measure field that determines the height of each area.
- **Horizontal.** A dimension field to create a horizontal axis for the streamgraph. Typically, this is a date or date-time field.
- **Color.** A dimension field to generate different areas in the streamgraph.
- **Tooltip.** The data placed in this bucket displays in the tooltip at run time. Can be used to make additional information available without changing the appearance of the chart.

- **Animate.** Enables you to animate time progression using a slider control. As you move the control along the slider bar, an animation effect results. The slider control has a Play button that allows you to play and pause the animation. When you click Play, the Pause option is activated, enabling you to pause the progression and analyze your data. Slider controls are limited to one sort field and should be time or sequence related, such as month or year.
- **MultiPage.** Enables the creation of multiple graphs based on the field that you place in this bucket. The MultiPage bucket is available for stand-alone charts. If you convert the chart to a page created from new content, the MultiPage bucket disappears.

Procedure: How to Create a Streamgraph

1. Open Db2 Web Query Designer. On the default Db2 Web Query Home Page, click *Visualize Data*.

   Db2 Web Query Designer opens in a new browser tab.

2. Select a workspace and a data source available from that workspace.

   Once you select a data source, Db2 Web Query Designer loads with options to create a single content item.

3. On the Content picker, change the chart to a streamgraph.
4. Add a measure field to the Vertical bucket, a dimension, such as a date field, to the Horizontal bucket, and another dimension to the Color bucket.

   The streamgraph loads, showing comparative changes for each value in the Color bucket.

5. You can make the following additional customizations to your streamgraph:

   a. Add additional measures or dimensions to the Tooltip, Animate, or MultiPage buckets of the chart, where applicable.

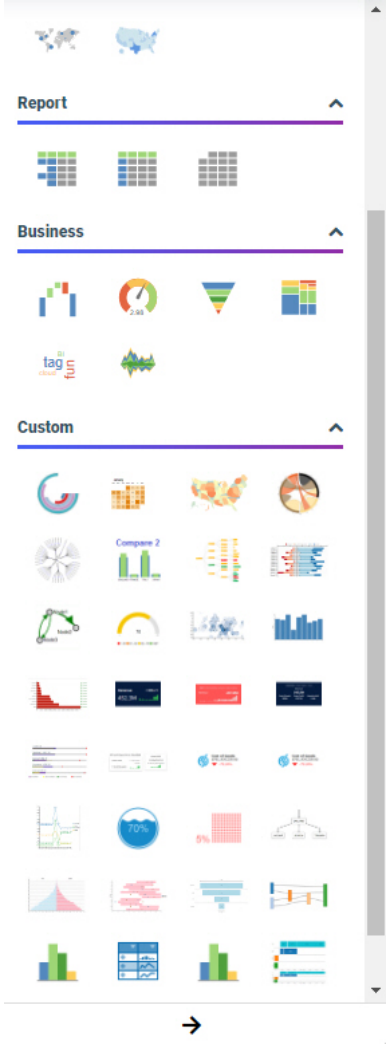
   b. Change the fields to obtain different information.

   c. Format the chart (for example, customize the header and footer or change series colors).

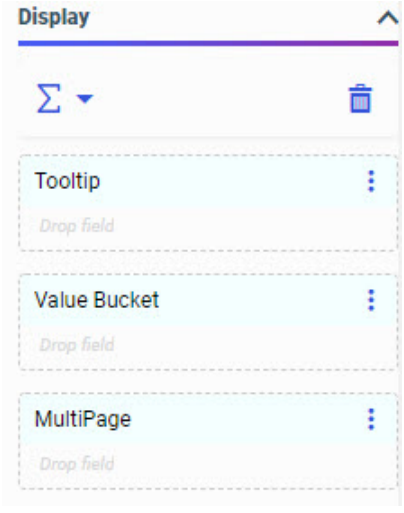
6. Save your streamgraph.

Creating Charts Using a Chart Extension

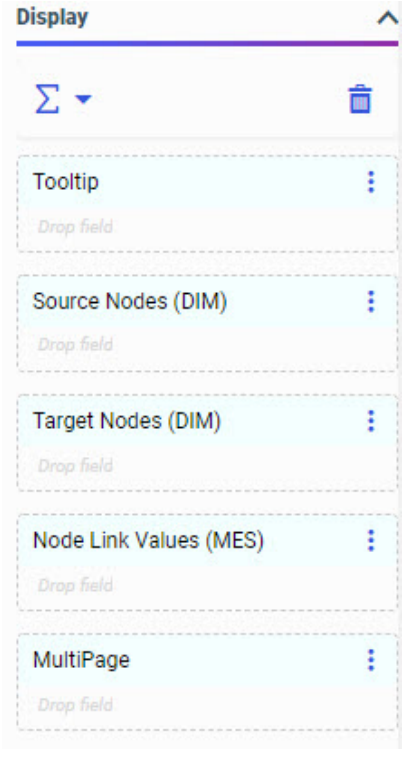
Db2 Web Query supports the ability to add new, custom chart types to its list of built-in charts. These custom chart types are called extensions or plug-ins. Once enabled on your Db2 Web Query environment, any extensions that you have added are available when you expand the Content picker, in the Custom section, as shown in the following image.



Each chart extension uses a set of buckets and properties unique to that extension. The liquid gauge chart extension uses the Tooltip, Value Bucket, and MultiPage buckets, as shown in the following image.



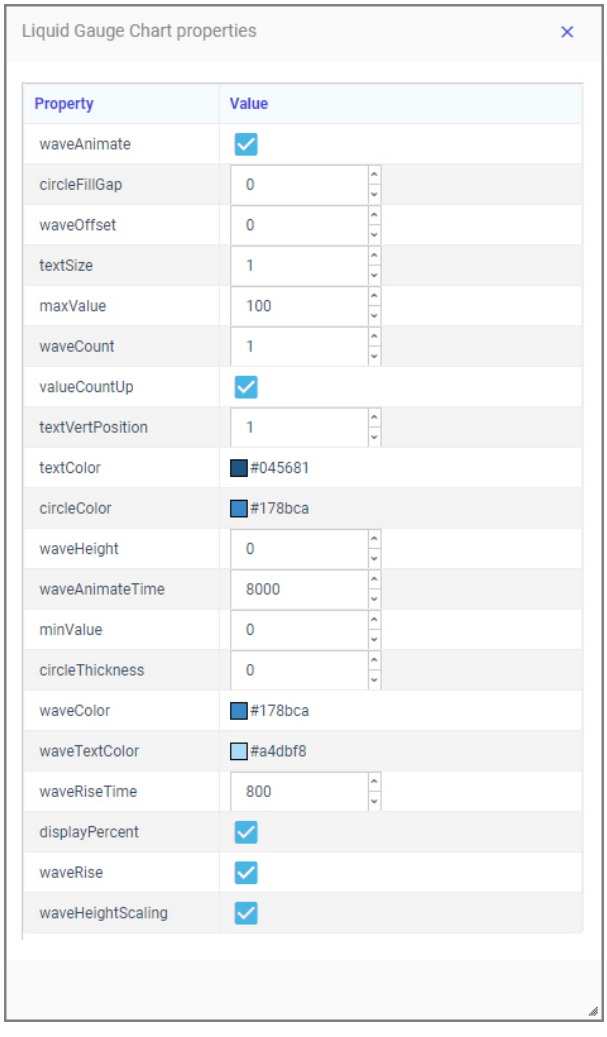
The chord diagram, on the other hand, uses the Tooltip, Source Nodes, Target Nodes, Node Link Values, and MultiPage buckets. It also indicates the type of field that should be used in each bucket, as shown in the following image.



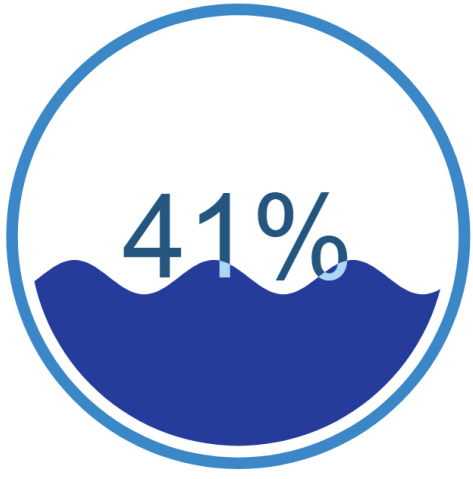
Each of these buckets is configured to allow a certain number of fields, and certain types of fields.

Chart extensions also have a unique set of properties that can be applied to them. To access chart extension properties, on the Format tab, with the General option selected from the Quick Access menu, in the Other section, click *Extension properties*. This opens the Extension properties panel. The Extension properties panel opens on top of the Resources and Properties panels, and can be resized and moved within the browser window. If you click outside of the Extension properties panel, it closes, and any changes that you made to the chart properties are applied.

The Extension properties panel for a liquid gauge chart is shown in the following image.



Some of the properties on the Extension properties panel apply to specific elements of the chart extension. For example, in the following image, the color of the wave in the liquid gauge chart has been changed to a darker shade of blue, and the number of waves has been increased from 1 to 3.



For more details about the buckets and properties used in specific chart extensions, see the page for each extension on the *Information Builders GitHub site*.

Procedure: How to Create a Chart Using a Chart Extension

1. Open Db2 Web Query Designer. On the default Db2 Web Query Home Page, click *Visualize Data*.

   Db2 Web Query Designer opens in a new browser tab.

2. Select a workspace and a data source available from that workspace.

   Once you select a data source, Db2 Web Query Designer loads with options to create a single content item.

3. Expand the Chart picker and, from the Custom section, select a chart extension with which to create your chart.

4. Add measure and dimension fields to the chart based on the available buckets.

5. Optionally, style the chart using the available extension-specific properties.

   a. On the Properties panel, select the *Format* tab.

   b. If it is not already selected, open the Quick Access menu and select *General*.

   c. In the Other section, click *Extension properties*. The extension properties panel opens.

d. Make changes to the desired properties, and then close the extension properties panel.

   The chart updates to reflect your changes to extension properties.

6. Save your visualization.

Displaying Measure Values in Charts

In most chart types, measure values for different categories are communicated based on visual cues. For example, the height of a riser in a bar chart, the size of a slice in a pie chart, or the color or an area of a heatmap all communicate the measure value of the dimension value that they represent. By comparing different areas of the chart, and by using the legend and tooltips, you can quickly identify overall trends in your data.

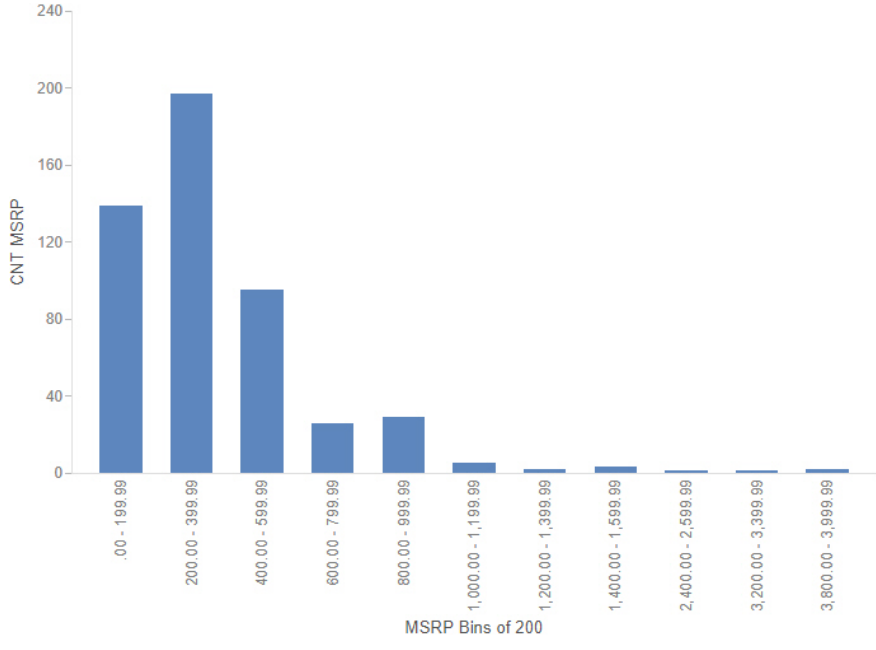
To display measure values in a chart, you add them to a measure bucket. The names of these buckets differ, depending on the type of chart, and many chart types include multiple measure buckets, so you can evaluate the relationships between different metrics. For example, in a bar chart, you can display measure values using the Vertical, Size, and Color buckets. The Vertical bucket expresses values of the selected measure field using the height of each bar, the Size bucket expresses values using the width of each bar, and the Color bucket expresses values using the color of each bar, based on a color scale. The Color bucket can accept either a measure field or a dimension field. If you use a dimension instead of a measure, the color of each bar or bar segment is based on dimensional series values.

Each chart type has a default measure bucket. When you double-click a measure field or drag it onto the canvas, it is automatically added to that bucket. In the case of a bar chart, the default measure bucket is the Vertical bucket.

By default, when a measure field is added to a measure bucket, the values are aggregated as a sum. The aggregation is performed for each dimensional sort value. To change the type of aggregation for a single field from sum to another option, such as count or average, right-click the measure field and point to *Aggregate*. A list of available aggregation options displays.

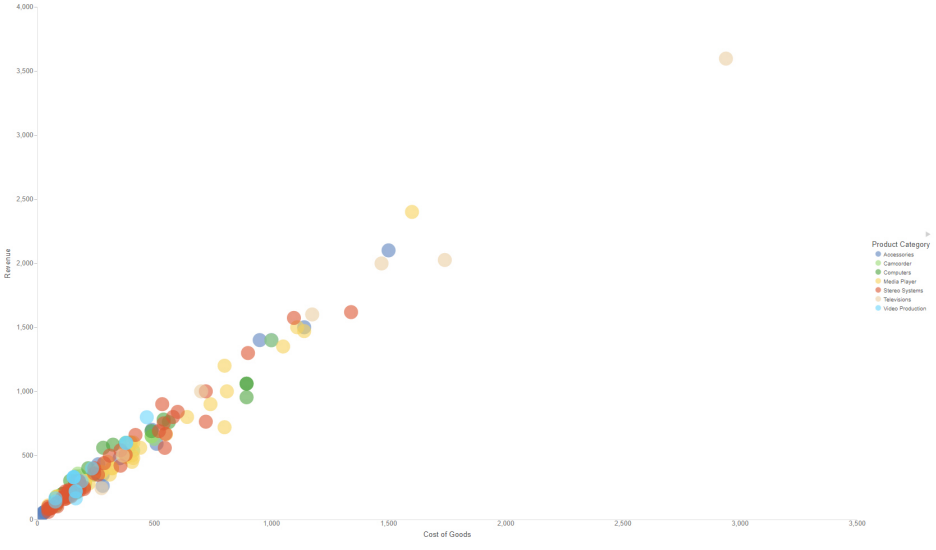
Alternatively, you can change the evaluation of all measure fields in your chart at once. From the Calculation Options menu  , you can change the evaluation in all measure buckets from a summary aggregation to a count aggregation or to detail values, in which case measure values are not aggregated at all, instead displaying the value of each record in your data set. When you select one of these options, the icon displays above the chart buckets.

The count evaluation method displays the number of records within each sort value. This allows you to see the distribution of your data, such as in a histogram. To create a histogram, create a new bar chart and create a set of bins for the measure field distribution you want to evaluate. Add the newly created bins to the Horizontal bucket, then add the original, associated measure field to the Vertical bucket. Finally, change the evaluation method from Summary to Count. The chart now shows the number of records that fall into each bin range, as shown in the following image.

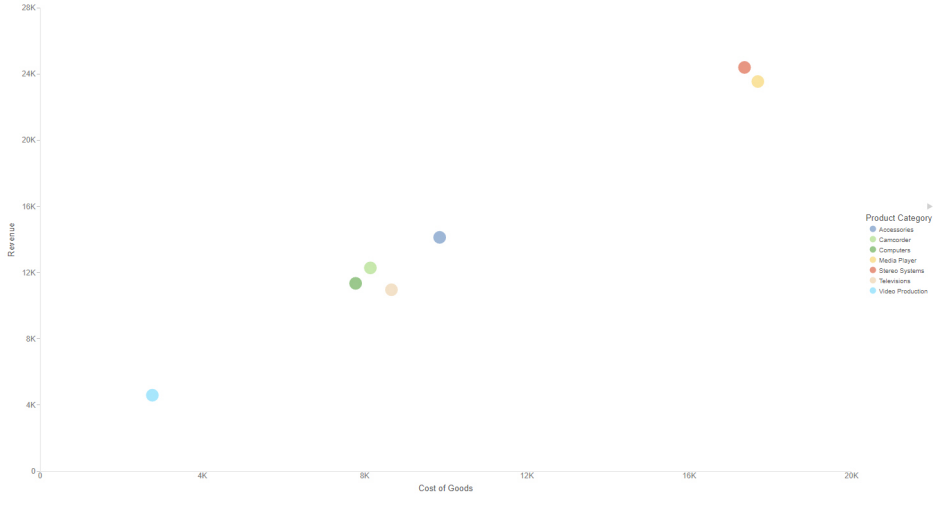


When using the Count evaluation option, you can still change the aggregation option for each individual measure field, just like when you are using the Summary option.

The Detail evaluation option allows you to see the value of each individual record in your data set. Since every record is displayed, the detail option is best used for chart types that can display lots of values effectively. For example, the following image shows a scatter plot where each point represents a different record. The Revenue and Cost of Goods values represented by each axis are the non-aggregated revenue and cost of goods for each individual record.



If we had used the Summary option, the chart would have displayed one point for each sort value, as shown in the following image. In this example, the sort value was the dimension in the Color bucket, Product Category.



Note: If you are using a very large data source, you may wish to filter your chart before displaying detail values in order to reduce the resources required to display all records.

Formatting Charts

Charts allow you to present information graphically, using such visual cues as color, size, and position to convey relationships between measures (numeric fields to be aggregated) and dimensions (categories) and to identify trends and outliers. You can create a wide variety of charts. For example, you can review your data (Gross Profit and Product Category) using different chart types (for example, bar chart, area chart, or line chart). The chart options give you an edge in deciding which chart to use to highlight certain information or trends.

Once you have created a chart, you can apply various styling and formatting changes to it. For example, bolding text in a legend or header, changing the color of a series, or changing the appearance of axis lines. The chart formatting options allow you to specify how components display, enabling you to format your chart to suit your needs.

The formatting capabilities of Db2 Web Query Designer let you indicate which aspects will display, how fonts are utilized, and which additional options will enable you to create an effective, styled chart.

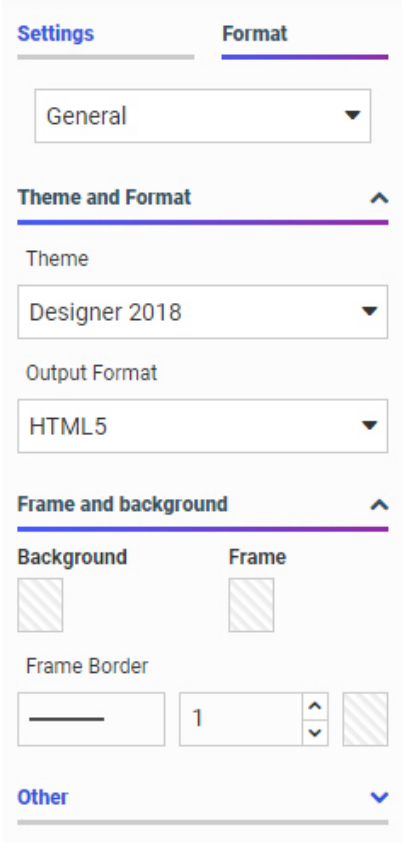
Customizing Charts

As you work with your chart, you can make modifications that improve the display of your chart, highlighting the layout and presentation of the chart components. Some of the formatting options include:

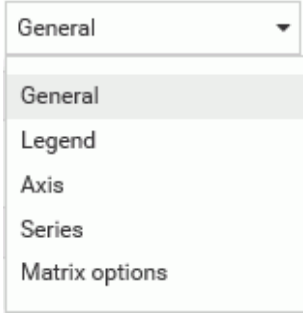
- Controlling font display
- Customizing headers and footers
- Changing the format of your legend
- Formatting the axes of your chart
- Formatting the series of your chart
- Customizing the format of your matrix chart
- Enhancing a box plot
- Enhancing your grid
- Enhancing a gauge
- Adding a theme

❑ Adding color to your chart

You can access the formatting options from the Format tab, as shown in the following image.

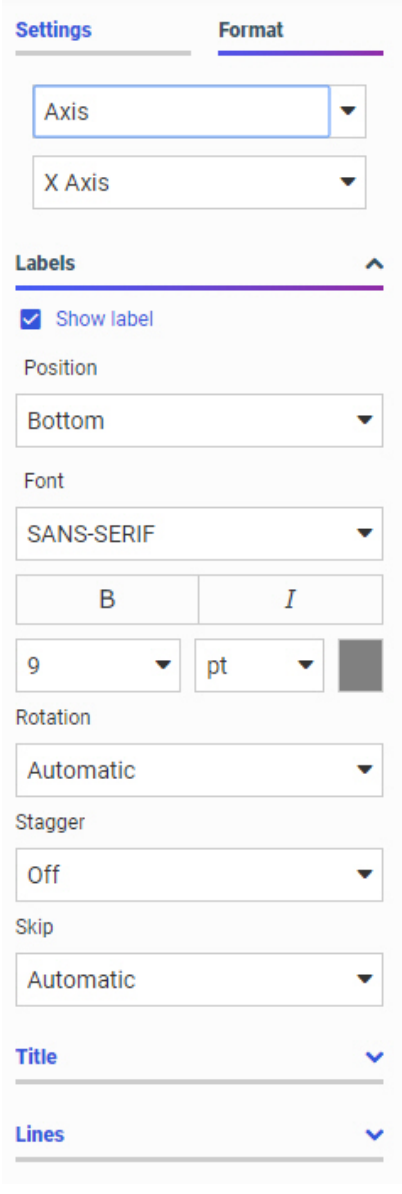


General options display, by default, but you can use the Quick Access menu to select a different aspect of your chart, for example, Legend, Axis, Series, or Matrix options, as shown in the following image.



Different options are available, depending on the chart type.

Once you select an area of your chart to modify (for example, Axis), you can use the intuitive options and menus to make selections, as shown in the following image.



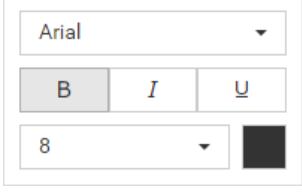
You can also access styling options by right-clicking an area of your chart, such as a riser or axis label, and clicking *Style*.

Note: If you are working with a map, reference lines, or data grids, additional tabs will display, enabling you to make formatting changes to these components. These tabs do not display, by default.

By streamlining formatting options in one place, you can quickly format charts to enhance the display of your data. Whether it be color-coding a series in a chart or changing the font size of your data labels, a customized, formatted chart is just a click away.

Controlling Font Display in a Chart

You can use the font formatter in Db2 Web Query Designer to control how fonts are displayed in your chart. This is a quick way to apply styling, colors, or a specific font type for any text within your chart. The font formatter displays in different areas of the Format tab (for example, Legend, Axis, Series, and Matrix options). Depending on the chart type and what you want to format, you can use these options to enhance the fonts in your charts. The font formatter is shown in the following image.



You can also change the font of a header or footer in your chart. This allows you to control how a chart is labeled or highlighted, which is useful when the chart will be distributed. For headers and footers, you can:

- Change the font type and font size.
- Add bold, italic, and underline emphasis to your text.
- Set the justification of text in your header or footer. For example, left-aligned, centered, or right-aligned.
- Change the font color or background color.

The styling toolbar for header and footer text is available along the top of the canvas, as shown in the following image.

When reviewing text that displays in your chart, you might want to increase the font size of the header text to enhance its visibility. Editing the font types and styles in your chart gives you more control over how information is displayed and presented.

Procedure: How to Change the Font Type in Your Chart

Changing the type, size, and emphasis of a font improves the impact for the user that is analyzing this chart. To change the font of a chart header:

1. Open Db2 Web Query Designer. On the default Db2 Web Query Home Page, click *Visualize Data*.

   Db2 Web Query Designer opens in a new browser tab.

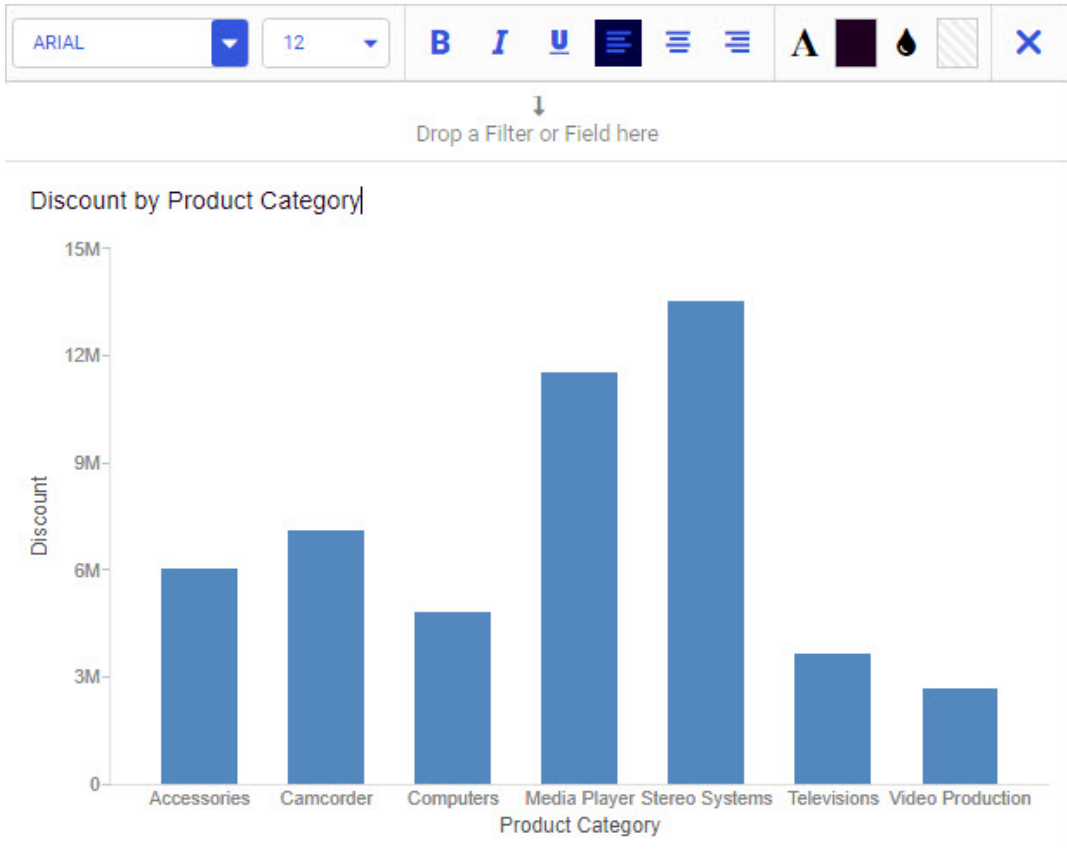
2. Select a workspace and a data source available from that workspace.

   Once you select a data source, Db2 Web Query Designer loads with options to create a single content item.

3. Add one or more measures and dimensions to your chart.

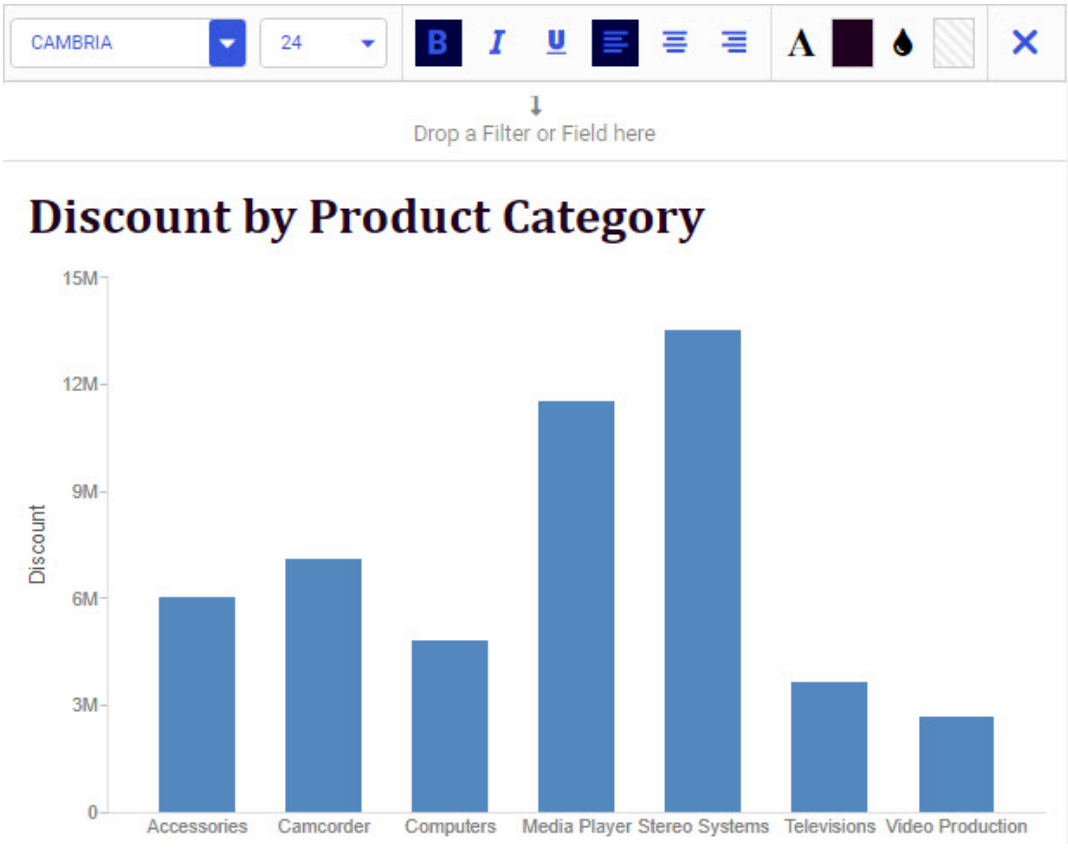
4. Double-click *Chart Heading* to enable it for formatting, and change this text to *Discount by Product Category*.

The styling toolbar displays along the top of the screen, as shown in the following image.



5. Ensure that the header *Discount by Product Category* is selected or highlighted.
6. From the styling toolbar, change the font type to Cambria, size 24, Bold.

The revised chart header displays and reflects the new font type and styling, as shown in the following image.



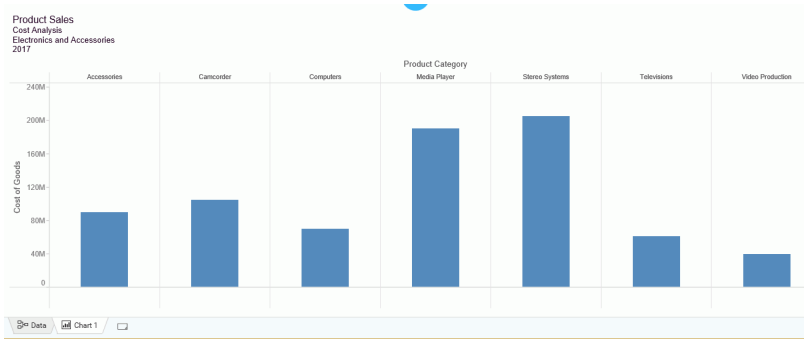
Note: You must select the text you want to modify in your header or footer before you apply any changes to the font.

Adding Headings and Footings to a Chart

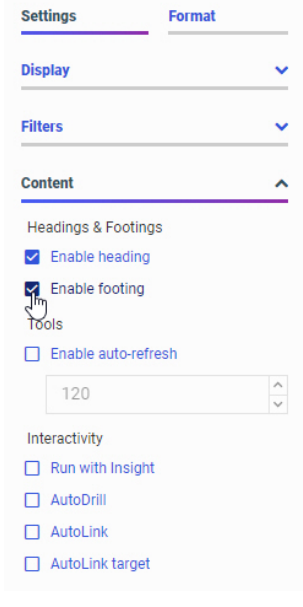
You can use headers and footers to add key information, such as the purpose of the chart and the audience. For example, if you have gross profit for different product categories, you can add a header to highlight this information in your chart.

You can add multiple lines of information into the heading and footing areas in a chart. This accommodates thorough explanations and additional information while offering the most readable presentation.

You add a new line in the heading and footing by pressing the Enter key. The number of lines of heading and footing you can add to a chart is only limited by the available real estate on the chart. The chart body will adjust to fit within the available space with the heading/footing lines inserted. You can change the font size or other presentation aspects using the editing toolbar that displays. When you are finished editing the heading and footing and edit mode is closed, the chart canvas adjusts to ensure that all lines of the heading or footing are visible, as shown in the following image.



Headers and footers can contain the same type of information. Footers are not enabled, by default, but can be enabled from the Content area on the Settings tab, as shown in the following image.



You can make styling changes to the information in your headers and footers, which allows you to interactively style the text according to your preferences. Using a WYSIWYG canvas, it delivers formatting changes instantly, allowing you to see the results of your selections as you make them. When editing your header or footer, you can find the options at the top of the canvas, as shown in the following image.

You can change the font and font size using the drop-down lists. You can add bold, italic, and underline accents to your text. In addition, you can change the positioning of your text (left, center, and right). You can also customize the color of the text, as well as the background of the header or footer text area. When your formatting is complete, you can close the toolbar and continue working with your chart.

Note: You can double-click the heading or footing to resume modifications at any time.

Procedure: How to Add Headings and Footings to a Chart

You can add and style headings and footings in a chart.

1. Open Db2 Web Query Designer. On the default Db2 Web Query Home Page, click *Visualize Data*.

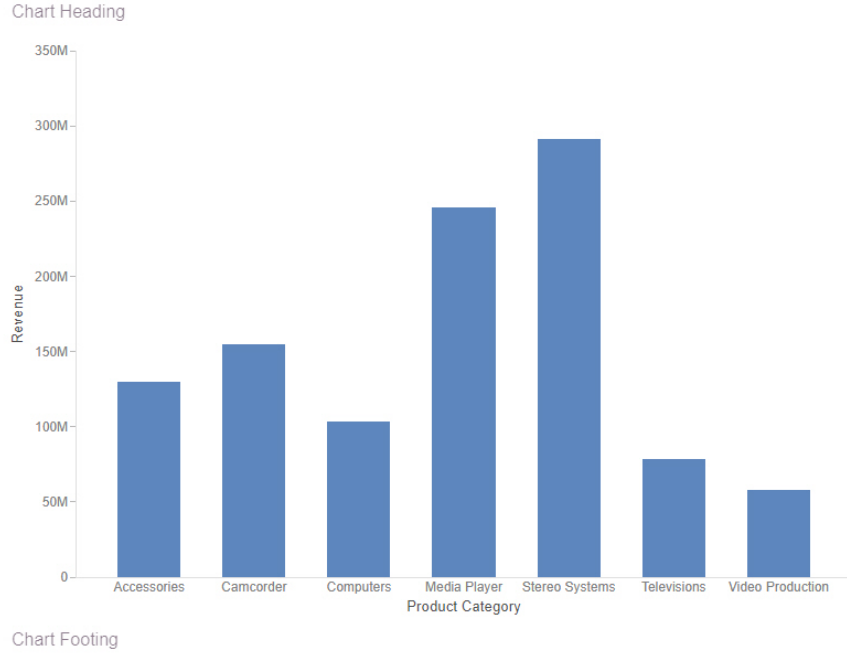
   Db2 Web Query Designer opens in a new browser tab.

2. Select a workspace and a data source available from that workspace.

   Once you select a data source, Db2 Web Query Designer loads with options to create a single content item.

3. Add one or more measures and dimensions.
4. On the Settings tab, expand the Content area and select *Enable footing*.

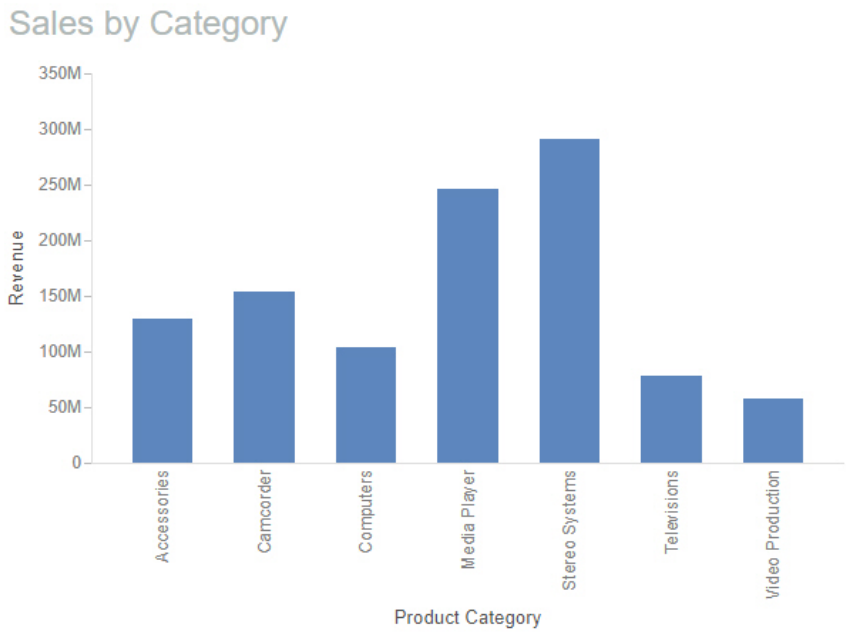
The headers and footers display, as shown in the following image.



5. Double-click the heading and change it to *Sales by Category*.

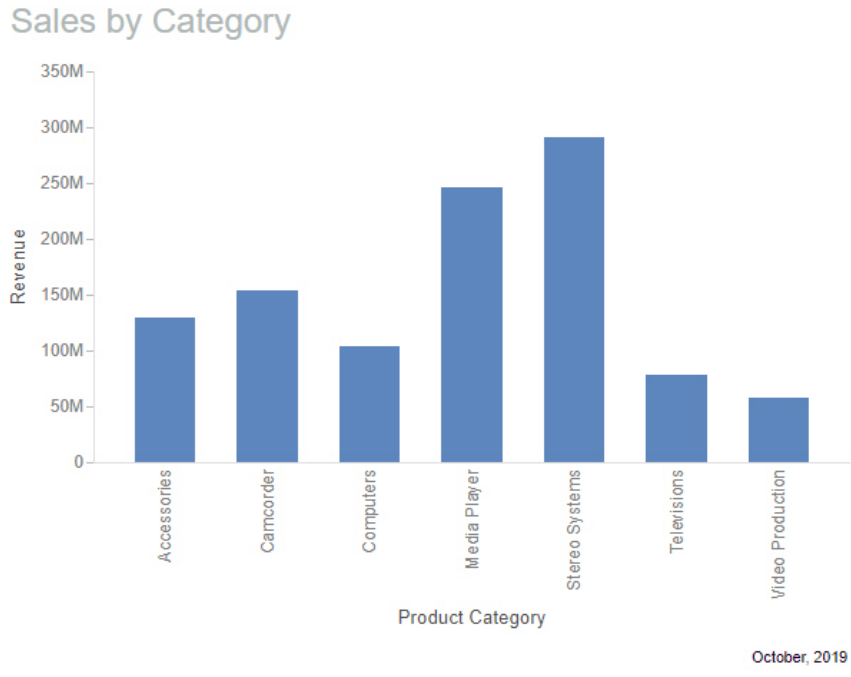
   The styling options to edit the header and footer text are shown in the following image.

6. Change the font color to grey and change the font size to 20, as shown in the following image.



7. Change the footer to read *October, 2019*.

8. Change the font size to 8 and right-justify it, as shown in the following image.



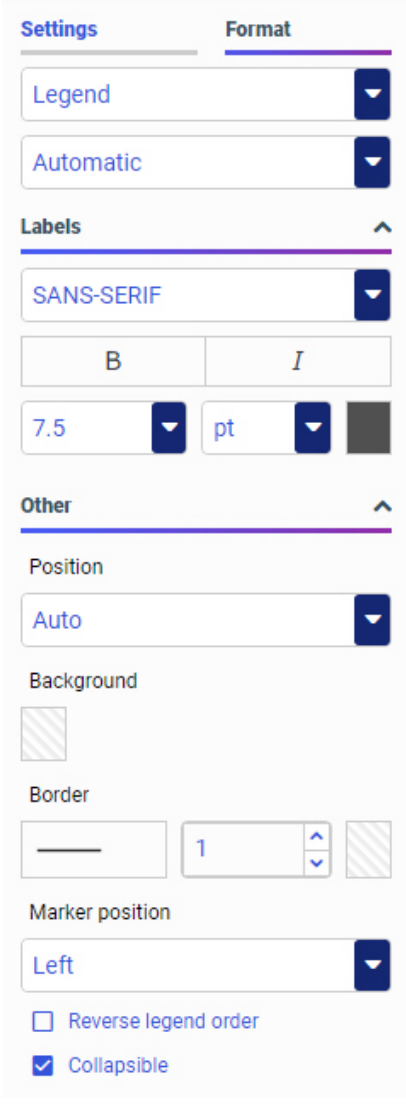
Using headers and footers, you can add the finishing touches on your charts, identifying them with useful information for your audience. For example, when sharing and distributing your charts, headers and footers can help identify and streamline your communication.

Formatting Legends in a Chart

In a chart, the legend identifies values according to the color-coded data values that display. The legend typically displays on the right side of the chart, but you can change the location using the formatting options. You can format a legend in any of the following ways:

- ❏ Turn the Legend On, Off, or set it to Auto.
- ❏ Change the font features of the legend (for example, bold or a larger font size).
- ❏ Change the format of the title of the legend.
- ❏ Access options to change background options, including setting the background color and setting the border line width, size, and color.
- ❏ Set the display options for the legend.

To access the legend formatting options, click the Format tab. From the quick access list at the top of the tab, select *Legend*. The Legend formatting options display in the following image.

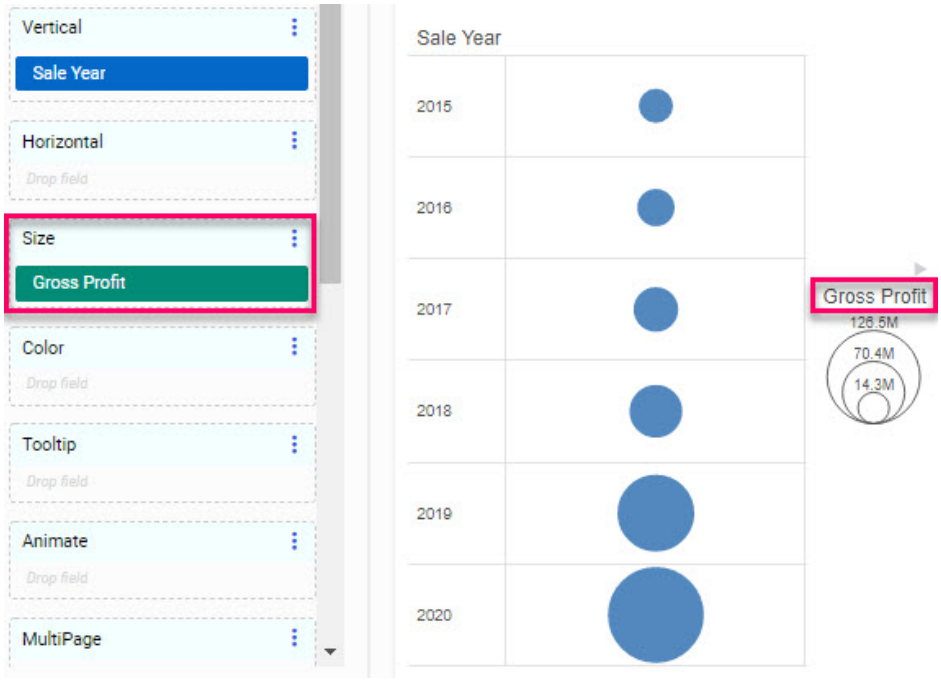


Use the On, Off, and Auto buttons to control how the Legend appears on your chart. You can optionally select On or Off, depending on whether you want to display the legend in your chart. The legend display setting is set to Auto, by default, which displays the legend only if there are multiple series in the chart.

Note: Occasionally, charts are large and require additional real estate. Hiding the legend, or turning it off, enables you to preserve additional room as required by the chart.

Under Labels, you can format the font used for the label text in your legend. These options include Font type, Style, Size, and Color.

Depending on the type of chart you use, adding data to a specific field automatically generates a title for the chart legend. For example, the following image displays a matrix marker chart that allows you to compare the differences between values by circle size. Since the measure Gross Profit has been added to the Size bucket, the legend title for this chart shows as Gross Profit, which is highlighted in the following image.



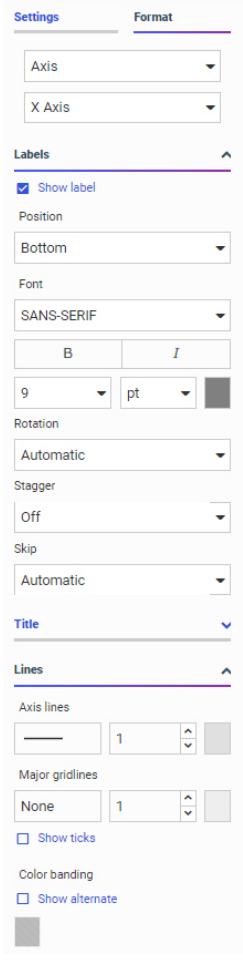
Under Titles on the Format tab, you can choose to show or hide the legend title with the *Show Titles* check box. You can also choose the font style and formatting of the legend title.

Under Other on the Format tab, you can perform tasks such as changing the position, setting the background color, and setting the border line width, size, and color. You also have options to display the legend options in reverse order and set it as collapsible.

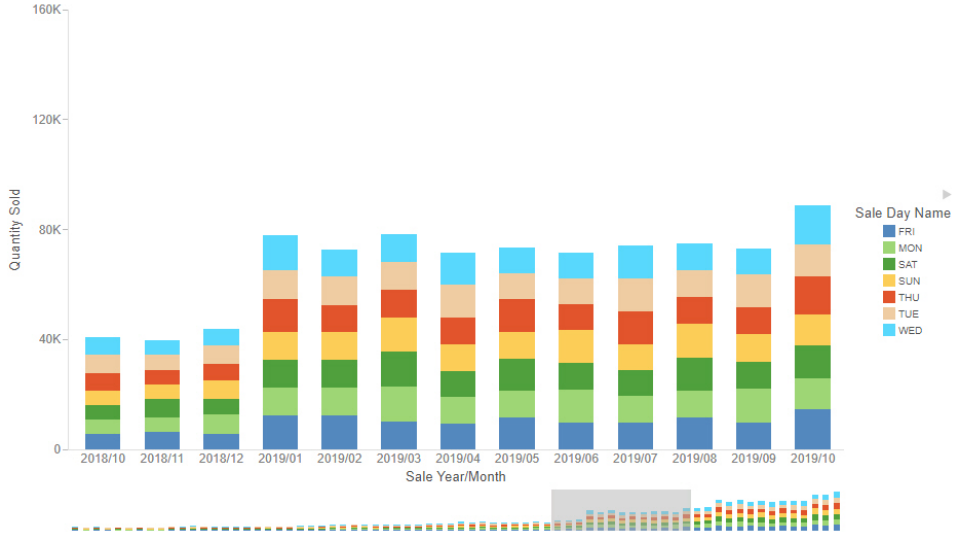
Using Axis Options in a Chart

Depending on the chart type (for example, bar chart), you can format the axes to customize the display of the information. This includes items such as labels, titles, and font formatting. For example, you can choose to hide the labels in your chart or format the font to add clarity to your chart. You can easily customize the X and Y axis with options that suit your needs. To access these options, select *Axis* from the quick access menu on the Format tab. Other options, such as dual-axis, bi-polar axis, and split axis behavior, and a continuous time axis, are available by right-clicking a field once it has been added to your chart or using the menu next to the Vertical bucket.

You can rotate the labels in your axes as well as stagger them. This allows you to shift the display of information, which is particularly useful when your chart is very dense. You can modify the lines for individual axes, enhancing the frame of the axis on the chart. You can also show ticks, which allows you to view milestones in your data. You can also change the position of an axis, enabling you to dictate where your axis information will display (for example, right). The options on the Format tab for formatting an axis are shown in the following image.

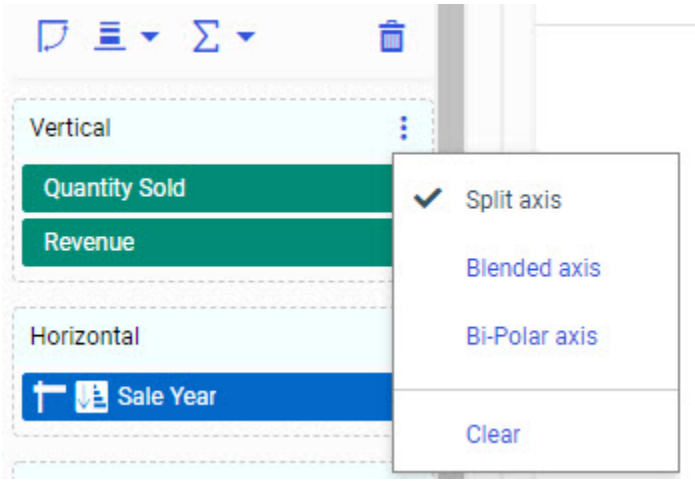


In bar, line, and area charts, you can control x axis scrolling behavior from the Scroll menu. By default, the Scroll option is set to *On* and the scrollbar is enabled. When a large number of values are displayed on the x axis, a scrollbar generates so that they all have enough space to fit comfortably in the visible area of the chart. To disable the scrollbar, set the Scroll option to *Off*. When the scrollbar is not enabled, points and labels are compressed to fill the area occupied by the chart. As an alternative to the basic scrollbar, set the Scroll option to *MiniChart*. Instead of using a basic, default scrollbar setting, the minichart option provides a simplified image of the chart, with a transparent scrollbar, as shown in the following image.



You can point to the edge of the minichart scrollbar and use the double-headed arrow cursor to change the visible area of the chart by expanding or contracting the scrollbar. To set the default minichart scrollbar size, use the Count property that appears on the Format tab when you select the *MiniChart* option. The count represents the number of values initially visible on the x axis. For example, the default Count value of 10 means that a maximum of 10 values display in the chart at all times, regardless of the physical width of the chart area.

In bar, line, and area charts, you can also choose whether the y axis, or vertical axis, should be shared between all measures, or split so that each measure is separated and generates separate bars, lines, or areas. By default, the axis is blended, so all measures share the same y axis. To split the y axis, on the Settings tab, click the menu next to the Vertical bucket (or Horizontal bucket if the axes have been swapped), and click *Split axis*, as shown in the following image.



This option is especially useful if there are large disparities between the values of different measure fields. For example, the revenue values in a data source may be many times greater than the quantity sold values. To merge the axes back together, click the same menu, and then click *Blended axis*.

Alternatively, if you want to split the measure fields in a bar, line, or area chart into groups on separate axes, you can use the bi-polar axis option. The bi-polar axis option creates a second set of axes to which you can add some of your measure fields, instead of splitting each measure onto a separate axis. To enable this option, click the menu next to the Vertical bucket and then click *Bi-Polar axis*. To switch the y-axis that a measure field uses in bi-polar axis mode, click the axis icon next to the field in the measure bucket, or right-click a measure field and click *Top Axis (Y1)* or *Bottom Axis (Y2)*.

When creating a bi-polar axis chart, it may be useful to change the chart type of the risers for one of the measures on an axis to differentiate it. Right-click the measure field in the Vertical bucket (or the Horizontal bucket if the axes have been swapped), point to *Shape*, and choose whether the chart type for that measure should be bar, line, or area. The following image shows a bi-polar axis chart in which the Cost of Goods field is represented by a line chart.

Another way to show multiple measure fields on separate axes is to use dual axes. Instead of splitting the chart into horizontal sections, one or more measure field is plotted against the y1 axis on the left, and the other uses the y2 axis on the right. To specify which axis a measure field should use, when the *Blended axis* option is selected, click the axis icon  next to the field in the measure bucket, or right-click the field and click *Left Axis (Y1)* or *Right Axis (Y2)*. Each of these axes can be styled separately from the Axis options on the Format tab. When using dual axes, take note of which axis is used for each measure, as the values displayed in the chart may visually appear to be closer than they are in reality.

The same options are available for horizontal bar, area, and line charts, but affect the x axis, or horizontal axis, instead.

Procedure: How to Format Axes

You can format the axes of your chart to customize the display of information, including labels (rotated and staggered), titles, and axis-specific fonts.

1. Create a chart using Db2 Web Query Designer, or open an existing Db2 Web Query Designer chart.

   Axes are used in bar, line, area, scatter, bubble, and circle plot charts.

2. On the Format tab, click *General* to open the quick access menu, and then click *Axis*.

   The options for editing your axes display.

   You can select the Y-axis or edit the X-axis. The axis selection determines where changes are applied.

3. On the X-axis, perform the following formatting tasks:

   a. In the Labels section, change the font format of the labels to bold.

   b. Expand the Title section and change the size of the font for the axis title to 16. Change this to bold as well.

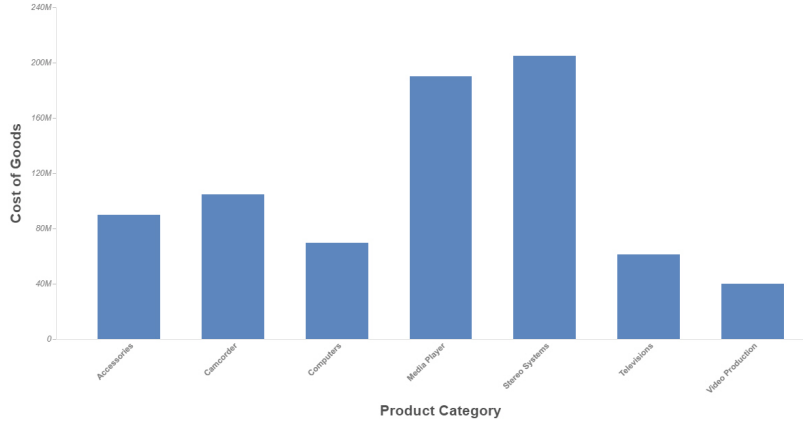
4. Select the Y-axis option and perform the following formatting tasks:

   a. Change the font format of the label to italic.

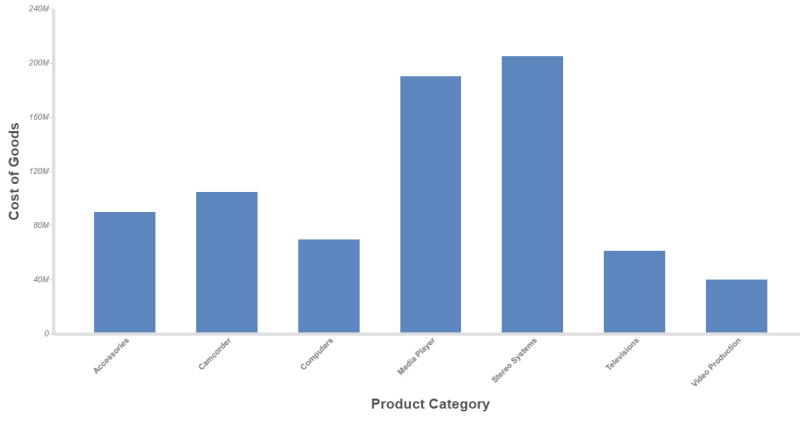
   b. Change the size of the font for the Title to 16. Change this to bold as well.

   When you preview the chart, you can see that styling on the axes has been modified, giving you a custom look and feel for your chart, as shown in the following image.

5. You can rotate the labels on the X-axis. In the Labels group, use the Rotation option to rotate the labels by 45 degrees, as shown in the following image.



6. You can also modify the line size of the axes. In the Lines group, use the Axis lines option to change the line size for both axes to 5. Making the axes lines bigger creates a more definitive frame, as shown in the following image.



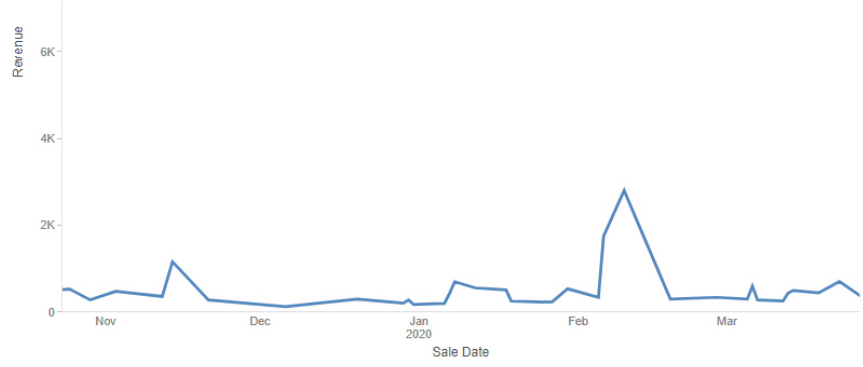
With the axes of your chart formatted, you can continue making modifications or apply similar formatting to the axes in other chart types.

Controlling the Display of Time-Based Axes

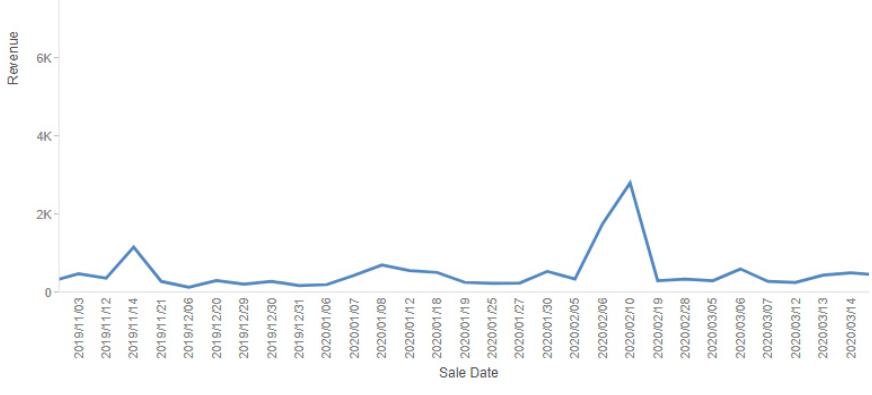
By default, when you create a chart that has a dimension on an axis, missing values are not displayed on that axis. For example, if you create a bar chart showing revenue by product category, but there are no revenue values, including zero, for televisions, then televisions will not appear on the horizontal axis in the bar chart.

However, when you create a line or area chart using a date or date-time field as one of the axes, this is not the case. In these chart types, when a date or date-time field is used, the time axis option is enabled by default. This option allows you to show the entire, continuous range of time encompassed by your data, even if there are missing values in between. Missing values are extrapolated based on the nearest values. The time axis option allows you to see changes in your data over time on a continuous scale, displaying date values more intuitively and making it easier to recognize gaps in your data.

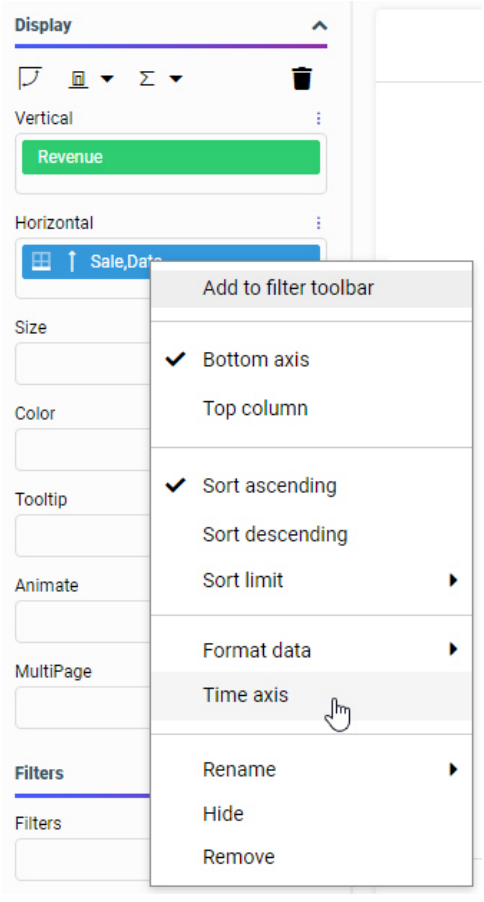
When the time axis option is enabled, the values in the chart are plotted along a continuous date axis, as shown in the following image.



Although there were no sales between December 6 and December 20 in the image shown above, those days occupy the same amount of space on the x-axis as the days in which there were sales, and the line is extrapolated for them. The same chart with the time axis option disabled is shown in the following image. Only dates with values in the data set of the chart display. Since not all dates appear in the chart, each existing date value is labeled on the axis.



To disable the time axis option and show only the date values in your data source, right-click the date or date-time field in the Horizontal or Vertical bucket of your chart and deselect *Time axis*, as shown in the following image.

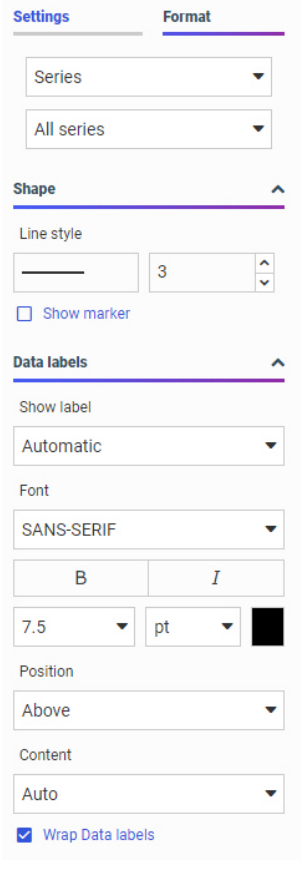


To re-enable the time axis option, right-click the date or date-time field and click *Time axis* again.

Formatting Series in a Chart

A series represents a set of related values in a chart. These could be different measure fields in a chart, or different dimension field values in a chart. You can format all series together, or format each separately, including color, shape, display options for labels, and other options, including the ability to hide overlapping labels. You can select a specific series in a chart to which to apply changes, or you can select *All Series*, which applies changes to all series in the chart.

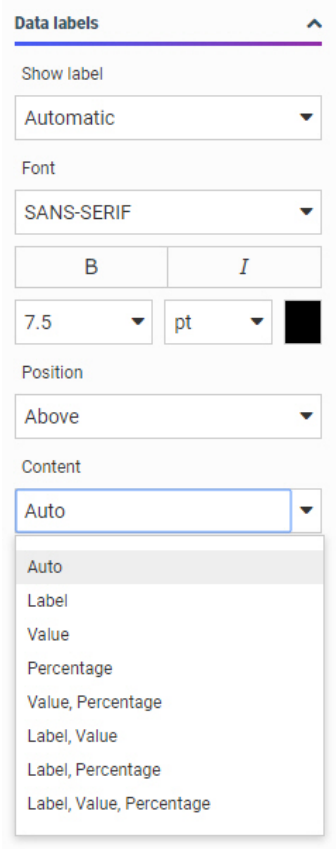
Having the ability to format by series gives you control over your content and allows you to customize display options at the series level. For example, you might want to color code a chart based on a range of values. You can also specify options for the data labels of the series. By default, these are enabled or hidden automatically depending on the chart type, but can be turned on or off. You also have the standard suite of font options, as shown in the following image.



Different kinds of charts allow you to make different series-level style changes. For example, in a bar, area, or line chart you can set the width of all bars, or change a series to display as a line or area instead of a bar or bar segment. In a ring pie chart, you can change the size of the hole in the middle when viewing the options for all series, and on a scatter plot or bar, area, or line chart, you can add and style a trend line with different formulas for all series or an individual series. Other chart types allow different styling changes.

Additionally, some series styling options are only available when modifying all series in a chart, or only available when editing a single series. For example, when creating a bar chart, you can set the bar width for all series, but not for a single series. On the other hand, you can change the fill color for a single series, but not for all series in the chart.

When working with series in a chart, you can also set an option to control the display of data labels in your chart. The default is Auto. This gives you the ability to specify how your data will be presented (for example, by Value or Percentage), which is particularly useful in cases where you want to save real estate when using data labels in your chart, or show additional information. You can click the drop down to access a full list of content options, as shown in the following image.



You can use the following terms to decide the best way to display the content of your data labels.

- **Auto.** The chart engine decides what data label information to show. This is usually the value.
- **Label.** Shows the series label of the riser, marker, or slice (same as legend label)
- **Value.** Shows the value of the riser, marker, or slice, using the numeric format of the field. For example, if the field defined in the master file is US Currency with two decimal places of precision, then that is what the dataLabel will be ($123.45).
- **Percentage.** Shows the percentage of the riser/slice based on the group to which it belongs.
- **Value,Percentage.** Shows the value of the riser, marker, or slice, with numeric formatting and the percentage of the riser/slice based on the group to which it belongs.
- **Label,Value.** Shows the series label of the riser, marker, or slice (same as legend label) and the value of the riser, marker, or slice, with numeric formatting.
- **Label,Percentage.** Shows the series label of the riser, marker, or slice (same as legend label) and the percentage of the riser/slice based on the group to which it belongs.
- **Label,Value,Percentage.** Shows the series label of the riser, marker, or slice (same as legend label), as well as the value of the riser, marker, or slice, with numeric formatting. It also shows the percentage of the riser/slice based on the group to which it belongs.

When creating a stacked bar, stacked area, or stacked line chart, you can also select the *Show stacked totals* option to show the summed total of all series at the top of each bar or sort-value point.

You can also Wrap Data labels, which allows you to truncate available chart space or show your data on multiple lines. The following examples show how the wrapping option works.

Example of WrapDataLabel=True:

"France

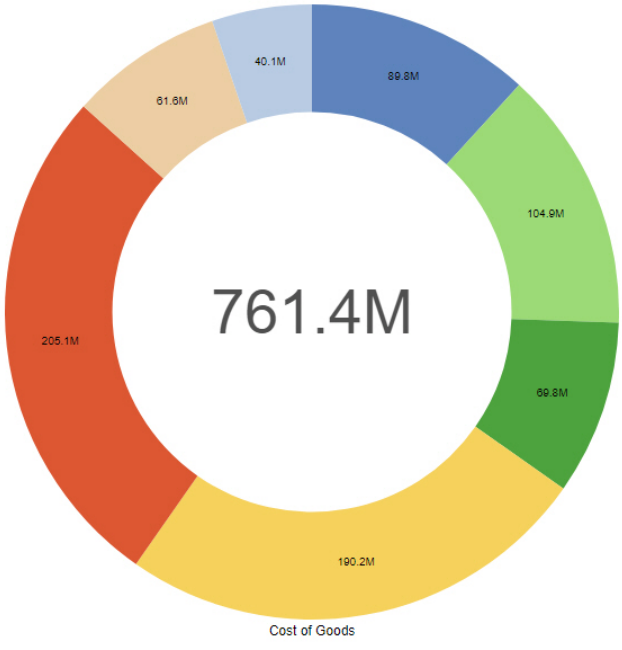
$123.4

23.4%"

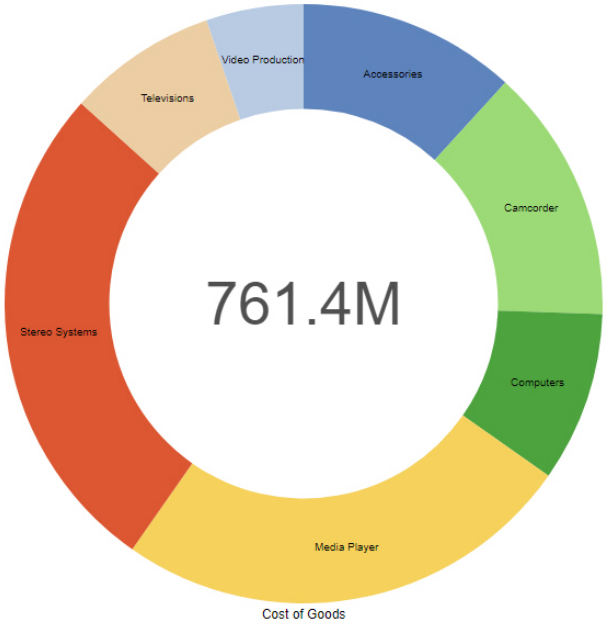
Example of WrapDataLabel=False:

"France, $123.4, 23.4%"

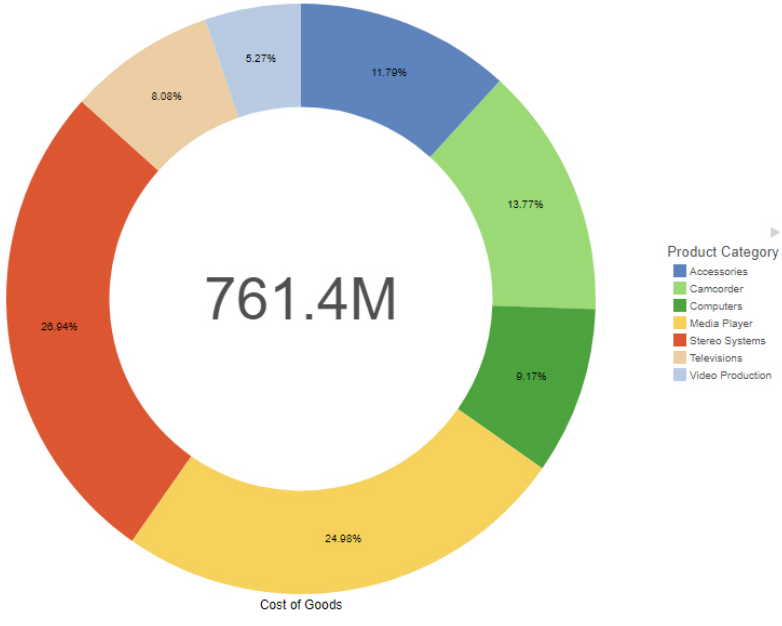
Specifically, the data label options allow you to determine what is shown when Show label is ON. For example, Label,Value,Percentage. If the option is set to Auto, the chart engine decides what it thinks is the best content to show. Typically, this is the value of the riser or slice. For example, on a basic pie chart, the Auto setting produces the following result.



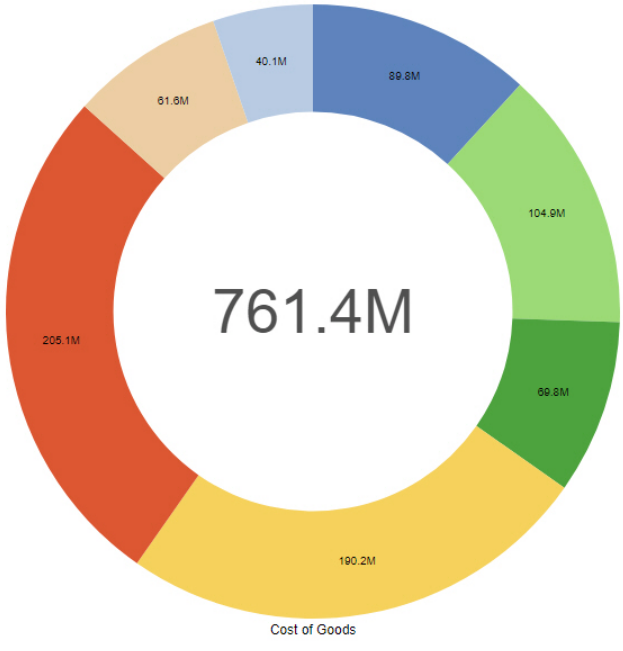
You have additional content choices. For example, you can choose Label, which corresponds to the series label that is shown in the legend. When you select the Label option, you also have the option of turning the legend off, so as not to duplicate the information that is displaying in your chart. The Label option is shown in the following image.



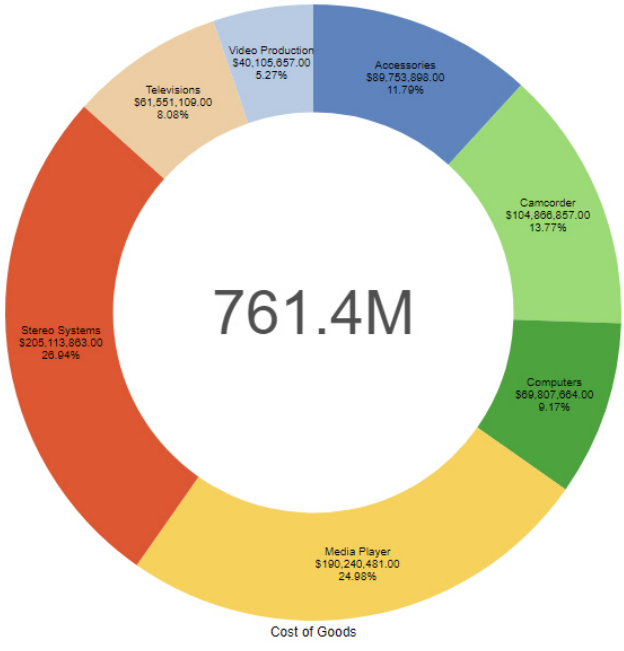
You can also choose Percent, which shows the percentage of the whole for each riser or slice. This is very useful for a pie or stacked bar chart, as these are the charts that are best used to visualize the concept of percentage-related content, as shown in the following image.



You can also display the Value, which is the riser/slice value. This is often the same thing you will get if you choose Auto.



There are also options for you to combine three choices, such as Value, Label, and Percent. This allows you to display all three items, as shown in the following image.



Click *Wrap Data labels* to display the content on three separate, unique lines, or clear the *Wrap Data labels* check box to display all label information on a single line.

Procedure: How to Format a Series

1. Open Db2 Web Query Designer. On the default Db2 Web Query Home Page, click *Visualize Data*.

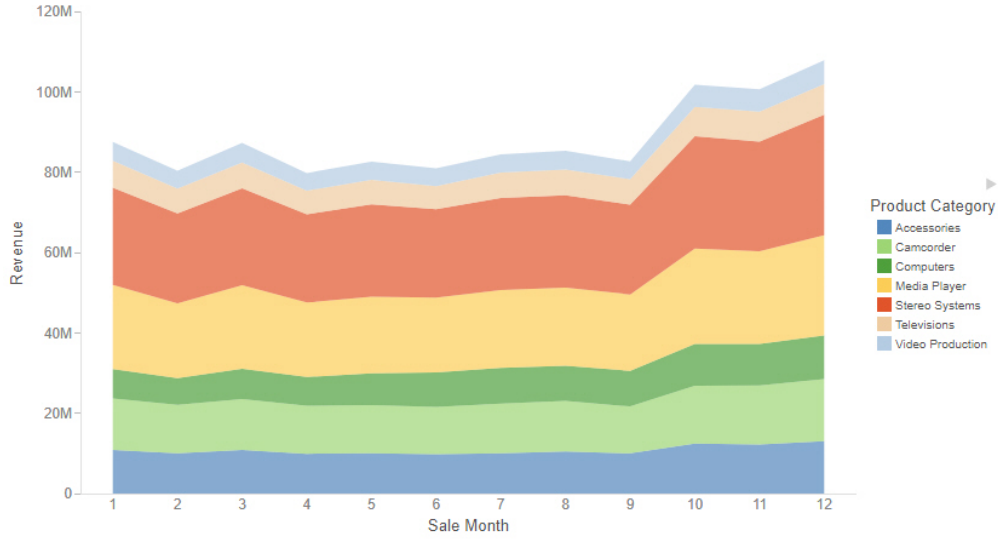
   Db2 Web Query Designer opens in a new browser tab.

2. Select a workspace and a data source available from that workspace.

   Once you select a data source, Db2 Web Query Designer loads with options to create a single content item.

3. Create a Vertical Stacked Area chart.

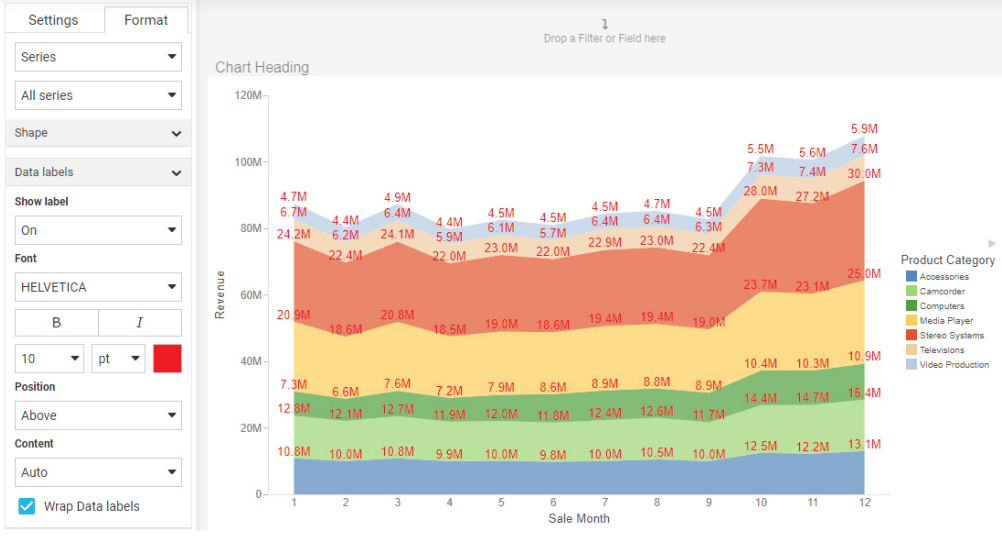
4. Add a measure to the Vertical bucket, a dimension (for example, a time based dimension with month or year values) to the Horizontal bucket, and another dimension to the Color bucket, as shown in the following image.



5. On the Format tab, open the quick access menu and then click *Series*.
6. In the Data labels section, in the Show label group, turn data labels on by changing the setting from Automatic to On.

   Since *All series* is selected by default, labels are displayed for every series in your chart.
7. Format the labels with 10 point, red font using the font options.

The values in the chart reflect your custom formatting, giving you a better view of your data, as shown in the following image.



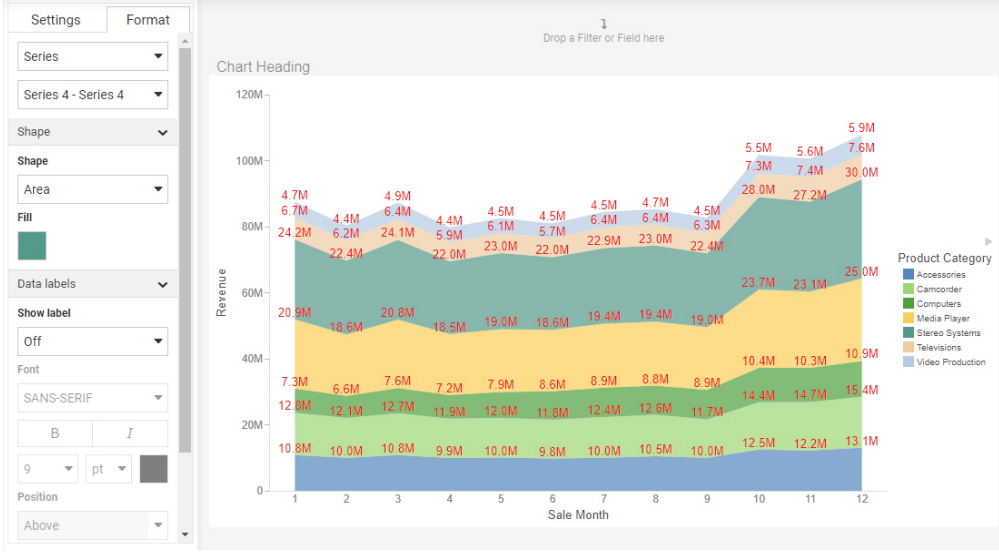
8. Change the color of one of the risers.

   a. From the series selection drop-down menu, on the Format tab, directly below the quick access menu, select a single series. Each series represents a value from the field in the Color bucket.

      If your chart contains multiple measure fields, then each series represents a measure field in addition to or instead of a dimension value.

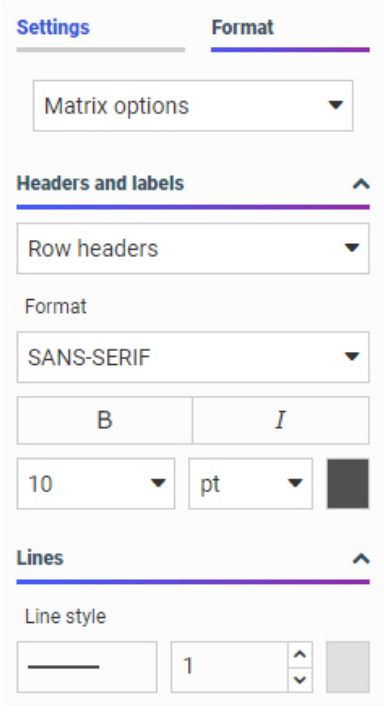
   b. In the Shape section, change the color selected for the Fill option to a color of your choice.

The selected series riser updates to show the new color, as shown in the following image.



Formatting Matrix Charts

If you are working with a chart type that supports a matrix format (for example, Matrix Marker, or another chart type utilizing matrix rows and columns), Db2 Web Query Designer provides a selection of formatting options that you can use to customize and enhance the styling of your chart. A matrix format is a grid that contains values based on the intersecting data points, which is useful for reviewing changes and trends over time. Available formatting options for matrix charts include *Headers and labels*, and *Lines*, as shown in the following image.



You can customize the row and column headers and their corresponding values in a matrix chart. Specifically, you can change the font type, font size, and color. You can also change the emphasis of the font using bold or italic styling. You can also change the alignment of row values text.

When working with lines in your matrix chart, you can change the line style (for example, solid or dotted) and the thickness. These formatting options allow you to make visible enhancements that will improve the appearance and presentation of your matrix charts.

Procedure: How to Format a Matrix Chart

To format a matrix chart:

1. Open Db2 Web Query Designer. On the default Db2 Web Query Home Page, click *Visualize Data*.

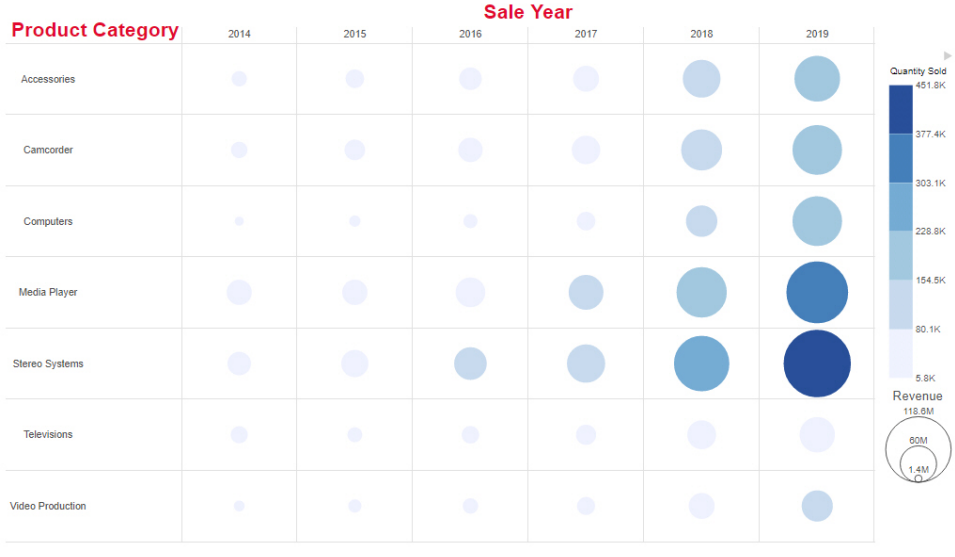
   Db2 Web Query Designer opens in a new browser tab.

2. Select a workspace and a data source available from that workspace.

   Once you select a data source, Db2 Web Query Designer loads with options to create a single content item.

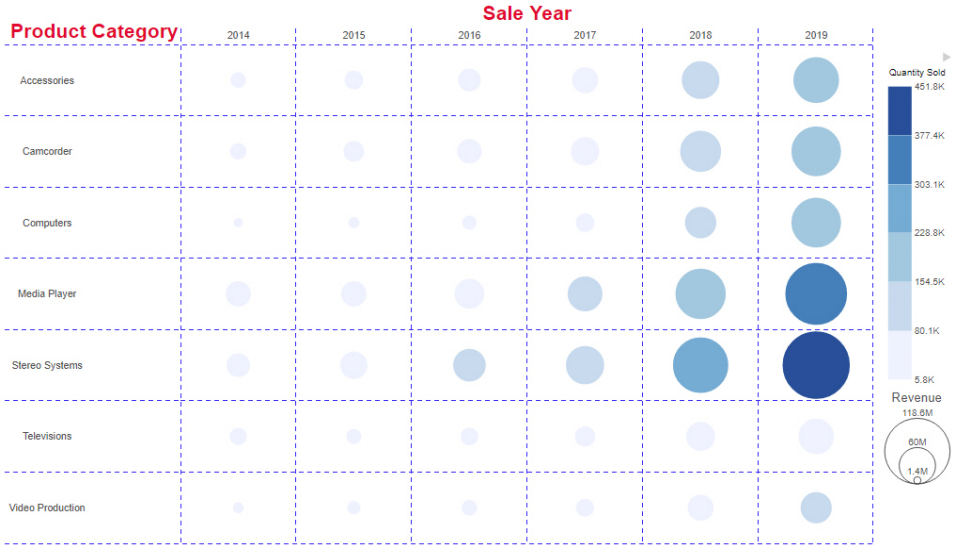
3. From the Content picker, select the *Matrix Marker* chart type.
4. Add two dimensions and two measures to the chart. These data fields should be placed in the Vertical, Horizontal, Size, and Color buckets.
5. On the Format tab, click *General* and then click *Matrix options* from the drop-down list.
6. Apply formatting changes for the matrix chart, including:
   a. Headers and labels, which allow you to customize the font options for row and column headers and values. Font options include font type, bold, italic, font size, and font color.
   b. Line style, which allows you to adjust the type, size, and color of the lines for the matrix chart.
7. Change the font being used for row and column headers to bold, red, and size 16 font.

   The updated matrix chart now displays customized row and column headers, as shown in the following image.



8. Using the options in the Lines section, change the line style to blue, dashed lines.

   The resulting matrix marker chart resembles the one shown in the following image.



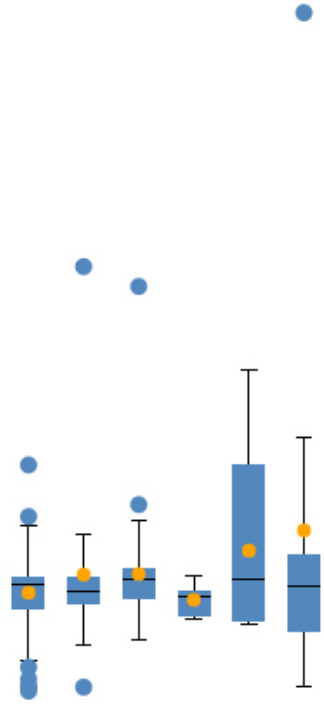
Formatting Box Plots

A box plot is a common chart type used to show key distribution information for a set of data points. A box plot displays outliers, the median, the upper and lower quartile, and the maximum and minimum with outliers excluded, by default. However, you can use the Box Plot options on the *Format* tab to show the mean, or average, as well. Additionally, you can change the display of the whiskers from lines to boxes, and change the style of the median and whisker lines.

To access the Box Plot properties when creating a box plot, click the *Format* tab and select *Box Plot options* from the Quick Access menu. The following options are available:

- **Show Mean.** Displays a marker at the mean point, which you can compare with the median to get an idea of the skewness of your data.

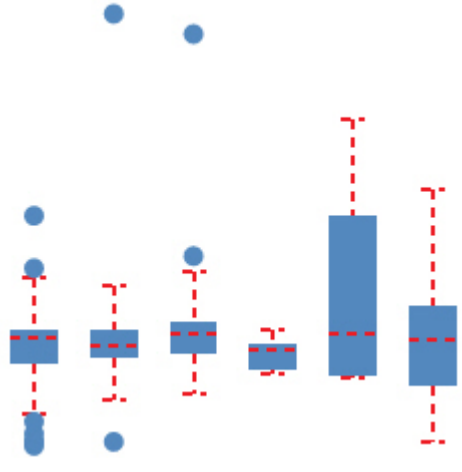
An example of a box plot with mean markers enabled is shown in the following image.



- **Show Hat as Box.** Changes the appearance of the whiskers in the box plot from lines to boxes.

An example of a box plot with the Show Hat as Box option enabled is shown in the following image.

- **Line style.** You can change the pattern of the median and whisker lines from a solid line to a dotted or dashed line, and change the width and color of the lines.



Procedure: How to Format a Box Plot

1. Open Db2 Web Query Designer. On the default Db2 Web Query Home Page, click *Visualize Data*.

   Db2 Web Query Designer opens in a new browser tab.

2. Select a workspace and a data source available from that workspace.

   Once you select a data source, Db2 Web Query Designer loads with options to create a single content item.

3. From the Content picker, select the *Statistical Boxplot* chart type.
4. Add a measure to the Vertical bucket and a dimension to the Horizontal bucket.

   A single measure value displays as a line in each column.

5. Use one of the following methods to generate a set of data for each column:

   - Add a dimension field to the Detail bucket. This field should provide multiple records for Horizontal bucket value.
   - Change the calculation option from Summary to Detail  . If you have a very large data source, this may generate too many records to evaluate in the box plot.

   A set of box plots appears on the canvas, showing indicators for outliers, maximum and minimum, median, and upper and lower quartiles.

6. On the *Format* tab, click *General* and select *Box Plot options* from the Quick Access menu.
7. Optionally, select the *Show Mean* check box to display a marker in each box plot indicating the location of the mean.
8. Optionally, select the *Show Hat as Box* check box to display the whiskers as narrow boxes on either side of the box showing the interquartile range.
9. Optionally, change the style of the median lines and whisker lines.

   Click the box showing an image of the line to change the line pattern to one of a variety of dashed and dotted lines. Use the spinner to change the width of the lines, in pixels. Click the color swatch to change the color of the lines.

   The box plot updates on the canvas as you make your changes.

10. Once you finish creating and formatting your box plot, save it, or convert it to a page to develop more content.

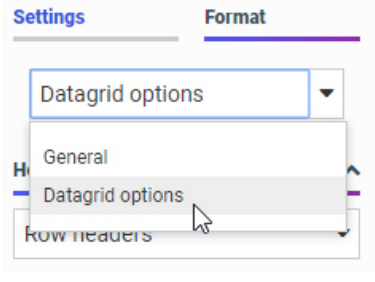
Formatting Data Grid Charts

A data grid is a type of chart that displays a tabular representation of your data, similar in structure to a tabular report. A data grid allows you to review data in a row and column format, similar to a printed report. Data grids are easy to create, and provide features such as a tooltip for each cell of the grid. Db2 Web Query Designer provides numerous options to style and format a data grid.

Values in a data grid can be sorted, and data grids can be saved for use on a page. A data grid is shown in the following image.

Product Category	Product Subcategory	Cost of Goods	Discount
Media Player	Blu Ray	$181,112,921.00	$10,895,633.29
Stereo Systems	Speaker Kits	$81,396,140.00	$4,954,243.27
	Home Theater Systems	$56,428,589.00	$3,943,920.23
Accessories	Headphones	$51,663,564.00	$3,516,913.33
Televisions	Flat Panel TV	$59,077,345.00	$3,478,828.52
Camcorder	Standard	$49,071,633.00	$3,214,786.74
Computers	Smartphone	$44,035,774.00	$2,790,775.51
Video Production	Video Editing	$40,105,657.00	$2,695,890.76
Stereo Systems	Receivers	$40,329,668.00	$2,643,045.39
Accessories	Universal Remote Controls	$36,037,623.00	$2,310,446.31
Computers	Tablet	$25,771,890.00	$2,018,134.59
Camcorder	Handheld	$20,576,916.00	$1,959,624.28
	Professional	$35,218,308.00	$1,933,997.25
Stereo Systems	iPod Docking Station	$26,119,093.00	$1,926,925.29
Media Player	Streaming	$5,064,730.00	$338,559.94
	DVD Players	$3,756,254.00	$258,593.13
Accessories	Charger	$2,052,711.00	$187,485.88
Televisions	CRT TV	$1,928,416.00	$118,654.68
Stereo Systems	Boom Box	$840,373.00	$62,739.39
Televisions	Portable TV	$545,348.00	$38,210.18
Media Player	DVD Players - Portable	$306,576.00	$26,356.05

You can format a data grid using the options on the Format tab. The Format tab contains two sets of options, General and Datagrid options, which you can access using the quick access menu, as shown in the following image.



The General section provides a set of options that are common to all chart types. These options are divided into three sections: Theme, Frame and background, and Other.

The Theme section provides a menu that allows you to select a StyleSheet to automatically format the data grid. You can select from a list of themes available with Db2 Web Query, or click *Custom* to select a StyleSheet from the legacy templates or your repository.

The Frame and background section includes the following options:

- **Background.** Allows you to select a color for the background area behind the data grid.
- **Frame.** Allows you to select a color for the chart frame. This option allows you to change the data cell fill color in the data grid.
- **Frame Border.** The Frame Border settings are not applied to data grids. To style the borders in the data grid, use the Border style settings under Headers and values in Datagrid options.

The Other section includes the following options:

- **Fit to container.** This option does not apply to data grids. It is used for bar, line, area, and scatter plot chart types.
- **Hide null groups.** When selected, if any rows or columns in the grid do not contain any data, they are hidden at run time.
- **Show null as zeroes.** When selected, cells for which no data is returned show a value of zero (0). When not selected, cells with no data appear blank, which is the default.

You can also select styling options that are specific to data grids. These are listed when Datagrid options is selected from the quick access menu on the Format tab. You can also access these options by right-clicking an area of the data grid and clicking *Style*.

The Datagrid options are divided into three sections: Headers and values, Background and padding, and Other.

The Headers and values section allows you to define the styling properties of the item selected from the Headers and values menu. You can set these properties for the row headers, column headers, cell values, and column totals. The Headers and values section contains the following options for each area of the data grid.

- **Format.** Allows you to select the font, text formatting, font size and units, and text color.
- **Alignment.** Allows you to set the text alignment to the left, center, or right side of the cells.
- **Border style.** Allows you select the line style (for example, solid, dashed, or dotted), thickness, and color of the cell borders.

The Background and padding section allows you to style the cells in the data grid by adding bands and increasing the cell padding. Options in this section include the following:

- **Row color.** Allows you to add bands to the data grid to make the rows easier to distinguish. Select the *Alternate row color* check box to add alternating bands to the data grid and select a color from the Color picker to style them.

- **Vertical padding.** Allows you to set the vertical padding, in pixels, between the text and borders of each cell.
- **Horizontal padding.** Allows you to set the horizontal padding, in pixels, between the text and borders of each cell.

The Other section allows you to add column totals to the data grid and freeze column and row headers. The options in this section are as follows:

- **Show column total.** When selected, adds a column total row to the data grid. This row can be styled by selecting *Totals* in the Headers and values section. Show column total is not selected, by default.
- **Freeze column headers.** When the data grid uses a vertical scrollbar, selecting *Freeze column headers* keeps the column headers in place while scrolling so that you can see which column each cell belongs to. When not selected, the column headers are not frozen when scrolling. Column headers are frozen, by default.
- **Freeze row headers.** When the data grid uses a horizontal scrollbar, selecting *Freeze row headers* keeps the row headers in place while scrolling so that you can see which row each cell belongs to. When deselected, the row headers are not frozen when scrolling. Row headers are frozen by default.
- **Fit to container width.** When this check box is selected, the grid spans the entire width of its container. When this check box is not selected, the grid width is only as wide as is needed to show each column header fully.

Procedure: How to Format a Data Grid

You use the options on the Format tab to customize a data grid. These options allow you to style the data grid to match your preferences while maintaining the simplicity and clarity of the data grid chart format.

1. Open Db2 Web Query Designer. On the default Db2 Web Query Home Page, click *Visualize Data*.

   Db2 Web Query Designer opens in a new browser tab.

2. Select a workspace and a data source available from that workspace.

   Once you select a data source, Db2 Web Query Designer loads with options to create a single content item.

3. From the Content picker, select the data grid chart type  .

4. Add fields to the data grid.
    a. In the Resources panel, with *Fields* selected from the sidebar, in the Dimensions area, expand *Product* and drag *Product,Category* to the Row field container.
    b. In the Measures area, expand *Sales* and drag *Cost of Goods* and *Revenue* to the Measure field container.
    c. In the Dimensions area, expand *Customer* and drag *Customer,Business,Region* to the Column field container.

    A basic data grid has been created, showing Cost of Goods and Revenue sorted by Product Category across Customer Business Region.
5. Add a header to the grid.
    a. Double-click the Chart Heading text.

        The text is highlighted and Rich Text Editor displays.
    b. Type *Regional Sales* into the chart heading area and click the X on the styling toolbar.

        The chart header is changed to *Regional Sales*.
6. Open the Format tab.
7. Change the background color of the cells to seafoam green.
    a. In the Frame and background section of the Format tab, click the color sample under Frame.

        The color picker opens.
    b. Click *More* to access the color wheel. Select seafoam green by clicking on the wheel in a location between cyan and green, and then using the brightness slider to select a light seafoam green color. Alternatively, type a hex code value into the text box. For example, #adebcc.
    c. Click *OK*.

        The data cells in the data grid now have a seafoam green fill.
8. Access additional styling options for the data grid. Open the quick access menu and select *Datagrid options*.
9. Make the across column headers bold.
    a. From the Headers and values drop-down menu, select *Column headers*.
    b. Click the *Bold* button to make the text bold.
10. Add pink bands to the grid.
    a. Expand the Background and padding section.
    b. Select the *Alternate row color* check box.

The rows now alternate between the seafoam green background and the default gray bands.

c. Click the color sample under the Alternate row color check box.

The color picker opens.

d. Select the pink color from the palette.

Now the data grid shows alternating seafoam green and pink rows.

11. Add column totals to the grid.

a. Expand the Other section.

b. Select the *Show column total* check box.

The column total row appears on the data grid.

12. Style the column row total by changing the text and border color to purple.

a. From the Headers and values drop-down menu, select *Totals*.

b. In the Format subsection, click the color sample to change the text color for the column totals.

c. Click *More* to access the color wheel, then select a shade of purple.

d. Click *OK*.

The column totals now show in purple text.

e. Add a purple border to the columns total row.

In the Border style subsection, click the color sample to open the color picker. From the Custom Colors palette, select the same purple color that you used for the text. This color was automatically saved and added to the Custom Colors palette.

f. Click *OK*.

The text and border for the column totals now use the same shade of purple.

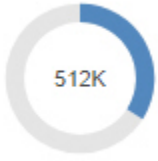
An example of what the resulting grid may look like is shown in the following image.

Regional Sales

Customer Business Region	EMEA		North America		Oceania		South America	
Product Category	Cost of Goods	Revenue	Cost of Goods	Revenue	Cost of Goo...	Revenue	Cost of Goods	Revenue
Accessories	$47,667,849.00	$68,812,972.66	$37,497,499.00	$54,160,885.45	$210,350.00	$307,271.64	$4,378,200.00	$6,327,208.78
Camcorder	$55,719,355.00	$82,072,171.39	$43,674,921.00	$64,321,724.39	$220,053.00	$335,357.69	$5,252,528.00	$7,736,448.77
Computers	$34,948,949.00	$52,021,126.36	$31,290,768.00	$46,016,670.36	$209,404.00	$303,155.55	$3,358,543.00	$4,975,529.85
Media Player	$101,282,350.00	$131,149,716.01	$79,074,473.00	$102,126,619.99	$475,372.00	$614,525.95	$9,408,286.00	$12,182,197.41
Stereo Systems	$109,228,523.00	$155,135,141.39	$85,362,237.00	$121,223,155.58	$481,962.00	$681,320.76	$10,041,141.00	$14,255,315.79
Televisions	$33,216,062.00	$42,288,326.80	$25,181,792.00	$32,072,458.16	$149,789.00	$190,177.46	$3,003,466.00	$3,830,170.39
Video Production	$21,304,481.00	$30,836,679.29	$16,726,755.00	$24,225,768.90	$90,544.00	$130,744.67	$1,983,877.00	$2,860,083.76
TOTAL	$403,367,569.00	$562,316,133.90	$318,808,445.00	$444,147,282.83	$1,837,474.00	$2,562,553.72	$37,426,041.00	$52,166,954.75

Customizing a Gauge Chart

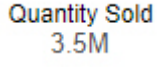
A gauge is a simple chart that allows you to display basic KPI values. You can choose to display these values with a standard or simplified dial graphic, or alone, as text only. The default, simple, gauge type is shown in the following image.



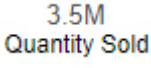
You can change the gauge type from the display options, above the buckets on the *Settings* tab. Use the default, Simple option to show a simple gauge dial, use the Circular option to show a gauge dial with a pointer and tick marks, or use the KPI option to show text only.

When you create a gauge, the Gauge Properties option becomes available on the *Format* tab. You can change the following properties of the gauge label and value text:

- Label
  - **Show label.** Select this check box to show the name of the measure field represented by the gauge. This text only displays when using the Circular or KPI display options. For example, the following image shows a KPI gauge with the label position set to *Top*.

    The following image shows a KPI gauge with the label position set to *Bottom*.

  - **Position.** You can choose to place the measure label above or below a circular or KPI gauge.
  - **Font.** Change the typeface, font style, size, and color of the label text as it displays in a circular or KPI gauge.
- Value
  - **Show value.** When creating a circular gauge, select this check box to show the gauge value as text, or clear it to hide the text and only show the value graphically. The simple and KPI gauge types always show the value text.

- **Font.** Change the typeface, font style, size, and color of the value text as it displays in the gauge. When using the simple gauge type, you can also leave the *Enable font autosize* check box selected to have the value text automatically resize to fill the inside of the gauge, or clear the *Enable font autosize* check box to set a consistent font size for the value text.

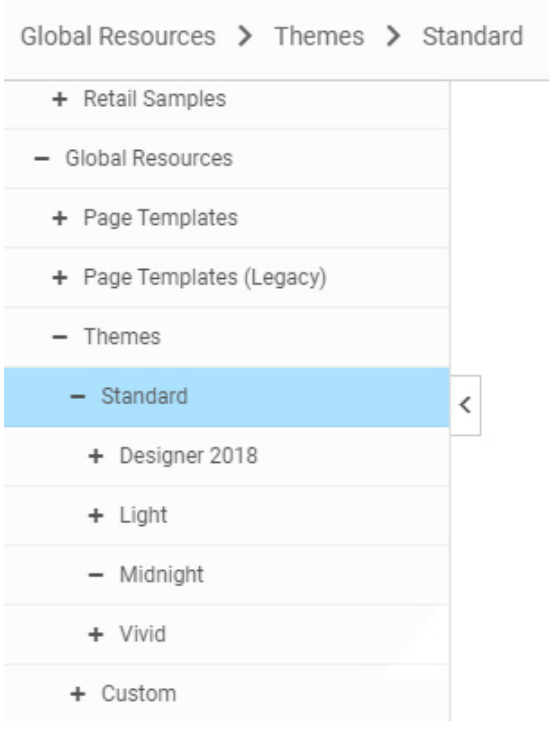
Adding a Theme to a Chart

A theme is used to determine the coloring and hues that display in the charts you configure using Db2 Web Query Designer. For example, the default border color and chart colors are determined by the theme.

When creating stand-alone content, the default theme is Designer 2018. When you turn the visualization into a page by adding a second new content item, the theme used for the chart is applied to the page. When you add items to the page, either by creating them or adding them as external content, the page theme is used as the default for all content items. You can then change the theme for each individual item.

You can use one of the themes included with Db2 Web Query, or you can create your own theme. For example, you may want to apply a corporate standard theme to your chart. You can add and change themes to suit your requirements (for example, branding).

Available themes that are called by Db2 Web Query Designer are located in the Themes folder in the Global Resources area, accessible from the Workspaces tab of the Db2 Web Query Home Page, as shown in the following image. Custom themes can be added to folders within the Custom folder.



Supported formats for themes include .css and .sty. A .css theme file is used to style a page, while .sty file is used to style content such as charts and reports. When files called theme.css and theme.sty are placed into the same folder in the custom themes folder of the Global Resources area, they are available for selection in Db2 Web Query when editing page components and content items. The two files are associated, so when the .css theme file is applied to a page, the associated .sty theme file is applied to new content in that page, by default. Similarly, if you select a theme for a chart, which uses the .sty file, then when you convert to a page, the associated .css file is used as the default page theme.

You can develop your own theme using the Db2 Web Query text editor and then access it in Db2 Web Query Designer. You can customize the .sty theme file used for charts and reports by specifying a set of default property values in it.

Tip: You can use the code from an existing theme as a model when creating a new theme.

Note: Charts and reports created for use on pages can use a transparent background to allow the defined background color of the page containers to show through. Since the themes used for charts and reports (.sty files) can be associated with themes for pages (.css files), you can coordinate the background, text, and element colors used in both themes to create content with unified styling. At design time, the page theme associated with the chart or report theme is used for the canvas background. This is for visibility purposes only, and shows how the chart or report will appear when added to a page with the associated theme. The stand-alone chart or report does not include this background.

If a chart or report is run stand-alone instead of being added to a page, the run-time view displays a white background only. This means that if, in order to display on a dark colored page, the font color in the selected theme is defined as white and uses a transparent chart background, then the text will not be visible on the white preview background. An example of such a theme is the Midnight theme, provided as one of the default themes in the Global Resources. To view the white text, build your chart or report on the canvas, add it to a page container with a dark background, or change the chart background color from the Format tab. Note that a non-transparent chart background is layered in front of the panel background when the chart is part of a page.

Procedure: How to Add a Theme to a Chart

You can add a theme to a chart to color the background and components of your chart. If the chart is in a page, the default theme is the one used in the page. If the content is stand-alone, so that there is no page from which to inherit the theme, the default theme is called Designer 2018.

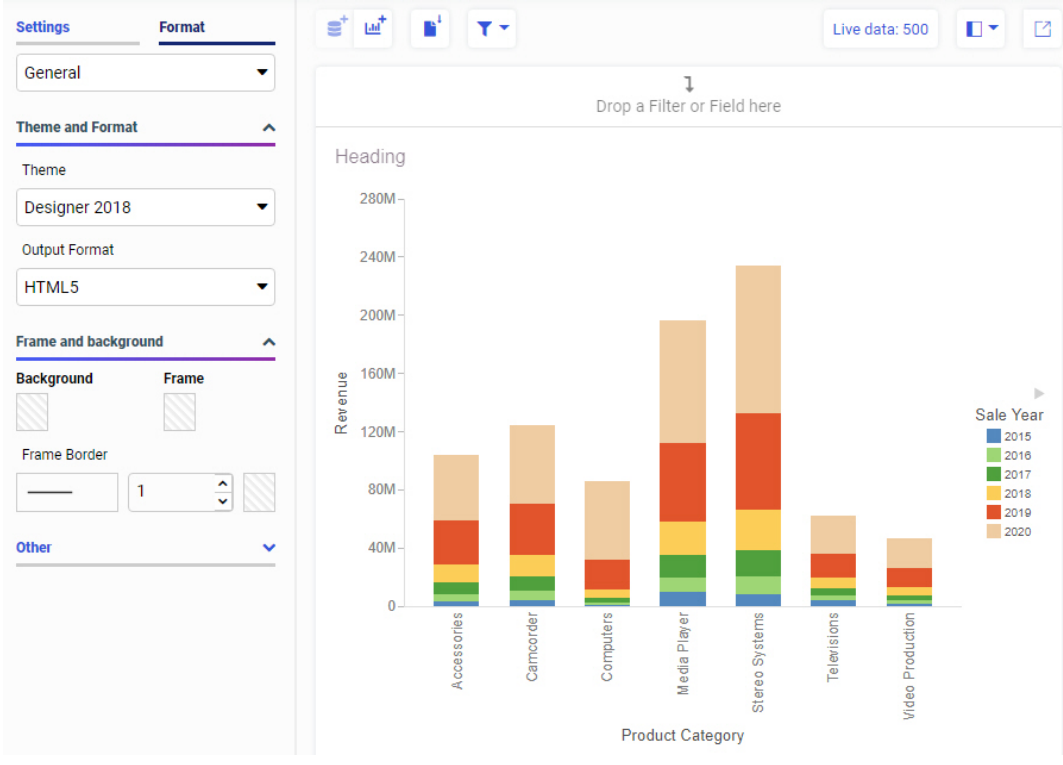
1. Open Db2 Web Query Designer. On the default Db2 Web Query Home Page, click *Visualize Data*.

   Db2 Web Query Designer opens in a new browser tab.

2. Select a workspace and a data source available from that workspace.

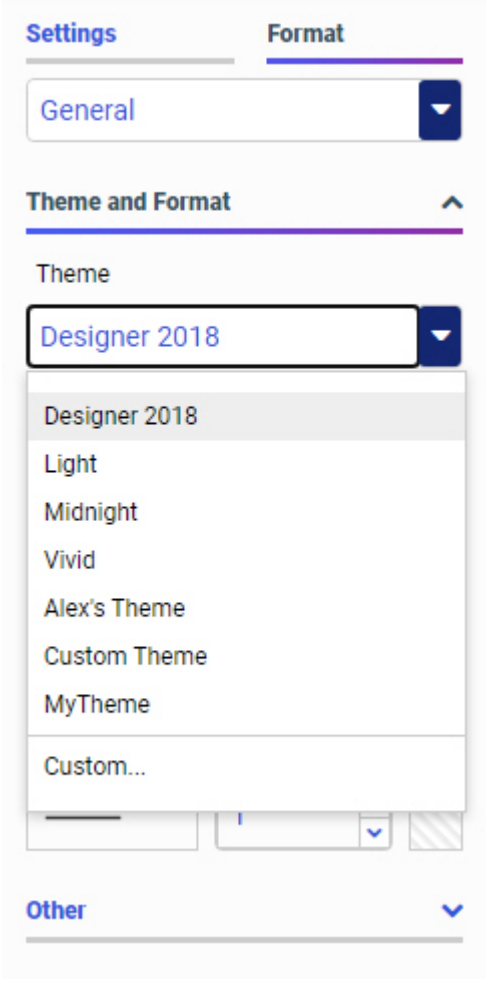
   Once you select a data source, Db2 Web Query Designer loads with options to create a single content item.

If you start creating content without changing the theme, the default theme is used, as shown in the following image.



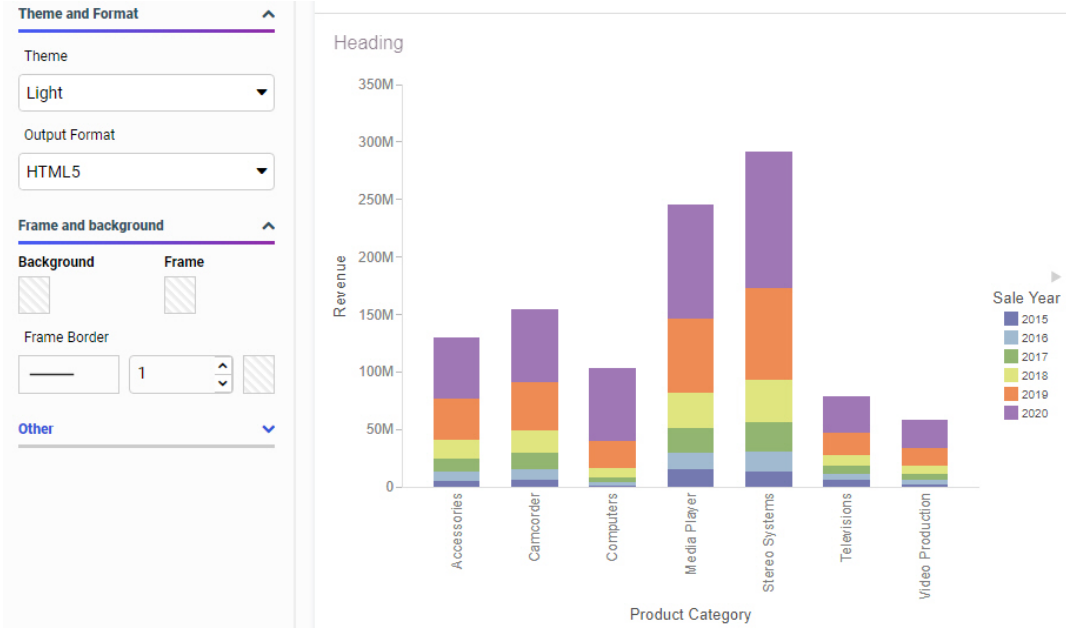
3. On the Format tab, with the General option selected from the quick access menu, in the Theme and Format section, open the Theme drop-down menu.

A list of available themes is displayed. As shown in the following image, you can choose from the Designer 2018, Light, Midnight, and Vivid themes that are included with Db2 Web Query, a custom theme added to the Global Resources area, such as the themes Alex's Theme, Custom Theme, or MyTheme shown in the image, or click *Custom* to select a legacy theme or a theme saved to a workspace folder.



4. Select another theme from the list (for example, Light) to change the theme.

The color of the background and chart components changes based on the selected theme, as shown in the following image.



5. Click *Add Visualization* on the Visualization toolbar to add another component to the visualization.

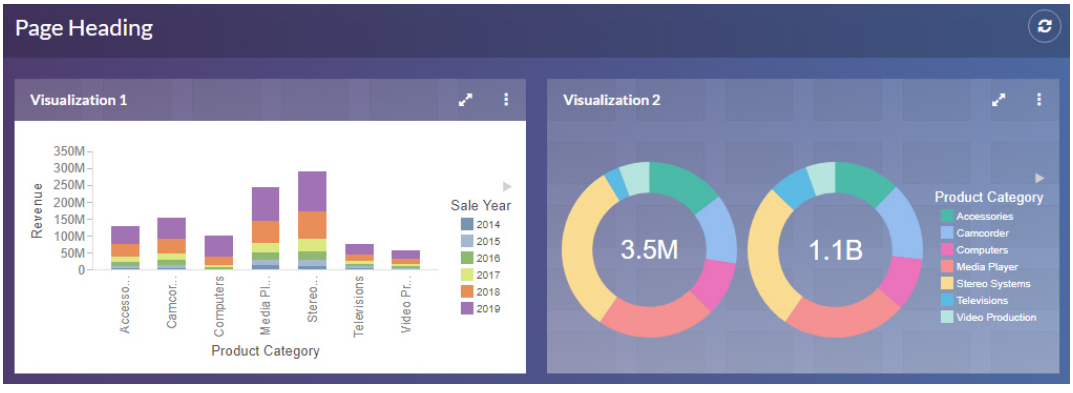
   The visualization transforms from a single content item into a page. Notice that the page adopts the theme that was used for the original content item. Additionally, the content item now has a theme of *Inherit Page Theme*, so that if you change the theme of the page, the theme of the content item changes along with it.

6. Add fields to the new chart to create a second content item. Notice that it also initially uses the same theme as the page.
7. Click the page toolbar or select the Visualization item from the outline to select the entire visualization.
8. Click the *Format* tab select a different theme from the Theme drop-down menu, for example, *Midnight*.

   Notice that the theme of both content items have also changed to match the page, since they have a theme setting of *Inherit Page Theme*.

9. Select one of the items on the page and, on the *Format* tab, with the *General* area selected, change the theme.

The content item whose theme you explicitly set has changed, while the second item, for which a theme was not explicitly selected, still uses the theme used for the page, as shown in the following image.



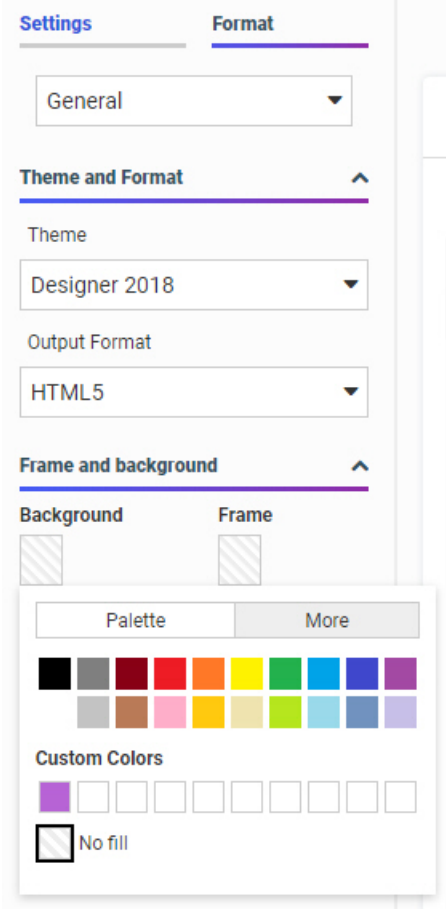
Adding Color to Charts

By adding color to your chart components, you can change the way information is perceived and plays a large role in the effectiveness of your chart.

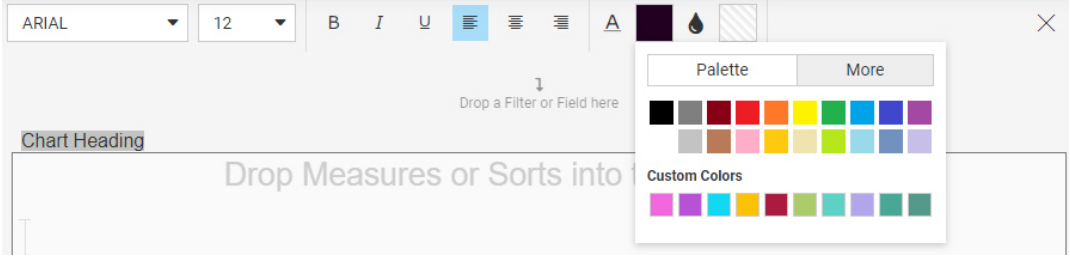
Color adds contrast to your charts, giving you an advantage in presenting unique, well-balanced content. You can use color to highlight a specific aspect or outcome on your chart. Db2 Web Query Designer provides a color picker to add color and style your chart.

You can access the color picker in two primary ways: on the Format tab and at the top of the canvas when formatting headers and footers. Using these options, you can change the color of different components to style your chart. You can indicate color values and ranges to highlight data. You can color a chart component (for example, a header or axis), text, or even add colored lines to accentuate the background grid of your data. You can also change the theme, which changes the color palette and background of your chart.

The following image shows an example of color options that display on the Format tab (with the palette exposed), which you will also see in other areas where color formatting is supported:

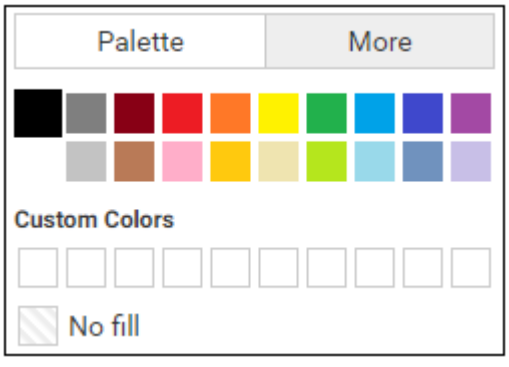


The following image shows the options that display at the top of the canvas (with the palette exposed) when working with headers and footers.



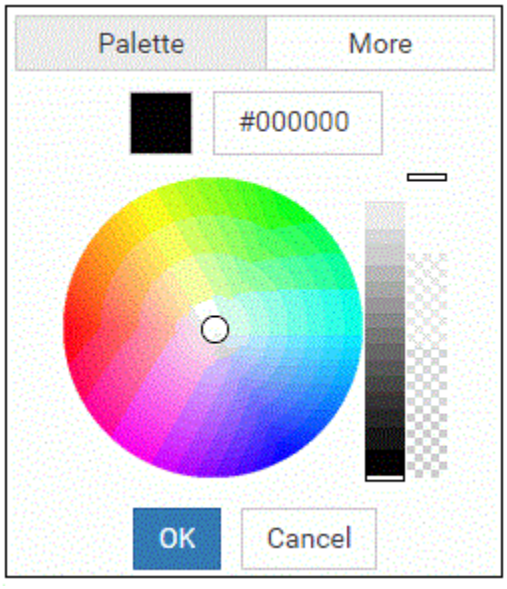
Note: When specifying a theme, you can use the default or specify another one. The colors stored for the theme are part of the underlying .css or .sty file, which contains the color schemes.

In Db2 Web Query Designer, the color picker supports a colorspace and a palette-based approach, as shown in the following image.



You can access the color picker from any of the sections on the Format tab. You can also access the color picker when working with headers and footers. When you access the color picker, the color picker displays the Palette tab, by default. From this tab, you can select from up to 20 pre-defined color options. You can also select the *No Fill* option, which displays the selected content as transparent. This is particularly useful in cases where you might want to prevent (or hide) the display of information.

The More tab allows you to choose a custom color by interacting with a hue wheel and the color value field, as shown in the following image.

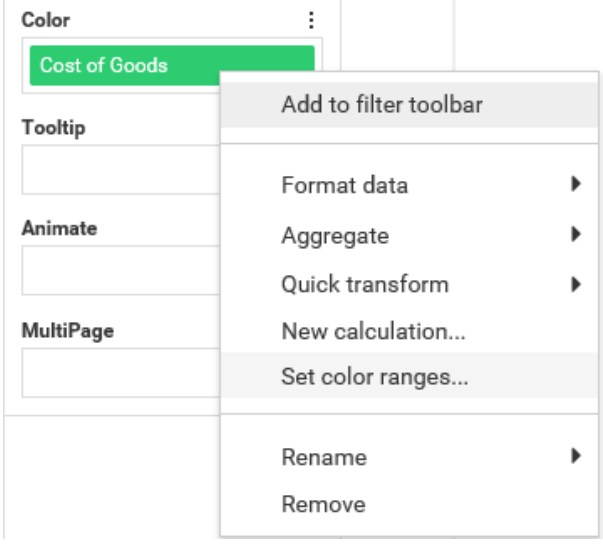


You can specify an exact color code (hexadecimal or HTML) by entering it in the color value field located at the top of this tab, and also specify transparency by using the transparency slider.

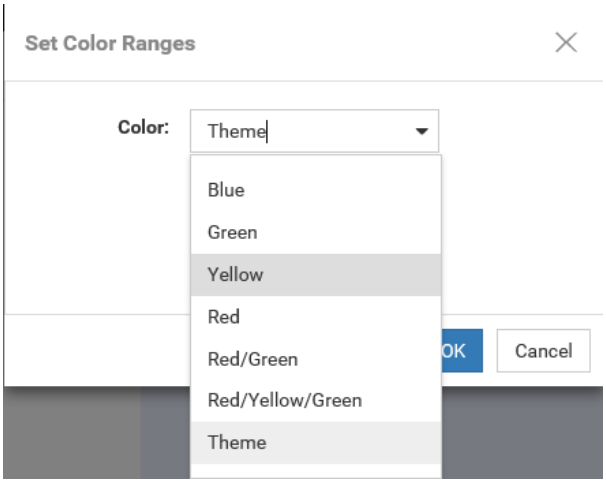
Note: When a custom color is selected and you click *OK*, the color is automatically added to the Custom Colors section in the Palette tab.

You can also set a color range for a measure in your chart. This allows you to specify hues or ranges of color for use in your chart. In cases where Theme is not selected, the color specification overrides what is available in the theme. The color that you select dictates the legend, which in turn displays the various chart components, based on the colors and measurements specified.

To change the color scale options, right-click a measure in the Color bucket and select *Set color ranges*, as shown in the following image.



This invokes a new dialog box, Set Color Ranges, where you can select a color range for your chart, as shown in the following image.



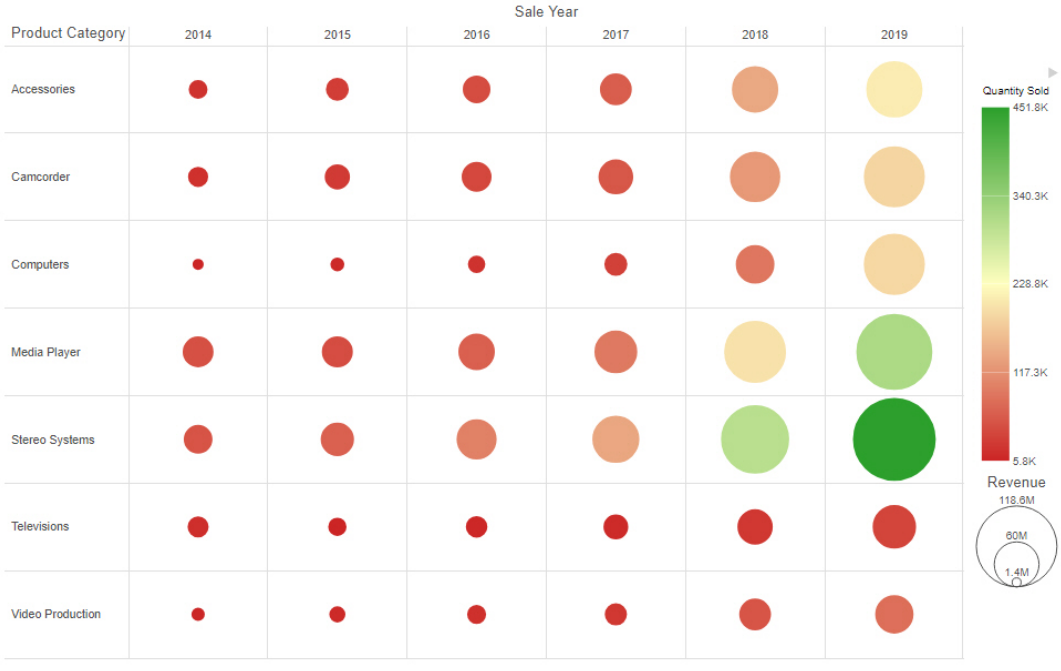
When you make a selection, you can override the color schemes that are available from the theme of your chart. Theme is selected, by default. You can select a different color range, such as Green or Red/Orange, from the list of options, which gives you more control over how color is used in your chart to create contrasts between various aspects. For example, if your chart displays different temperature values using a measure in the Color bucket, you may wish to use the Red/White/Blue option to intuitively show higher temperature values in red and lower ones in blue

If you change the color range to something other than Theme, it is written as inline styling in the .fex file. Inline styling always overrides what is in the StyleSheet because it is listed after it in the .fex file. In this case, the last setting indicates which styling takes precedence. When the color range is set back to Theme, the inline styling is removed so the behavior returns to the theme's settings.

This behavior does not affect your ability to change themes on the Format tab. However, if you change the theme with an inline setting in place, the settings of the Theme will still be overridden by the inline settings and the color scale in the legend will not be affected. The current procedure only respects the current theme's settings if the color range setting is set to Theme.

In the Set Color Ranges dialog box, you can also select *Continuous* or *Discrete* to determine how the color scale is generated. When Continuous is selected, the color scale is a gradient, and each color in the color scale represents a different value. When Discrete is selected, the color scale is divided into segments. Each color in the color scale represents a range of values.

The following image shows a matrix marker chart that uses the Red/Yellow/Green color scale with the Continuous option selected.



The Continuous option creates a more granular color scale, allowing you to see slight differences between similarly colored chart components.

The following image shows the same chart, with the Discrete option selected.

The Discrete option creates identifiable groups based on sections of the color scale.

When using the Theme color scale option, the default color scale type and number of segments in discrete mode are dependent on the values of the colorScale property in the theme that you are using. For example, if 5 colors are listed for the colorScale property in StyleSheet being used as your theme, then 5 colors display in the color scale when the discrete option is used.

Procedure: How to Add Color to Your Chart

To add color to your chart:

1. Open Db2 Web Query Designer. On the default Db2 Web Query Home Page, click *Visualize Data*.

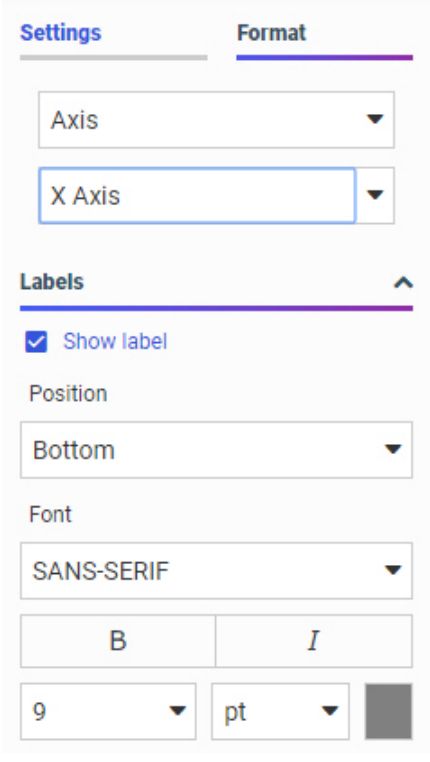
   Db2 Web Query Designer opens in a new browser tab.

2. Select a workspace and a data source available from that workspace.

   Once you select a data source, Db2 Web Query Designer loads with options to create a single content item.

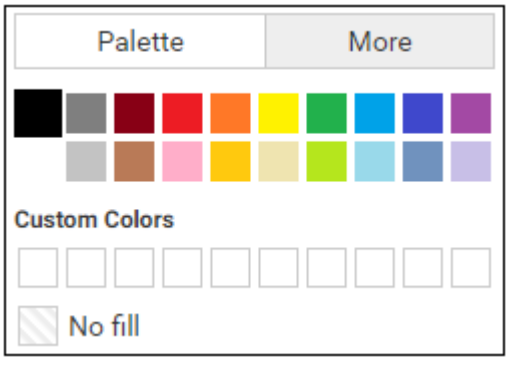
3. Add one or more measures and dimensions to your chart.

4. On the Format tab, expand the quick access menu and then click *Axis* from the drop-down list, as shown in the following image.

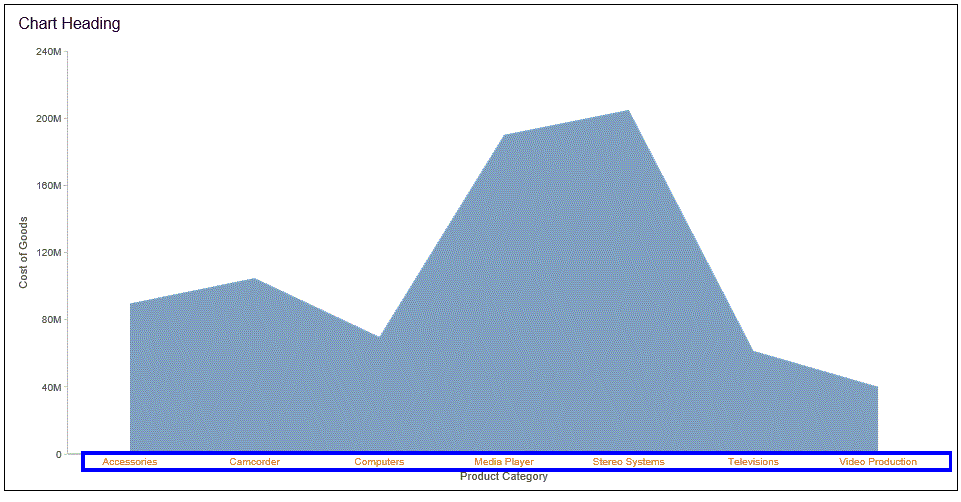


5. In the Font section, click the color sample.

   The color picker displays, as shown in the following image.



The text color you select is displayed for the values on the specified axis (for example, x-axis), as shown in the following image.



Procedure: How to Change the Color Scale in a Chart

1. Open Db2 Web Query Designer. On the default Db2 Web Query Home Page, click *Visualize Data*.

   Db2 Web Query Designer opens in a new browser tab.

2. Select a workspace and a data source available from that workspace.

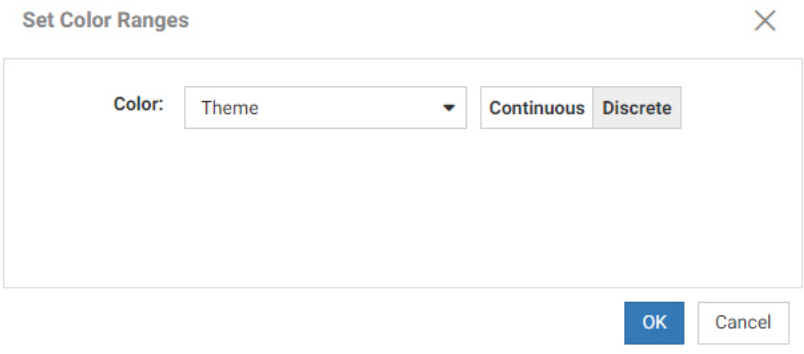
   Once you select a data source, Db2 Web Query Designer loads with options to create a single content item.

3. Add one or more measures and dimensions to your chart.
4. Add a measure to the Color bucket.

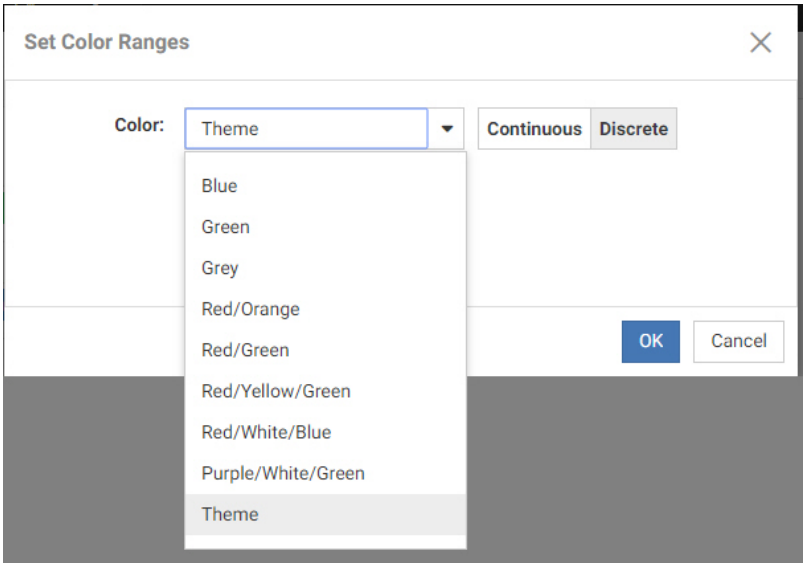
   Many different chart types generate a color scale from the Color bucket. Exceptions include the ring pie and data grid chart types.

5. Right-click the measure field in the Color bucket and click *Set color ranges*.

The Set Color Ranges dialog box displays, as shown in the following image.



6. From the list of colors, select a color range, as shown in the following image.



7. Optionally, select *Continuous* or *Discrete* to determine how the color scale is generated.

   When Continuous is selected, the color scale is a gradient, and each color in the color scale represents a different value.

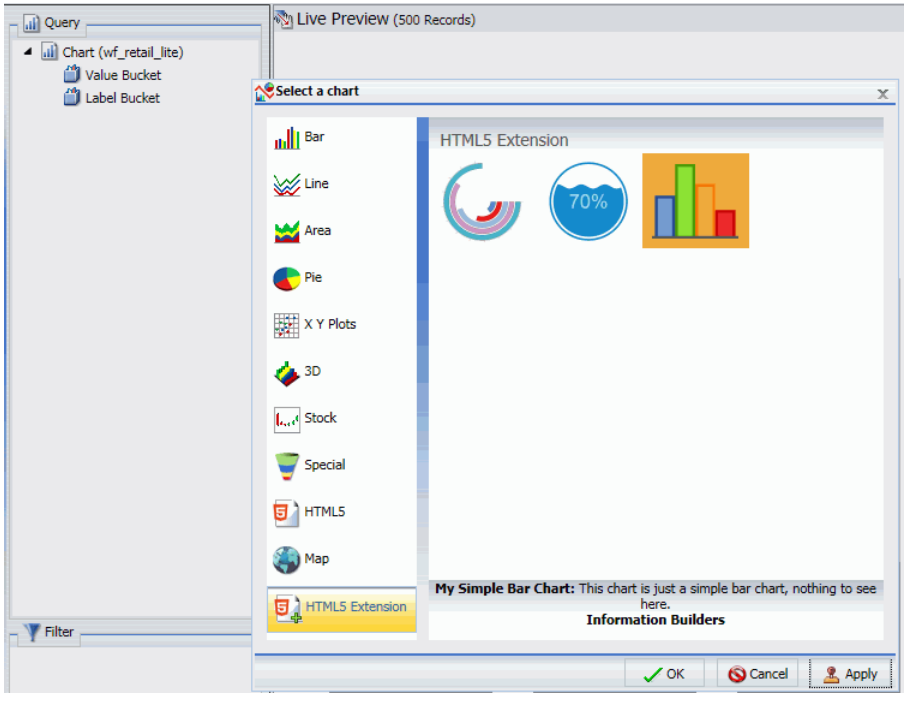
   When Discrete is selected, the color scale is divided into segments. Each color in the color scale represents a range of values.

8. Click *OK*.

   Note the change in the color and hues in your chart.

Using Your Extension in a Db2 Web Query Request

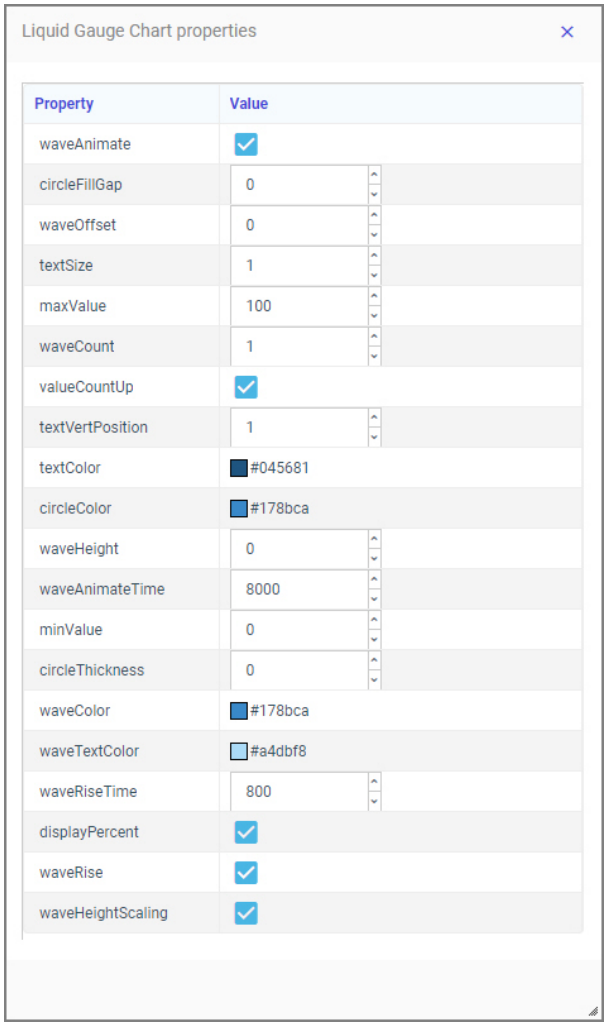
If you have installed and configured your extension as described, your extension will be available for use in the Db2 Web Query tools as a chart type in the *Other* format category under *HTML5 Extension*, as shown in the following image.



When creating a chart using Db2 Web Query Designer, chart extensions are available in the Custom category when you expand the chart picker, as shown in the following image.

The attribute categories you defined in the dataBuckets object of your extension are available in the Query pane in InfoAssist or Display panel in Designer.

Additionally, in Db2 Web Query Designer, the properties defined in the propertyAnnotations object are available on the Format tab, in the Other section, when General is selected in the Quick Access menu. Clicking *Extension properties* opens the Extension properties panel, where you can make changes to the available properties, as shown in the following image, which shows properties for the liquid gauge chart extension.



The following syntax is added in the FOCEXEC:

- The LOOKGRAPH value is EXTENSION.
- The actual extension to use is identified in the chartType property of the *GRAPH_JS block in the StyleSheet. For example, for a liquid gauge chart:

```
*GRAPH_JS
    chartType: "com.ibi.liquid_gauge",
```

- Each custom attribute category name is prepended with a greater-than character (>). For example, for a simple bar chart that has one label field and four value fields:

```
TYPE=DATA, COLUMN=N1, BUCKET= >labels, $
TYPE=DATA, COLUMN=N2, BUCKET= >value, $
TYPE=DATA, COLUMN=N3, BUCKET= >value, $
TYPE=DATA, COLUMN=N4, BUCKET= >value, $
TYPE=DATA, COLUMN=N5, BUCKET= >value, $
```

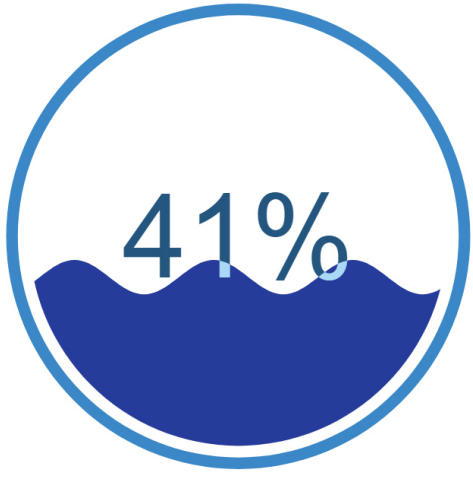
- Extension chart properties are listed under the extensions:*extension_name* object. For example, for a liquid gauge chart with the number of waves set to 3 and the wave color set to a shade of dark blue, the properties appear as follows:

```
"extensions": {
    "com.ibi.liquid_gauge": {
        "waveCount": 3,
        "waveColor": "#083f9e"
    }
}
```

The following is a sample request using the liquid gauge extension.

```
GRAPH FILE wf_retail_lite
SUM PCT.WF_RETAIL_LITE.WF_RETAIL_SALES.QUANTITY_SOLD
BY WF_RETAIL_LITE.WF_RETAIL_GEOGRAPHY_CUSTOMER.BUSINESS_REGION
WHERE_GROUPED WF_RETAIL_LITE.WF_RETAIL_GEOGRAPHY_CUSTOMER.BUSINESS_REG
ION EQ 'North America'
ON GRAPH PCHOLD FORMAT JSCHART
ON GRAPH SET LOOKGRAPH EXTENSION
ON GRAPH SET AUTOFIT ON
ON GRAPH SET STYLE *
TYPE=DATA, COLUMN=N2, BUCKET= >value, $
*GRAPH_JS_FINAL
"chartType": "com.ibi.liquid_gauge",
"extensions": {
    "com.ibi.liquid_gauge": {
       "waveCount": 3,
       "waveColor": "#083f9e"
    }
}
*END
ENDSTYLE
END
```

Run the chart. The output is shown in the following image.



Configuring the Automatic Refresh Option for Charts

Db2 Web Query Designer allows you to integrate real-time streaming data with your charts using the Automatic refresh option. For example, for IoT analytics applications, if you configured a connection to a streaming data source using the Kafka adapter, the Automatic refresh option can be enabled to update your chart dynamically at a specified interval (in seconds). Depending on your specific use case or requirements, you can configure multiple charts using the Automatic refresh option and add them to assembled pages. Each chart will refresh independently with updated data based on the specified refresh rate.

Considerations

The Automatic refresh option is supported for all chart types, except for maps (for example, Proportional Symbol and Choropleth maps). The Automatic refresh option is not available for reports in Db2 Web Query Designer. In addition, this option is not included in InfoAssist. Automatic refresh is only supported for stand-alone charts. If you convert the chart to a page, a warning appears, alerting you that automatic refresh will not be carried over.

Procedure: How to Enable and Configure the Automatic Refresh Option for a Chart

1. Create a new chart in Db2 Web Query Designer. To best utilize the automatic refresh feature, use a streaming data source, such as one using the Kafka adapter.

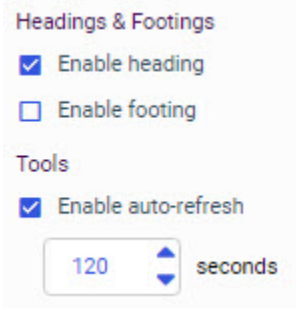
2. Choose a chart type from the chart picker, as shown in the following image.

3. Add measures and dimensions according to your requirements by dragging them onto the canvas.

   Note: You can also double-click a measure or dimension to add it to the relevant bucket or drag it into the relevant bucket.

4. Apply any required formatting or styling to your chart (for example, adding a header or footer).

5. To turn on automatic refresh, on the Settings tab, expand the Content section. Select the *Enable auto-refresh* check box, as shown in the following image.



6. By default, the refresh interval is set to 120 seconds. Use the spinner or type a value to specify the refresh rate in seconds, which is the period of time to wait until the chart polls the corresponding data source to reflect any updated data.

   Note: You can specify a maximum value of 120 seconds (two minutes) as the refresh rate.

7. Click *OK*.

   You can continue to build and modify your chart as required.

8. When you are finished, click *Save* on the Visualization toolbar to save your chart.

9. To test and verify that your chart is being refreshed correctly, locate it on the Home Page, right-click it and select *Run* from the context menu.

   Observe your chart while it is running and make a note of any adjustments that should be made. For example, if the chart is being refreshed too quickly, then you should consider increasing the number of seconds specified for the Automatic refresh option.

Procedure: How to Disable the Automatic Refresh Option for a Chart

To disable the Automatic refresh option:

1. Open a visualization that uses automatic refresh. On the default Db2 Web Query Home Page, right-click a visualization and click *Edit*.

   The selected visualization opens in Db2 Web Query Designer.

2. On the Settings tab, expand the Content section.

3. Clear the *Enable auto-refresh* check box.

4. Save your content. When it is run, your content no longer refreshes automatically.

Using Insight to Analyze Dynamic Charts

Insight is a visualization tool that allows for the interactive selection of measures and dimensions, so you can create dynamic charts that refresh as you make changes.

With Insight, you can review and analyze a chart that shows the data fields that you choose in real time. It even rebuilds as you select additional fields or specify filters.

You can make quick decisions regarding your data with Insight. Using logical menus and simple filtering, you can analyze charts interactively to suit your needs. As you select additional fields and create filters, your chart refreshes instantly, letting you see the results of your data choices as you use the tool.

Insight lets you build filters, as needed, to customize the data that displays. You can add and remove fields, at any time and in any pattern, to enhance your chart. You can take advantage of the customization options that are available to you right from the toolbar.

With Insight, the chart type determines the buckets that display. For example, if you are working with a pie chart, you can specify values for the following buckets: Measure, Rows, Columns, Color, Size, Tooltip, and Animate.

Available fields are organized into applicable Dimension and Measure categories. You can use the plus sign  to add additional fields to your chart. For example, if you want to create a bar chart that plots Gross Profit, Revenue, and MSRP for each Product Category, click the plus sign to add fields using the drop-down field selector. Once you choose the fields that you want to include, you can rearrange them by dragging and dropping them into the order that you prefer.

The resulting bar chart displays, as shown in the following image.

Note: The Save icon only displays when running an existing Insight chart from the Home page.

You can use the navigational arrows in the interactive header to move between the available buckets in your chart. The following image highlights these arrows, which shift the focus of these buckets to the right or left.

All charts support a bucket for Color, which adds contrast to your chart. Some charts also support the Size bucket, which binds a measure to the size of the markers rendered on the chart.

Once you have added fields to the relevant buckets, you can use the Sort arrows adjacent to each field  to sort the data in ascending or descending order. This helps identify trends and priorities within your data. You can only sort one field at a time. Ascending order sorts your data from the smallest value to the greatest value, while descending order sorts your data from the greatest value to the smallest value, as shown in the following image.

When you select a sort order for a field, the field arrow changes color, appearing bolder than the unsorted fields. In the image below, a sort order was selected for MSRP, so the field arrow appears black.

Specify measures and dimensions for your chart in Db2 Web Query Designer before using Insight. This pre-loads the Insight user interface (UI) with those selections. Optionally, you can use Insight without selecting *any* fields. In this case, the field selection options are broad, meaning that all fields will be presented. An example of an empty canvas is shown in the following image.

Insight can be enabled for stand-alone charts, and you can access Insight functionality when these charts are run on their own or as part of an assembled visualization. When added to an assembled visualization, Insight-enabled charts display an icon that you can click to access Insight features. If you convert an Insight-enabled chart to a page with new content, a warning appears, alerting you that Insight functionality will not be carried over.

Procedure: How to Enable Insight From Db2 Web Query Designer

1. Open Db2 Web Query Designer. On the default Db2 Web Query Home Page, click *Visualize Data*.

   Db2 Web Query Designer opens in a new browser tab.

2. Select a workspace and a data source available from that workspace.

   Once you select a data source, Db2 Web Query Designer loads with options to create a single content item.

3. Optionally, change the chart type and add fields to the chart.

   Insight can be run with no fields applied, allowing you to create an entirely new chart in Insight.

   Note: Insight is not available for reports.

4. On the Settings tab of the Properties panel, expand the Content section and select *Run with Insight*.

5. On the toolbar, click *Run in new window*.

   The chart opens with the Insight toolbar available, and you can begin modifying and analyzing your chart.

Working With Charts in Insight

With Insight, you can choose individual fields for the buckets that you add. Whether you added fields into the buckets before running Insight or left them empty, creating a chart in Insight is streamlined to allow you to easily create a dynamic chart in real time. It also provides you with the flexibility of interactive comparison as you change your data selections rapidly and adjust the options for display.

You can use the default vertical bar chart or you can specify a different chart type using the Chart Picker in the Options toolbar.

In addition, you can reorder the display of fields in your chart. This allows you to change the placement of a particular field, giving you control over where the data for this component displays in your chart.

Procedure: How to Configure a Basic Bar Chart Using Insight

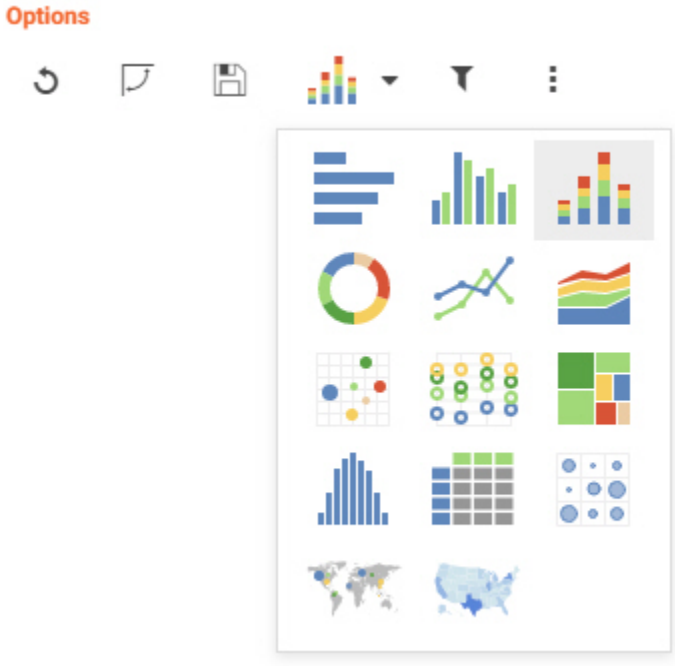
1. Click the plus icon under the Vertical Axis bucket.
2. Choose a measure field from the drop-down list.
3. Click the plus icon under the Horizontal Axis bucket.
4. Choose a dimension field from the drop-down list.

   Your bar chart displays, as shown in the following image.

Procedure: How to Change the Chart Type in Insight

1. On the Options toolbar, click *Chart Picker*.

The table of chart selections opens, as shown in the following image.



2. Select a chart type.

   Your chart refreshes with the new chart type, and the Insight interface refreshes to display all of the buckets that are relevant to the current chart type.

Procedure: How to Delete a Field From a bucket

1. Add one or more fields to your chart.
2. Hover over the field that you want to delete and click *X*, as shown in the following image.

The chart refreshes to reflect your selections.

Procedure: How to Reorder the Display of Fields in a Bucket

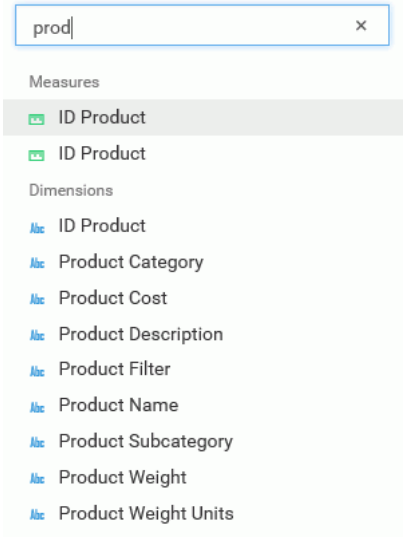
1. Add multiple fields to your chart, as shown in the following image.

2. In the Vertical Axis grouping, drag the second bucket into the first position. The placement of the field is shown by a dark blue vertical bar, as shown in the following image.

The following image shows the newly ordered fields.

Searching for Fields

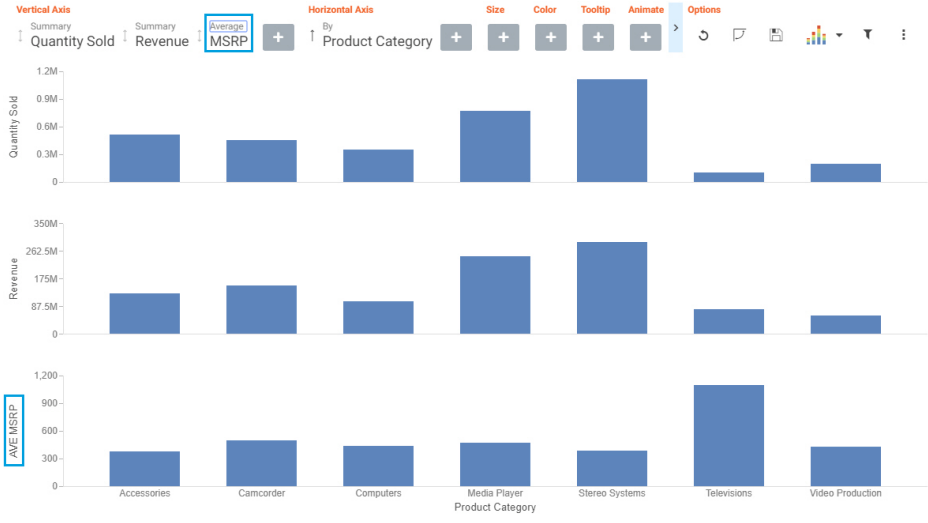
You can locate fields for your buckets using the search option. On the toolbar, click the plus sign. In the search field, start typing the field that you want to locate. You can type in whole words or partial words. The search identifies all fields that contain any instance of the characters that you specify, as shown in the following image.



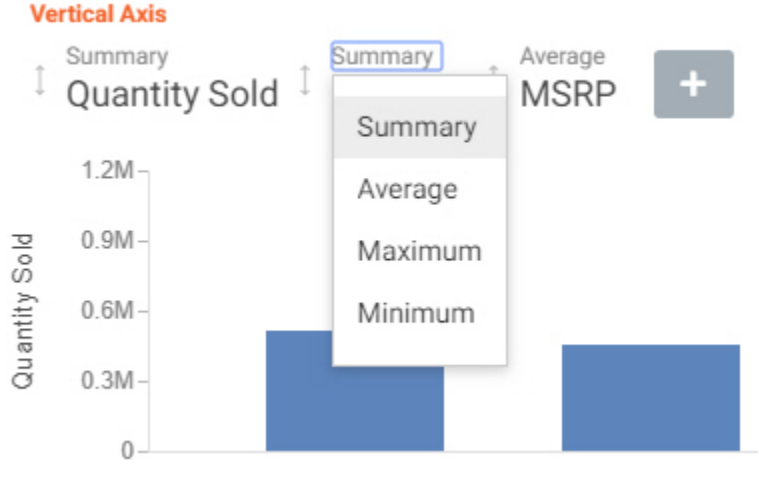
Changing Summary Operators for the Field

When working with measure fields, you can change the summary operators for the field from Summary (default) to Average, Maximum, or Minimum. You can also change a Count field to Count Distinct, using a similar menu selection.

When you make a selection, the axis of the relevant measure updates in the chart, as shown in the following image.



Options for changing the Summary field are shown in the following image.

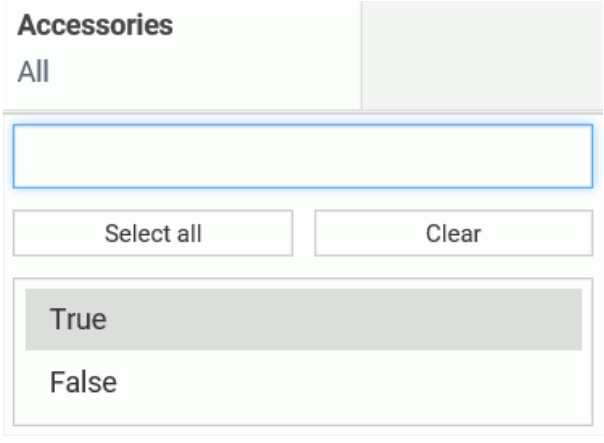


Filtering in Insight

To enable filtering, click the Show Filter icon , which is located in the Options section of the toolbar. This opens the filter shelf that renders above the bucket shelf, as shown in the following image.

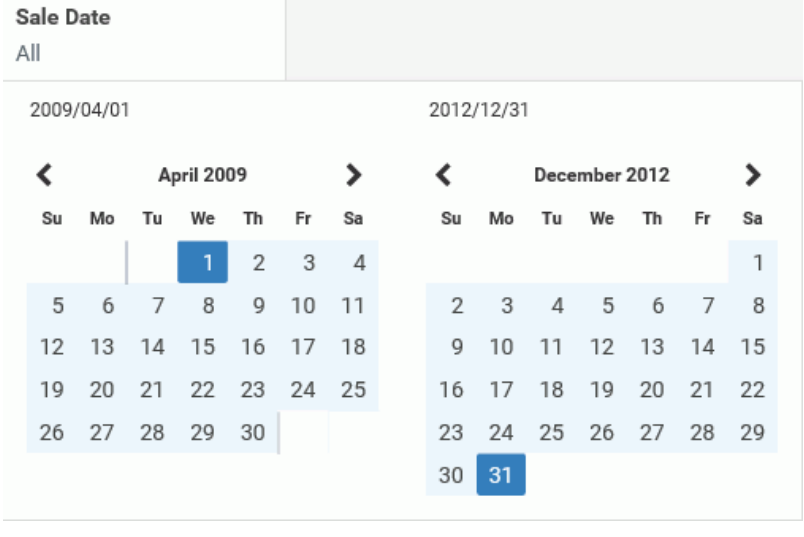
Use the filter shelf to build your filter. The filter shelf must be visible in order to add or modify a filter. In addition, constant value filters that were created in a procedure (.fex) or in InfoAssist, as well as all filters created in Db2 Web Query Designer, are applied and display on the filter toolbar in Insight. Parameter filters created in InfoAssist, on the other hand, do not display in Insight. When Insight is enabled, prompted filters created in Db2 Web Query Designer are always multi-select and optional, because single-select filters and required filters are not available in Insight.

Additionally, query variables are available in Insight and functional on the Filter shelf. Typically, query variables display in the Data pane, above the measure fields. The filter values display as True or False, rather than one and zero. In addition, you can only select one value, as shown in the following image.

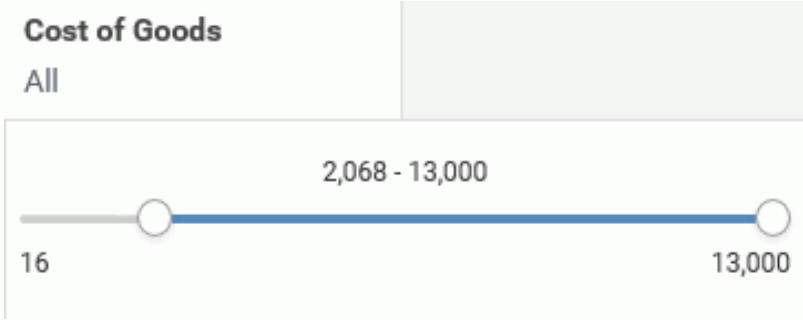


Types of Filters

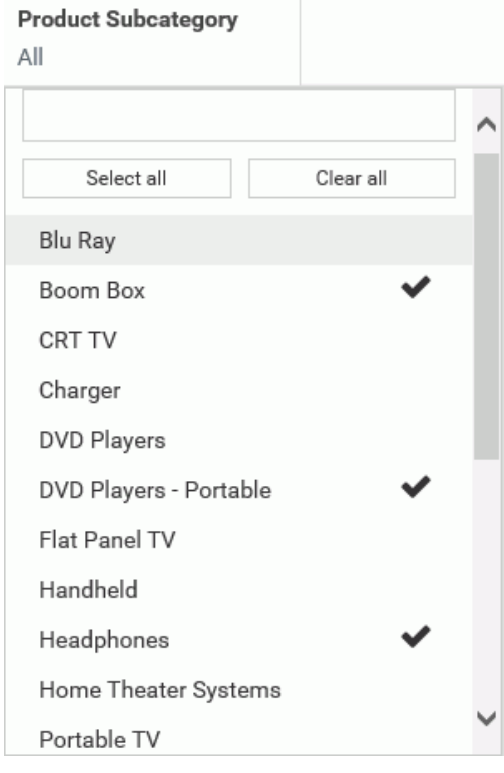
There are different types of filters in Insight. For example, if you are filtering with a date field, you can use a built-in calendar to select a date range, as shown in the following image.



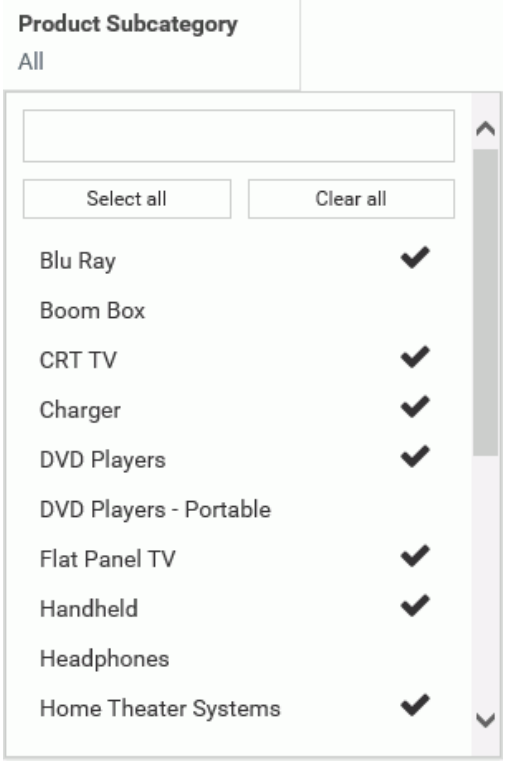
If you are filtering on a numeric value, such as a measure value, you can filter on values that are specific to a field. In this scenario, when you define the filter, a slider control opens. You can adjust the range of values that you want to include, using the slider control options, as shown in the following image.



You can also filter on dimension values. You can select one or more values by simply clicking on multiple values. A check mark appears, indicating the values selected, as shown in the following image.

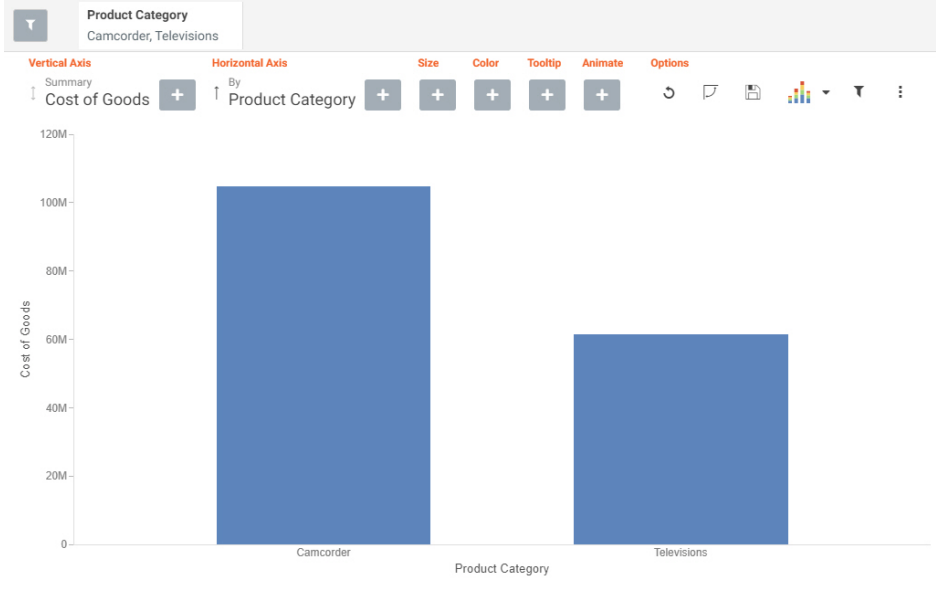


You can select all values for the dimension, select one or more, or clear all selected values, as shown in the following image.



Adding a Filter

You add a filter when you want to limit the display of your data, or drill down to focus on specific data values. For example, you may want to just display data for Camcorder and Televisions, rather than all Product Categories. You can do this by adding a filter for the Camcorder and Televisions, as shown in the following image.



Procedure: How to Add a Filter in Insight

1. In the Options toolbar, click *Show Filter*.

   The filter shelf opens.

2. Click the Show Filter icon.
3. From the drop-down list that opens, select the field on which to filter.
4. Click the identified field in the filter shelf to specify a value for the filter.

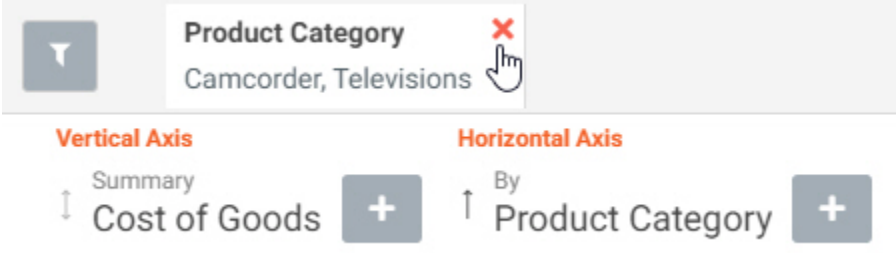
   A list displays, showing the values that you can select.

5. Click on the filter shelf to save your filtered items.

   Your chart refreshes.

Removing a Filter

To remove a filter, hover over it and click on the X, as shown in the following image.



The chart refreshes and displays your data without any filter.

Using the Options Toolbar

The Options toolbar is located in the upper-right corner of the Insight interface. These options control your interactions with your data, including options such as pivoting and filtering. You can also change your chart type using the Chart Picker option.

Reference: Options Toolbar Icons

The following section describes the icons that display on the Options toolbar.

Reset
Returns the chart to its original state. Any filters, measures, dimensions that are added in the current Insight session are reverted. The chart type is reverted, as well.

Swap Axis
Swaps the x and y axis, placing the contents of the x-axis on the y-axis. You can click *Swap Axis* again to change the chart back to its original orientation.

Save
Available when running an Insight-enabled chart from the Db2 Web Query Home Page. Allows you to save the Insight chart as a new file.

Chart Picker

Provides options for selecting different chart types, including:

-  **Horizontal Bar.** Offers the capability of ranking data in descending order. This chart type can also be used when x-axis labels are too long to fit legibly side-by-side. The following buckets are available for this chart type: Vertical Axis, Horizontal Axis, and Color.

-  **Vertical Bar.** Shows different measures per dimension component using different identifying colors. The following buckets are available for this chart type: Vertical Axis, Horizontal Axis, and Color.

-  **Vertical Stacked Bar.** Stacks values per dimension component using differentiating colors. The following buckets are available for this chart type: Vertical Axis, Horizontal Axis, and Color.

-  **Pie.** Presents values as part of a whole using colors to separate the segments. Pie charts emphasize where your data fits in relation to the larger whole. The following buckets are available for this chart type: Rows, Columns, Measure, Color, and Size.

-  **Vertical Line.** Creates a line chart which is representative of the data. Line charts are useful for showing trends in numerical data. The following buckets are available for this chart type: Vertical Axis, Horizontal Axis, and Color.

-  **Area.** Creates an area chart which is similar to a line chart except the area between the data line and the zero line (or axis) is usually filled with color. The following buckets are available for this chart type: Vertical Axis, Horizontal Axis, and Color.

-  **Scatter.** Plots data using variable scales on both axes. The following buckets are available for this chart type: Rows, Columns, Vertical Axis, Horizontal Axis, Size, Detail, and Color.

Note: When working with Insight Scatter or Bubble Charts, the "Show Datalabels" ability is tied to the Size bucket. Therefore, you will only see datalabels if there is a measure in the Size bucket.

-  **Circle.** Plots differing values in rows, enabling you to draw inferences as to how the values overlap. The following buckets are available for this chart type: Rows, Columns, Vertical Axis, Horizontal Axis, Size, Detail, and Color.

-  **Treemap.** Displays large amounts of hierarchically structured data. This chart type uses sections to represent an aspect of the selected measure. The following buckets are available for this chart type: Grouping, Size, and Color.

-  **Histogram.** Analyzes the distribution of a measure while assigning it to buckets based on the values you specify for the bins that are created. The default bin count is 10. The following buckets are available for this chart type: Rows, Columns, and Measure.

-  **Table.** Presents data in tabular form, allowing you to compare various intersections in your data. The following buckets are available for this chart type: Rows, Columns, and Measure.

-  **Matrix.** Analyzes one or two measures against a crosstab of two categorical dimensions. The following buckets are available for this chart type: Rows, Columns, Size, and Color.

-  **Point Map.** Uses symbols of different sizes to represent data associated with different areas or locations within the map. The following buckets are available for this chart type: Layer, Size, and Color.

-  **Choropleth Map.** Visualizes location-based data, trends, and distributions across a geographic area. These maps are geographically-based heat maps. The following buckets are available for this chart type: Layer and Color.

Note: The orientation of this chart icon changes if you swap an axis. In addition, the image that displays for the chart type changes, based on your selection.

Show Filter

Defines filters for your data. Select this icon, and using the filter shelf that opens above the bucket shelf, click the Show Filter icon to define a filter.

Note: To select one or more non-consecutive values, select each field. The selected values will display with a check mark to indicate that they have been selected.

More Options

Opens the following additional options:

- **Export Data.** Exports the underlying data of the current chart to an Excel file in LOCAL file storage. You will be alerted when the file appears in the bottom left corner, similar to any other file that you download.
- **Export Image.** Generates an image of the current chart, which is saved in PNG format to LOCAL file storage using the current width and height of the browser window.
- **Series Layout.** The bar, line, and area charts in Insight support several different sub-graph types (aka *Layout*). The supported graph types include: horizontal bar, vertical bar, vertical stacked bar, line, and area charts. For bar, line, and area charts, the Series Layout Options are as follows:
  - Horizontal Bar: Stacked, Side-by-Side, Absolute, Percent
  - Vertical Bar: Stacked, Side-by-Side, Absolute, Percent
  - Vertical Stacked Bar: Stacked, Side-by-Side, Absolute, Percent
  - Line: Stacked, Side-by-Side, Absolute, Percent
  - Vertical Stacked Area: Stacked, Side-by-Side, Absolute, Percent
- **Y-Axis Log Scale.** Adjusts the log scale on the y-axis. This option is always unchecked, by default. The following chart types are supported:
  - Horizontal Bar
  - Vertical Bar
  - Vertical Stacked Bar
  - Line

- Area charts
- Scatter charts
- Circle
- Histogram

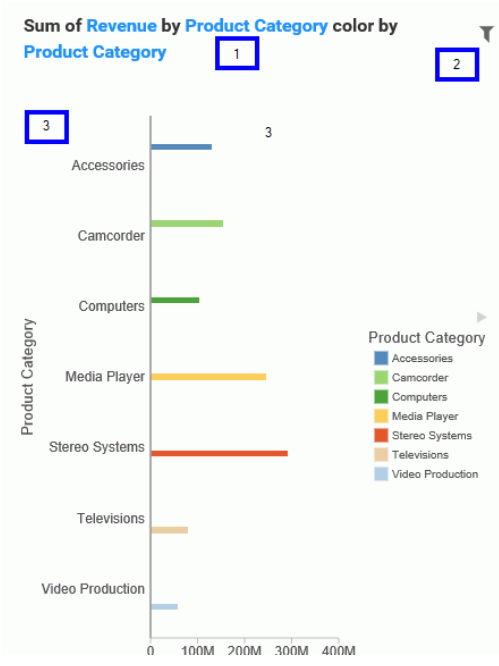
- **X-Axis Log Scale.** Adjusts the log scale on the x-axis. This option is always not selected, by default. The following chart types are supported:
  - Scatter
  - Bubble
- **Change Bin Size.** Changes the size of the bin (numeric value only). This option is only available for histograms. Clearing the text box switches it back to automatic bin size generation.
- **Show Data Label.** Turns numeric Data labels on/off on all charts, except Grids. The default for this setting is always Off except for Treemaps.
- **Show Totals.** Turns the Summary Row Total on Data Grid on or off. The default for this setting is always False.
- **Marker Shape.** Changes the marker shape used in the matrix marker chart. Options include: Circle, Square, or Fill.

Using Insight in Phone Mode

Phone mode, which is available in Insight, allows you to take advantage of the features of Insight on your phone. The interactive heading that is available in Insight on a tablet or desktop is replaced by a static heading that displays the field names in the chart, in blue text. These become summary fields that allow you to see what fields are included in the chart.

Insight is mobile aware and mobile-friendly. Full functionality is available on tablet devices and other high-resolution touch displays. On smaller devices, such as an iPhone, Insight enters a special *phone mode* which has a useful, but more limited, set of options and features that are tuned for the small screen real-estate of the device. In this mode, you can add or modify filters to narrow your data as needed. You can also hover over data points to see the underlying data.

Measures are shown first. The first measure displays with a summation attribute (for example, Sum or Avg) and then displays *of* and then the name of the measure, as shown in the following image.



In the above image, area one is the static heading. Area two marks the filtering side option button. Lastly, area three shows the conbody of the chart.

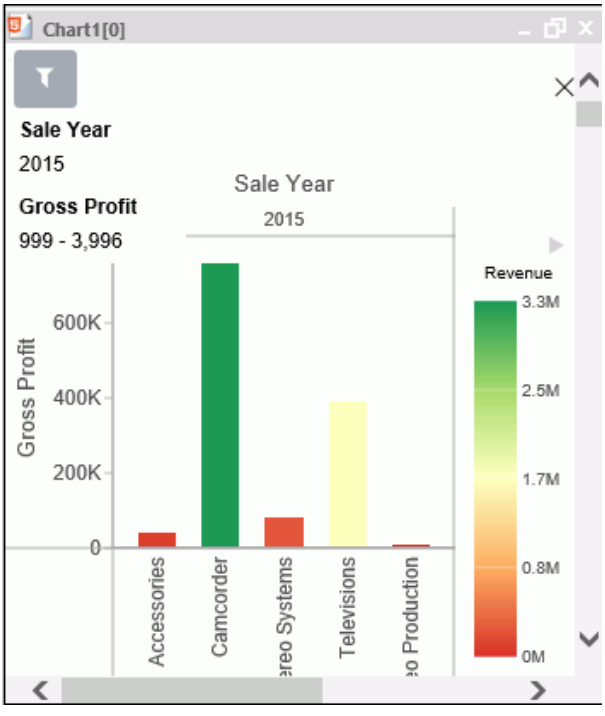
Numeric measures are displayed after the measures in the order of Y-Axis and then X-axis. If you define fields in your Grouping bucket, they display after the collective measures and are preceded by the word *by*. If you have created a matrix marker chart, the relevant buckets for these display next. They also use the word *by*, as do any Detail buckets that are populated in the chart. If your chart specifies a field for color, Phone mode precedes the display of this item with *color by*. Lastly, if you have populated the Size bucket, this displays last and is introduced by *size by*.

User Options in Phone Mode

You have a number of options in Phone mode, including robust filtering and hover capabilities.

Filtering

In Phone mode, you can filter just like in regular desktop mode. The primary difference is that the filter shelf stacks the available filters in a vertical row, as shown in the following image.



You click the filter icon to bring up the filter shelf and then you click the X to close it. If you have defined filters, closing the filter shelf merely collapses it. The filters that you defined remain intact. To remove a filter, hover over it and click the X in the upper-right corner.

General Usability

Phone mode allows you to view your chart and filter it to refine it based on your own unique scenario.

You can hover over a data bar a segment of a chart to obtain additional, detailed information from the underlying data. The tooltips that display are based on your data selections.

You can also show and hide the legend using the right arrow above the legend. When you collapse the legend, you can see more of your chart.

The opportunities for dynamic charting are vast with Insight. Using dynamic menus, filtering options, and search features, you can quickly and effectively create charts that communicate your data.